2022

Kaiapuni Assessment of Education Outcomes (KĀʻEO)

Operational Assessment Technical Report

Grades 3-8 Hawaiian Language Arts and Math

Grades 5 & 8 Science

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Chapter 1: Introduction

The state of Hawaiʻi represents a linguistically and culturally diverse population. The state constitution identifies Hawaiian and English as the official languages of Hawaiʻi in Article XV, Section 4, while Article XII, Section 7 ensures traditional and customary rights. These rights include, but are not limited to, the ability to use the Hawaiian language in home, school and business settings, and to access places and gather plants for use in traditional Hawaiian cultural practices. In addition, the state constitution (Article X, Section 4) mandates that the Hawaiian education system shall support and promote the study of Hawaiian language, culture, and history. Working with parents and Hawaiian leaders, the state established the Hawaiian Language Immersion Program, Ka Papahana Kaiapuni Hawaiʻi (Kaiapuni). Kaiapuni students are instructed through the medium of the Hawaiian language using a language immersion framework. Currently, 28 Kaiapuni schools instruct over 3,400 students in dedicated classrooms or schools. The Kaiapuni Assessment of Educational Outcomes (KĀʻEO) is administered in 21 of those schools to approximately 1,700 eligible students. Students receive instruction exclusively in Hawaiian through 5th grade after which English is introduced for one hour a day. From kindergarten to 12th grade, the medium of instruction is Hawaiian. Any parent can enroll their child as a student in the Kaiapuni schools.

As part of the state education system, Kaiapuni schools are required to comply with student testing requirements stipulated under the Every Student Succeeds Act (ESSA). For elementary and middle school students, the ESSA requires testing of students in reading/Hawaiian Language Arts each year; math in grades 3–8 and high school, and science in grades 5 and 8 and high school. Kaiapuni schools face a unique challenge when administering summative statewide assessments because Kaiapuni students are taught exclusively in Hawaiian through grade 4. In the past, the Hawaiʻi Department of Education (HIDOE) implemented different assessment strategies for Kaiapuni students, including a portfolio assessment (the Hawaiian Aligned Portfolio Assessment) and a translation of the Hawaiian State Assessment. In the 2014–15 school year, the state of Hawaiʻi tested most students using the Smarter Balanced Assessment Consortium (SBAC) summative assessments, which do not offer a Hawaiian language translation (Figure 1.1).

Beginning with the 2014–15 school year, the HIDOE entered into a memorandum of agreement with the University of Hawaiʻi (UH) to develop the KĀʻEO. Starting in 2015, Kaiapuni students in grades 3 and 4 engage in technically rigorous, native-language assessments that are culturally appropriate, meet current psychometric standards, and are aligned with the requirements of the ESSA. Beginning in 2017, the HIDOE stipulated the addition of grades 5–8 to the KĀʻEO assessment program. The results from these operational tests are covered in this technical report.

Figure 1.1: Timeline

1.1. Theoretical Foundation for the Hawaiian Language Immersion Program and Assessment System

Language is the marker of identity, and has a vision of the past, present, and future; "Language not only transmits visions of the past but also expressions of social relationships, individual friendships as well as community knowledge, a wealth of organizing experiences, rules about social relationships plus ideas about art, craft, science, poetry, song, life, death and language itself" (Baker, 2011, p. 45). Learning what Skutnabb-Kangas (2009) terms a mother-tongue language, such as the Hawaiian language, is an act of reconnecting with ancestors, understanding one's current place in the world as indigenous peoples, and imagining the future of language, culture, and community through a Hawaiian-language lens. These benefits and rights have been confirmed by the United Nations Declaration on the Rights of Indigenous Peoples (2008).

Additionally, the benefits of bilingual education have been well-documented in the world of qualitative research (Baker, 1988, 2011; Cummins, 1981, 1986, 1999, 2000, 2003; Fishman, 1976; Hakuta & Gould, 1987; Hakuta, 1986; Skutnabb-Kangas, 2009). According to Garcia (2008), bilingual education (which includes the immersion model currently being followed by the Hawaiian Language Immersion Program) has the potential to be transformative and can expand and stimulate the intellects of children and allow them to draw from a greater pool of knowledge and experiences than if they were monolingual. In addition, children who speak more than one language bring with them a wealth of experience and knowledge that enhances their learning: "Crossing cultural, social class, and language boundaries, students in a bilingual class develop multiple ways of solving human problems and approach ecological and social science issues from a cross-national perspective. These learners acquire deep academic proficiency in two languages, which becomes a valuable resource in adult professional life" (Thomas and Collier, December 1997/January 1998, p. 26).

In Hawaiʻi, the movement to revitalize the Hawaiian language in the education system is marked by a number of key events and policy changes, the most relevant of which was the movement to ensure the right to use Hawaiian as a medium of instruction: "By 1986, parents of children who spoke the Hawaiian language and advocates of the cause began entreating the State legislature to rescind the ninety-year-old Act 57, removing the last legal barrier to the creation of Hawaiian language immersion programs" (Kahumoku, 2000, p. 203). This was only possible because of a change in the state's constitution in 1978, whereby Hawaiian became one of the two official languages of the State of Hawaiʻi. More recently, the redraft of Board of Education Policy 105-8 reconfirmed the state's commitment to Hawaiian language and culture being present in every aspect of the education system, as well as highlighting the significance of Hawaiian immersion education in the state of Hawaiʻi. The alignment of this work with the larger movement towards improved academic outcomes for native students is clear; the value of this work lies in the direct impact it will have on not only Hawaiian immersion students, but also the state as a whole.

1.2. Summative Assessment in the Kaiapuni Program

A key consideration in assessment is the validity with which a key construct or domain is measured. Testing programs must ensure that students are able to access the material in the test. In order to best accommodate access, testing programs must consider and include appropriate methods to ensure that students can demonstrate their knowledge. These practices must reflect the most salient characteristics of the student population. The state of Hawaiʻi recognizes the intricate and integral

roles language and culture play in the assessment process. Assessment practices and priorities are derived from the culture in which they are developed and are based on cultural and contextual assumptions (Solano-Flores, Trumbell, & Nelson-Barber, 2002; Solano-Flores, 2006). In addition, assessment by its very nature requires academic knowledge of the written or spoken language (Solano-Flores, 2012). These implications must be acknowledged when developing a test to ensure the valid measurement of the construct. If language and culture are not considered, the test could ultimately be measuring other domains, resulting in a biased assessment. Indeed, "the notions of constructive alignment between assessment, curriculum, and student and/or cultural responsiveness are key to the success of teaching and thus learning" (Keegan, Brown, & Hattie, 2013).

For the KĀʻEO, the development process first considered the assessment language. The language diversity of the Kaiapuni students varies based on their home language and time of entry into the Kaiapuni system. However, all students in 3rd and 4th grades are educated exclusively in Hawaiian. The language acquisition of emerging bilingual students presents a challenge to test development, but also an opportunity to explore ways to engage and assess students more appropriately. Research has shown that emerging bilinguals possess "cognitive and linguistic practices that differ from monolinguals" (Menken, Hudson, & Leung, 2014, p. 602), and that these traits and differences should be examined and evaluated independently to best understand their unique characteristics (Menken et al., 2014; Mislevy & Duran, 2014). Further, Solano-Flores & Trumbull (2003) state that these specific and unique mental processes of bilingual students should be a foremost concern in test development to ensure that students are interpreting the items as intended. In addition, research suggests that myriad problems can arise when students are taught in one language and tested in another. Thus, a nexus should exist between the language of assessment and the language of instruction (Abedi et al., 2004; Keiffer et al., 2009).

Second, good assessment practices dictate the explicit consideration of culture. While assessments often reflect the values, beliefs, and priorities of the dominant culture (Padilla & Borsato, 2008), this can create potential bias for other students. The KĀʻEO allows for the overt inclusion of Hawaiian culture, experiences, and priorities to encompass a sociocultural view. "A sociocultural view of knowing accepts that there are cultural differences in the nature of learning, differences in what is viewed as valued knowledge and the way individuals connect with previous generations and draw on cultural legacies, often mediated by the cultural tools that they inherit" (Klenowski, 2009, p. 90). This allows for improved relevancy of the assessment material as well as student access to and engagement with this material.

Culture and language need to be understood and examined on an ongoing basis and in multiple ways throughout the assessment development and administration process (He & van de Vijver, 2012). For example, Padilla and Borsato (2008) recommend that community members should be involved in assessment development and that test developers should build their knowledge of customs and communication styles. Research supports the adoption of a "pluralist" approach to item writing, whereby items are created specifically for a cultural group to ensure greater sensitivity (Keegan, Brown, & Hattie, 2013). By doing this, test developers can build assessments that strive toward reducing bias because they have increased their sensitivity, knowledge, and understanding. Thus, considerations of culture and language were embedded throughout the development process. One

critical method that was used entailed the engagement and involvement of stakeholders. The project included the widespread involvement of the Hawaiian community in the writing and review of items, Student Learning Outcomes (SLOs), scoring, and advisory groups.

1.3. Inclusion

Hawaiian immersion students had previously been included in the statewide assessment program that was built on a worldview and language derived from a majority perspective. A central tenet of the KĀʻEO is to develop a more valid measure for assessing immersion students by placing culture and language at the center of the assessment program. Thus, throughout the assessment development process, the program focused on building an assessment that would be more relevant and accessible to immersion students. This was accomplished because all the assessment development tasks – standards development, item writing, item review, scoring, and standard setting – encompassed a purposeful collaboration among teachers from across the islands. These educators contributed a vast amount of knowledge about their communities, variations in academic language, and educational philosophy, resulting in a sense of ownership of the process and the product, thereby garnering community support. The community ownership of the process supports the notion that the assessment has the potential to provide important academic achievement information to schools, teachers, parents, and the community that is grounded in the priorities of the Hawaiian people.

1.4. Initial Meetings and Project Plan

The development of the KĀʻEO started in the fall of 2014 (Table 1.1). In December 2014, the project team began initial meetings with staff members and assessment specialists to discuss elements of test design. A plan was developed that followed a foundation of assessment industry best practices (e.g., Standards for Educational and Psychological Testing, Revised 2014 edition developed by American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME]). This plan included developing assessment purpose statements and blueprints, building high quality items, reporting results, and technical work (e.g., item analyses, standard setting) As the project has progressed, additional grades and content areas have been added (for additional details on the development process, see 2017 Technical Report).

Table 1.1:Assessment Development Timeline

2014	• Assessment MOA between HIDOE and UH Manoa • Content standards development for grade 3 and 4 math and HLA • Identify and convene Kaiapuni advisory boards • Initiate development of assessment technology framework • Waiver from US DOE for math/LA double testing in English and Hawaiian • Develop test blueprints for HLA/math • Item writing and review
2015	• Continue item writing • Develop administration, accommodation, and security procedures • Spring and Fall field tests • Administer surveys to participating educators on assessment and use feedback to improve the test • Cognitive interviews • Psychometric Analyses • Alignment of Math and LA standards to the CCSS

2016	• Grade 4 science standards development • Develop science assessment blueprints • Science item writing and review • Grade 4 science field test • Grade 3 and 4 math/HLA operational assessments • Cognitive interviews • Psychometric analyses • Alignment of items to standards (math/HLA) • Standard setting workshop (math/HLA) • Results • Develop parent, school, teacher reports
2017	• US DOE Peer review for grades 3-4 assessments • Additional item writing and review grades 3 and 4 • Grade 3 and 4 operational assessments in math/HLA; and grade 4 science • External validity study • Science standard setting • Science items to standards alignment • Score reporting for all content areas • Item writing for grades 5-8 math/HLA and grade 8 science
2018	• Grade 3 and 4 operational assessments in math/HLA; and grade 4 science • Grades 5-8 field test in math/HLA and grade 8 science • Additional item writing and review for all content areas • Cognitive interviews • External validity study • Score reporting for grades 3-4 in all content areas • Grades 3-4 equating study. • Grades 5-8 standard setting. • Grades 3-4 External validity study finalized. • Continued item development • Development and field testing of Grade 5 science assessment • Score reporting for grades 3-4 in all content areas. • US DOE Peer review for grades 5-8 assessments
2019	• Grade 3 - 8 math/HLA & Grade 8 Science operational assessments • Grades 3-4 equating Study • Grades 5-8 standard setting • External validity study finalized • Continued item development • Development and field testing of Grade 5 science assessment • Score reporting for grades 3-4 in all content areas • US DOE Peer review for grades 5-8 assessments
2020	• ESSA waiver cancelled test administration • Item bias and sensitivity review • Continued Item writing
2021	• Grade 5 science operational field test assessment first administration • Grade 3 - 8 math/HLA & Grade 8 Science operational assessments • Grade 5 Science Alignment study • Grade 5 Science Preliminary Standard Setting • Score reporting for all grades and content areas • Continued item development

	• Refresh grades 3-4 and release items. • US DOE Peer review for grades 5 science assessment • Retirement of Grade 4 Science assessment
2022	• Grade 3 - 8 math/HLA & Grades 5 & 8 Science operational assessments • Grades 5-8 equating study • Score reporting for all grades and content areas • Continued item development
2023	• Grade 3 - 8 math/HLA & Grades 5 & 8 Science operational assessments • Grade 5 Science Standard Setting • Score reporting for all grades and content areas • Continued item development

1.5. Framing Documents

The project team was committed to generating an assessment that was both technically rigorous and supported by the community. To facilitate the process, the team purposefully considered materials generated by the Next Generation Science Standards (NGSS) and general assessment materials from the SBAC. These resources included:

- Item writing guidance
- Item review guidance
- Rubric development
- SBAC assessment blueprints
- Reading and listening passage review guidance
- Assessment Claims and Targets in mathematics
- Achievement level descriptors (ALDs) and threshold descriptors for 3rd and 4th grades
- Guidance on universal design (UD) and technology-based assessment.

By considering these materials as a starting point, the team was able to collaborate with community members to adapt the materials, which streamlined the development effort in contrast to developing all new materials. In addition, these documents provided information that gave the work a firm foundation and prioritized content in a manner that was both thoughtful and thorough. This process ensured that the assessments were based on a unified set of standards, resources, and materials, as adopted by Hawai'i's Board of Education. Throughout this report, these documents are referenced and describe how they were used to inform the work.

1.6. Purpose of this Report

The purpose of this report is to provide documentation of the development processes, methodologies, and progress up to the 2022 test cycle. The report includes information on the assessments' validity and reliability including developing assessment blueprints, item writing and review, computer-based administration, educator and student surveys, scoring procedures, and analysis of the test items.

1.7. UH KĀ'EO Assessment Staff

The UH staff is responsible for the oversight of the project, coordination of teams, and implementation of assessment tasks.

- Dr. Pohai Kukea Shultz: Principal Investigator

- ʻUlu Victor: Hawaiian language, math, and science specialist
- Keliʻi Ruth: Hawaiian language, math, and language arts specialist
- Nicholas Lum: Hawaiian language and Hawaiian language arts specialist
- Lindsey Ching: Hawaiian language specialist, project manager
- Patrick Karjala: programmer

1.8. KĀʻEO Technical Team

The technical team supports the ongoing work of the project including psychometrics and technical considerations (e.g., item writing). The team also supports special studies including standard setting and alignment.

- Ms. Jessica Allen; psychometrician
- Mr. Frank Brockmann: Content development, reporting, information manager
- Dr. Karla Egan: Standard setting and overall technical consultant
- Dr. Kerry Englert: Lead psychometrician
- Ms. Monique Fountain: Analyst
- Dr. Bruce Randel: Psychometrician, technical consultant
- Dr. Linda Oshita: Special education, universal design
- Dr. Phoebe Winter: Peer review and technical consultant

The UH KĀʻEO Assessment Staff and the KĀʻEO Technical Team make up the KĀʻEO Assessment Team and execute the design of every aspect of the KĀʻEO development.

1.9. Hawaiʻi Department of Education Technical Advisory Committee (HIDOE TAC)

The HIDOE TAC is the primary technical advisory committee for all State of Hawaiʻi assessments. The KĀʻEO assessment is just one of many assessments in the Hawaiʻi assessment portfolio.

- Dr. Laurie Wise - Chairperson
- Tony Alpert
- Dr. Jon Cohen
- Dr. Gage Kingsbury
- Dr. Guillermo Solano-Flores
- Dr. Martha Thurlow
- Dr. Patricia Reiss
- Facilitator: Dr. Scott Marion

Chapter 2: Theory of Action

The KĀʻEO is founded on the idea that the assessment will facilitate meaningful changes in instruction by providing teachers, parents, and community members with information about student achievement. The development process has sought to bring together members of the community at every milestone including developing crosswalks, item writing, item review, alignment, standard setting, and cognitive interviews. It is through these events that educators provide meaningful input into the assessment development process as well as engaging with each other in discourse about student learning and instruction. This process allows for ongoing reflection and collaboration, which facilitates opportunities for changes throughout the development process.

A "theory of action" was first developed to talk about the major goals and specific outcomes that might emerge from the process. A theory of action offers a straightforward process for generating broad goals based on expectations. The project team considered several models that informed the development of the KĀʻEO theory of action, including the SBAC theory of action (https://files.eric.ed.gov/fulltext/ED536956.pdf). These documents informed the types of goals and processes that might be included in the development of the KĀʻEO theory of action.

Throughout the early meetings, participants including teachers, administrators, and advisory board members were asked about their greatest hopes and fears. This open exchange allowed for shared expectations of the assessment development process. UH KĀʻEO Assessment staff used the ideas expressed during these meetings to begin generating a theory of action (see Appendix A: Theory of Action) The theory of action was developed by identifying salient themes and synthesizing the most important ideas that were gathered from all stakeholders. UH KĀʻEO assessment staff looked at a number of theory of action models to determine which model would be most appropriate from a Hawaiian cultural perspective, as well as to gain an understanding of the unique aspects of this theory. Then, a document was created defining the specific purposes and goals of the process (see Appendix B: Purpose Statements). The most important aspect of the process of creating a theory of action and purpose statements was that it was conducted in Hawaiian from start to finish to ensure that the foundation of these assessments was situated firmly in a Hawaiian worldview, thereby strengthening the validity of the assessments for Hawaiian community stakeholders.

Chapter 3: Grounding the Assessment in a Validity Argument

The AERA, APA, and NCME state that "validity refers to the degree to which evidence and theory support the interpretations of test scores for the proposed uses of tests" (AERA/APA/NCME, 2014, p. 11). Education researchers and psychometricians view validity as a central concern when constructing and evaluating assessments. At its essence, validity evidence conveys the degree to which an assessment provides information on a given topic for a given purpose. However, validity is not a property of the test itself. Rather, it is an evaluation of how test scores are interpreted compared with the intended uses of those scores. This type of evaluation implies that a definitive "yes" or "no" answer is never the outcome (nor the intended goal) of validity research. Rather, validity presents evidence supporting or refuting a test's usefulness for the proposed purposes. This means that test validation is never complete, and validity should be revisited and amended over time as more data are collected in relation to test scores and the proposed uses change.

Constructing a validity argument is a complex process, and this was especially so in relation to this assessment. There is very little research describing how to build validity studies for an assessment based in a native language, particularly one that supports a program of cultural immersion (Solano-Flores, 2011). In this report, we present validity as an argument-based approach because this provides a framework for the ongoing evaluation of, threats to, and assumptions about, validity. "The argument-based approach to validation adopts the interpretive argument as the framework for collecting and presenting validity evidence and seeks to provide convincing evidence for its inferences and assumptions, especially its most questionable assumptions" (Kane, 1992, p. 527). Throughout the report, we propose studies to build evidence in support of our validity arguments. In addition, we seek to develop questions that might help to identify misinterpretations and counterfactuals that potentially threaten validity.

3.1. Validity Concepts

The following validity concepts form the foundation of the **current and proposed** validity work:

3.1.1. Use and Interpretation.

Perhaps the main validity issue for this study, is to develop evidence in support of the intended uses and interpretations of the assessment results. Messick asserts that validity is "an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores or other modes of assessment" (Messick, 1989, p. 13). This complex schema provides a deeper understanding of the measures and the underlying constructs, which are crucial to the building of theories and the progression of knowledge. Included in this type of validity evidence is a detailed development of the purposes of the assessment system, theory of action, and examination of the alignment of these concepts across the system.

3.1.2. Content validity.

Evidence based on content is central to supporting the validity claims of the assessments. In other words, does the instrument sufficiently represent the key content associated with student achievement in the Kaiapuni academic content standards? It is not sufficient to merely examine

correlational evidence to determine whether a test validly predicts a behavior or whether the content of a particular curriculum is represented by a test. Rather, we need to understand *what* dimensions are measured by the test and why. While this process can entail collecting content and predictive evidence, validity studies must move beyond this to focus on critically assessing the test and challenging ourselves and our conceptions to arrive at different hypotheses. These hypotheses must be scrutinized and challenged in search of other plausible interpretations of test scores.

3.1.3. Reliability.

Reliability plays an important role in providing evidence in support of validity. Reliability evidence provides information regarding the consistency of information obtained from a measure over repeated observations (Kane, 2006). Thus, the degree to which an instrument can produce consistent results speaks to its importance within the domain of validity – an instrument's validity evidence is compromised if its results vary in ways that are not consistent with the participants' true scores. This becomes critical when looking at the implementation of the KĀʻEO because the consistency of the information impacts the utility of the measure used for making decisions based on accurate results.

3.1.4. Construct Validity (Internal and External Validity).

Construct validity also plays a central role in better understanding the technical qualities of the instrument. Construct validity is a broad category that focuses on the importance of the inferences from and interpretations of scores, and involves going beyond simple predictions or assessment of the content domain. Other aspects of validity such as concurrent, predictive, discriminant, and convergent validity are subsumed under construct validation as "data collection and data analysis strategies" (Angoff, 1988, p. 28) and include an examination of construct-irrelevant variance or construct underrepresentation (Brualdi, 1999). The applications of these processes provide evidence of how well the test conforms to or measures the underlying construct. While this term can be quite broad in its application, we focus our discussion of construct validity on an examination of issues such as internal consistency and relationships with external factors. Therefore, we propose to examine the dimensionality of the assessment, the correlational patterns of items, and the relationships between scores and other factors.

3.1.5. Cultural Validity (including Fairness and Bias).

While the above mentioned concepts are typical considerations in assessment development, a central tenet of the system is that the KĀʻEO provides a more accurate and fairer measure for students who are educated in Hawaiian immersion schools. As such, the system must deeply consider cultural validity.

The KĀʻEO program is uniquely grounded in the language, culture, and worldview of the Hawaiian immersion community. These factors play intricate and integral roles in the assessment process, thus necessitating a broader approach to the examination of validity. Because assessment practices and priorities are derived from the culture in which they are developed and are based on cultural and contextual assumptions, all aspects of testing should reflect an underlying consideration of the learner, the learning process and context, and the content being measured. These considerations place the onus on development staff to account for culture and language because they directly impact the construct on which the test is based and that it will measure. If these factors are not considered,

the test could ultimately be measuring other constructs such as knowledge of the dominant culture. This could result in the introduction of construct-irrelevant variance and a biased assessment, which can have negative consequences for students.

While culture is certainly considered in the assessment literature (AERA/APA/NCME, 2014), it is often viewed as a threat to validity as opposed to something worthy of intrinsic consideration as an aspect of validity (Solano-Flores, 2011). Kirkhart (2016) argues that validity in itself is culturally situated and, as such, should be central to any validity study to ensure sensitive and accurate measurement. The KĀ'EO Assessment Team recognizes that culture is a complex factor, and there are no easy or established methods that enable direct consideration of cultural validity (Solano-Flores, 2011). However, this does not diminish the need for its consideration. Researchers need to build comprehensive validity arguments that reflect their priorities in relation to the use of the data. For example, one purpose of the KĀʻEO assessment system is to honor and preserve the values of the community (e.g., aloha) and the Hawaiian language as they are taught in schools. If researchers fail to think broadly about validity and the degree to which an assessment embodies cultural priorities, it can result in the marginalization of some participants.

Solano-Flores discusses the distinct contribution of, and provides a definition for, cultural validity in stating that it represents "the effectiveness with which [...] assessment addresses the sociocultural influences that shape student thinking and the ways in which students make sense of [...] items and respond to them" (Solano-Flores, 2011, p. 3, citing Solano-Flores and Nelson-Barber, 2001). This includes an array of considerations including language, worldview, teaching and learning, and values. Grounding research on a foundation of cultural validity can expand our perception of the traditional concept of validity by providing perspective and focus for our validity argument.

We propose that cultural validity is not a distinct type of validity, but rather is something that underpins the entire concept of validity. Thus, each time a validity study is developed as a part of the KĀʻEO system, we consider the ways in which language and culture form a part of the validity argument. The validity study advances the ways in which we think about the complexities involved in cultural validity, which are informed by worldview, learning styles, and community (Solano-Flores & Nelson-Barber, 2001). "Ideally, if cultural validity issues were addressed properly at the inception of an assessment ... there would be no cultural bias and providing accommodations for cultural minorities would not be necessary" (Solano-Flores & Nelson-Barber, 2001, p. 557). Thus, true cultural validity goes beyond fairness and equal educational opportunity to consider culture and language via the purposeful involvement of the community. This ensures transparency, buy-in, and ownership by the community, and promotes a level of validity that cannot be achieved using traditional methods.

3.1.6. Community validity

Even if an assessment has cultural validity, stakeholders may view the results with skepticism if it lacks meaningful integration with the community values. Community validity seeks to engage diverse stakeholder groups to ensure their priorities and concerns for their students' education are reflected in the assessment. We strive to understand how community members use and interpret results as a foundational component of our validity argument, and we prioritize evidence collection accordingly. With this in mind, we define community validity as: a.) the degree to which the assessment generates results aligned with its intended uses within the community, and b.) the degree to which developers

collaborate with community members to support accurate and meaningful interpretations of these results. This collaboration builds trust by facilitating an understanding of the needs and priorities of the community. When a developer has a multifaceted understanding of those priorities and how the results will be used, content can be better aligned with those needs. Furthermore, the collaboration prioritizes transparency, ensuring greater trust in the results.

Over many attempts to develop fair, valid, and reliable assessments for Kaiapuni students in Hawai'i, our community rejected tests developed without regard for their culture and community (Ka'awaloa, 2014). This directly relates to a core tenet of validity—to examine the veracity of the interpretations of test scores (Kane, 2006, 2012). When the values and knowledge of a community are not included in the assessment development process, the traditional concepts of validity, as well as cultural and community validity are affected. The key idea is that assessment results are not just used "as intended" by the assessment developer; rather, they reflect the needs and priorities of the community.

While the term community validity may feel new, its theoretical foundation is not. Core writings have implored us for decades to consider the prevalence and impact of value judgments in our work (Shepard, 1993) and how assessment results produce intended and unintended social consequences (Cronbach, 1988; Kane, 2006; Shepard,1993; Messick, 1989). The way forward may seem uncharted, but we do have a compass. For example, Cronbach (1988) pushes us to consider the importance of stakeholders in determining the significance and priorities of test consequences when he advises validity researchers to seek out myriad stakeholders to inform our questions and to "spread resources judiciously over inquiries likely to influence community judgments" (p. 7). Similarly, if a test is used to categorize, select, or evaluate, we must include a range of values in judging those tests and uses. To value only one perspective "engenders too narrow a validation inquiry and reduces our sensitivity to side effects that are likely to be seen as adverse by other value positions" (Messick, 1989, p.87). In naming cultural and community validity, we center stakeholders' values to ensure a more valid interpretation of test scores.

Community validity can provide a framework for ensuring inclusivity in our value judgments. By presenting counterfactuals and integrating multiple perspectives into the validity argument, we can challenge our assumptions and protect against unintended social consequences. While many test developers consider consequential validity as essential to a validity argument (Messick, 1989), too often, we wait until the assessment is implemented to test these arguments. By then, the ship has left the port. Chapelle & Lee (2021) argue that assessing language can be particularly insidious because those who define the constructs and interpret the results often operate within a set of singular values. For example, researchers found that a widely used assessment overidentified students who did not speak mainstream English dialects as being linguistically impaired (Hendricks & Adolf, 2017). This identification is largely attributed to ways in which assessments reflect the dominant monocultural and monolingual perspective, and this example importantly highlights issues of fairness and unintended consequences. It also shows that retrospective studies are too late; by the time the research is completed, the damage is already done (Sirecci & Randall, 2021). Furthermore, while this issue has caused concern among educators and linguists, little, if anything, has been done to address these negative consequences. As noted by Columbia University linguistics professor, John McWhorter, "tests like these stay in place" (2022, n.p.).

Community validity asks us to engage communities early in order to avoid pitfalls and better serve local purposes. Moreover, while cultural validity has been an essential foundation of our theory and practice, extending our considerations of culture and language to include the vital contributions of our community requires more. We need to think and purposefully articulate what culture means within the context of developing a native language assessment for our community. We would argue that considering both cultural and community validity evidence are critical aspects of the validity argument(s).

When this approach is adopted, validity studies become more actionable and focused. As part of our validity studies, we include specific discussions about language and culture, and always include as many educators and community members as possible based on the study context. For example, our alignment studies included teachers who were knowledgeable about Hawaiian immersion instruction, as well as culture, and thus were uniquely qualified to make informed judgements in these areas.

3.2. Validity Argument

The concept of validity is often promoted as an ongoing argument that continually seeks to gather evidence as a means of improving instruments and their associated interpretations. However, this is often infeasible, and validity studies must consider the limits and priorities inherent in the situation. Therefore, the UH KĀʻEO assessment team and KĀʻEO Technical Team attempt to strike a balance that relies on stakeholder priorities and the community's perspective and worldview, coupled with rigorous technical processes. The goal is to provide the UH KĀʻEO assessment team with pertinent information that they can use to determine the strengths of the assessment, as well as providing ideas for future improvement. Some of the potential priorities included in the purpose statements and theory of action not only include summative and formative uses of the system, but also aim to ensure fairness, consistency, accurate feedback, and education improvement. This work considers the priorities of stakeholders, as well as a variety of technical guidance (AERA/APA/NCME, 2014; Gullickson, 2008; Kane, 2006; Messick, 1989).

With regard to technical quality, the team has and will continue to examine the validity evidence pertaining to the assessment within several technical areas of validity that we believe to be particularly relevant to supporting this assessment. Based on the purposes and uses of the system, we aim to collect evidence in the following main areas: content-based validity, validity based on cognitive processes, internal validity, external validity, reliability, and fairness and bias (including cultural validity). While we present these aspects of validity as distinct categories, we recognize their interconnectedness. For example, it is difficult, if not impossible, to correctly interpret a score if the score does not adequately represent the intended content.

The validity framework is guided by both professional standards (AERA/APA/NCME, 2014) and US Department of Education (DOE) peer review guidance (US DOE, 2018). These guidelines suggest potential topics of consideration for a validity agenda including examining the content of the assessments and alignment to standards/student learning objectives, construct validity (e.g., patterns in correlations between and across different factors, unidimensionality of the assessment), bias review, standard setting, classification accuracy and consistency, and fairness (e.g., differential item functioning).

As with any assessment, validity plays an important role in laying out the development and research tasks. The US DOE peer review guidance specifies a range of documentation that is needed to support the validity of inferences from and uses of an assessment. The research team used the US DOE peer review guidance as a framework to ensure that we addressed a range of priorities. The tasks listed in Tables 1–6 provide guidance to the development team regarding priorities and the data that must be collected. It is also important to note that cultural validity is embedded throughout the development and research efforts as an ongoing validity consideration.

Appendix Table A-1 presents an overall framework for the validity argument, specifying the different types of validity evidence that are aligned with the intended purposes of the assessment system. Table 3.3 through Table 3.8 list the sources of supporting evidence for each type of validity.

Table 3.1: Assessment Purpose Aligned with each Type of Validity Evidence

Purpose Statement	Community Validity				
	Content Validity	Validity Based on Cognitive Processes	Internal Validity	External Validity	Additional Technical Evidence (reliability, fairness)
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	✓	✓	✓	✓	✓
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in the classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	✓	✓	✓	✓	✓
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	✓	✓	✓	✓	✓

The assessment purposes specifically reflect the importance of informing stakeholders about student achievement in important content areas in math, language arts, and science. To ensure that these purposes are supported, a key focus of the development is ensuring the appropriate representation of content (Table 3.2). As defined by the standards, content validity information is "evidence based on test content that supports the intended interpretations of the test" (AERA/APA/NCME, 2014, p. 218).

Table 3.2: Summary of Content Validity Evidence

Purpose Statement	Summary	Chapter(s)	Evidence
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	Systematic construction of assessments including blueprints, item development and representing cognitive complexity. All development tasks were completed with broad community support and involvement.	• Test development • Validity, reliability, fairness, and special studies	• Item development • Blueprints • Meeting notes • Meeting attendance records • Meeting agendas • Blueprint review • Model fit statistics • Alignment studies • Standard setting • Achievement level descriptors
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	Systematic construction of assessments including blueprints and item development reflects the breadth and depth of the intended content standards. All development tasks were completed with broad community support and involvement.	• Test development • Validity, reliability, fairness, and special studies	• Item development • Blueprints • Meeting notes • Meeting attendance records • Meeting agendas • Blueprint review • Model fit statistics • Alignment studies • Standard setting • Achievement level descriptors
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	All development tasks were completed with broad community support and involvement.	• Test development • Kaiapuni SLO development • Theory of action • Validity, reliability, fairness, and special studies	• Meeting notes • Meeting attendance records • Meeting agendas • Blueprint review • Alignment studies • Standard setting

One purpose of the KĀ'EO testing program is to specifically measure Hawaiian immersion students' performance in HLA, math, and science. The testing program provides a unique opportunity to develop assessments that reflect the priorities and needs of the Hawaiian immersion community. In doing so, the assessment program faces a unique context for the development and implementation of test items. A central issue is making sure that the assessment taps student achievement in these domains while minimizing the effects of irrelevant constructs. As such, the test development process considers multiple methods for evaluating the assessment items and the degree to which students can access each item based on cognitive processes (Table 3.3).

Table 3.3: Summary of Validity Evidence Based on Cognitive Processes

Purpose Statement	Summary	Chapter(s)	Notes
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	Cognitive testing showed that students were interpreting the items as anticipated across different student groups (e.g., special education, language background). Teacher review of items (e.g., bias, content, depth of knowledge) indicated that the items measure content in a way that all students will interpret consistently.	• Special studies • Test development	• Additional validity studies will be conducted in 2023 to examine data related to cognitive processes. These studies will include collecting and comparing information from teachers about the degree to which they believe their students can think deeply and critically on complex assessment tasks relative to students' performance on those tasks.
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	Cognitive testing showed that students were interpreting the items as anticipated across different student groups (e.g., special education, language background). Teacher review of items (e.g., bias, content, depth of knowledge) indicated that the items measure content in a way that all students will interpret consistently.	• Special studies • Test development	• Additional validity studies will be conducted in 2023 to examine data cognitive processes. This study will include collecting and comparing information from teachers about the degree to which their students can think deeply and critically on complex assessment tasks relative to students' performance on those tasks.
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	Teacher review of items (e.g., bias, content, depth of knowledge) indicated that the items measure content in a way that all students will interpret consistently.	• Test development	

Construct validity addresses the degree to which the test conforms to or measures the underlying construct or trait that is the target of the measure. This is often a statistical argument that focuses on such evidence as internal consistency in scores, relationships between scores and external factors, and score patterns. Evidence of internal validity can support the claim that the test conforms to or measures the underlying construct or trait that is the target of the measure (Table 3.4).

Table 3.4: Summary of Internal Validity Evidence

Purpose Statement	Summary	Chapter
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	Analyses that show the internal content is consistent with the content standards. Differential item functioning that shows the items perform the same way for different groups.	• Validity, reliability, fairness, and special studies
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	Analyses that show the internal content is consistent with the content standards. Differential item functioning that shows the items perform the same way for different groups.	• Validity, reliability, fairness, and special studies

Purpose Statement	Summary	Chapter
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.		• Validity, reliability, fairness, and special studies

Like internal validity, external validity supports the assessment by providing information on the degree to which the assessment reflects key content by relating scores to other similar variables. This type of evidence is typically generated by examining the relationships between assessment scores and scores from other similar assessments (e.g., the state assessment system and the NAEP, TIMMS, college readiness assessments, and the NWEA). However, there are no similar Hawaiian language assessments with which to make these comparisons, and so additional data is collected to enable comparisons to be made (Table 3.5). One important point to note is that the KĀʻEO program considered Smarter Balanced and NGSS materials throughout the development process (e.g., blueprints, ALDs, and reports) to provide a grounding framework for the KĀʻEO.

Table 3.5: Summary of External Validity Evidence

Purpose Statement	Summary	Chapter	Notes
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	The assessment structures were informed by Smarter Balanced materials including blueprints and performance standards. Additional validity study	• Introduction • Special studies	This type of evidence is typically generated by examining the relationships between assessment scores and scores from other similar assessments. However, there are no similar Hawaiian language assessments by which to make these comparisons. The research team is developing a plan to examine relationships between KĀʻEO scores and teacher ratings of student proficiency.
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	The assessment structures were informed by Smarter Balanced materials including blueprints and performance standards. Additional validity study	• Introduction • Special studies	
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	Additional validity study	• Special studies	

Generating additional technical information is necessary to ensure the adequacy of the assessments in supporting the purpose statements, as well as evaluating the assessments for continued improvement. Table 3.6 outlines the evidence that was generated to support other technical qualities of the assessment including reliability, fairness, and rigorous scoring methods in support of the test purposes. Standard 4.0 of the AERA/APA/NCME standards states that "Test developers and publishers should document steps taken during the design and development process to provide evidence of fairness, reliability, and validity for intended uses for individuals in the intended examinee population" (AERA/APA/NCME, 2014, p. 85).

Table 3.6: Summary of Internal Validity Evidence

Purpose Statement	Summary	Chapter
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	• Analyses that show the internal content is consistent with the content standards. • Differential item functioning that shows the items perform the same way for different groups.	• Validity, reliability, fairness, and special studies
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	• Analyses that show the internal content is consistent with the content standards. • Differential item functioning that shows the items perform the same way for different groups.	• Validity, reliability, fairness, and special studies
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	• Additional validity study	• Validity, reliability, fairness, and special studies

Like internal validity, external validity supports the assessment by providing information on the degree to which the assessment reflects key content by relating scores to other similar variables. This type of evidence is typically generated by examining the relationships between assessment scores and scores from other similar assessments (e.g., the state assessment system and the NAEP, TIMMS, college readiness assessments, and the NWEA). However, there are no similar Hawaiian language assessments with which to make these comparisons, and so additional data is collected to enable comparisons to be made (Table 3.7). One important point to note is that the KĀʻEO program considered Smarter Balanced and NGSS materials throughout the development process (e.g., blueprints, ALDs, and reports) to provide a grounding framework for the KĀʻEO.

Table 3.7: Summary of External Validity Evidence

Purpose Statement	Summary	Chapter	Notes
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	The assessment structures were informed by Smarter Balanced materials including blueprints and performance standards. Additional validity study	• Introduction • Special studies	This type of evidence is typically generated by examining the relationships between assessment scores and scores from other similar assessments. However, there are no similar Hawaiian language assessments by which to make these comparisons. The research team is developing a plan to examine relationships between KĀʻEO scores and teacher ratings of student proficiency.
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	The assessment structures were informed by Smarter Balanced materials including blueprints and performance standards. Additional validity study	• Introduction • Special studies	
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	Additional validity study	• Special studies	

Generating additional technical information is necessary to ensure the adequacy of the assessments in supporting the purpose statements, as well as evaluating the assessments for continued improvement. Table 3.8 outlines the evidence that was generated to support other technical qualities of the

assessment including reliability, fairness, and rigorous scoring methods in support of the test purposes. Standard 4.0 of the AERA/APA/NCME standards states that "Test developers and publishers should document steps taken during the design and development process to provide evidence of fairness, reliability, and validity for intended uses for individuals in the intended examinee population" (AERA/APA/NCME, 2014, p. 85).

Table 3.8: Summary of Additional Evidence

Purpose Statement	Summary	Chapter	Notes
To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.	• Classical test theory (CTT) reliability statistics, Rasch reliability statistics (reliability, item and person separation statistics) • Conditional standard error of measurement (CSEM) • Test information function (TIF) • Decision consistency • Differential item functioning (DIF) • Item writing and review • Cognitive interviews • Item specifications • Usability and comparability studies • Item by person distributions • Scoring information	• Validity, reliability, fairness, and special studies • Test development	The analysis plan includes an in-depth examination of the items and test which includes Rasch, classical test theory (CTT) analyses, and descriptive statistics.
To provide an appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.	• CTT reliability statistics, Rasch reliability statistics (reliability, item and person separation statistics) • Conditional standard error of measurement (CSEM) • Test information function (TIF) • Decision consistency • Differential item functioning (DIF) • Item writing and review • Cognitive interviews • Item specifications • Usability and comparability studies • Item by person distributions • Scoring information • Community validity studies	• Validity, reliability, fairness, and special studies • Test development	Community validity studies provide direct input from stakeholders on the use and interpretation of test results.
The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.	• Item writing and review • Cognitive interviews • Item specifications • Usability and comparability studies	• Validity, reliability, fairness, and special studies • Test development	

Chapter 4: Content Standards

As mentioned in Chapter 1, the state constitution names Hawaiian and English as official languages of Hawaiʻi (Article XV, Section 4). This provides students in the State of Hawaiʻi with a unique opportunity to follow one of two language pathways in their educational journey – either in an English medium setting or a Hawaiian medium setting. Furthermore, because the State of Hawai'i Board of Education has adopted a unified set of standards, the Hawai'i Department of Education (HIDOE) has ensured that students are fairly and appropriately assessed in their medium of instruction (either Hawaiian or English). As such, the use of the Kaiapuni SLOs was done to ensure that while the standards and assessments were built in two distinct languages, that these assessments were founded on the unified set of state standards. Starting in 2015, the assessment program focused on developing assessments for Hawaiian language arts (HLA) and mathematics (HIDOE, August 7, 2020).

This policy further states that HIDOE develop curriculum and standards to prepare students for college, career, and community contribution. To do this, HIDOE adopted a single set of standards (the CCSS) with two language paths: English and Hawaiian. The adoption of a single set of standards ensures that schools are teaching to the same expectations regardless of the language of instruction. This same set of expectations ensures that students can transition between language pathways.

The Common Core State Standards (CCSS) and the Next Generation Science Standards (NGSS) have always been central to the development of KĀʻEO. Students in the Hawaiian Language Immersion program, like students in all Hawaii public schools, are held to the expectations (the content and cognitive processes) of the CCSS and NGSS. As such, the standards have been foundational to the development of the KĀʻEO, and HIDOE developed the Kaiapuni SLOs to specify how the standards would be represented on KĀʻEO. By providing a way to guide item writers in developing items aligned to the standards in the Hawaiian language, the Kaiapuni SLOs have served as tool to ensure content developers are consistent in their use of Hawaiian in terms of accuracy, phrasing, terminology, and fidelity to cultural norms and values as expressed through the use of the language.

The KĀʻEO Content Specifications (2019-2020) document(s) describe the interrelationships between the standards, the Kaiapuni SLOs, and KĀʻEO item development. UH developed these specifications, in part, to help clarify existing relationships between test development documentation and the CCSS. Per AERA standards, content specification documents are important because they allow for a specification of the "content, skills, processes, and diagnostic features" (p. 76) of the assessment. Similarly, SBAC has a content specification document (SBAC Content Specifications for the Summative Assessment, 2015) aimed at describing the relationship between CCSS, the skills and content targeted for assessment, and the broader goals and objectives of SBAC test content development.

Student Learning Outcomes (SLOs) are a critical component of the KĀʻEO Content Specifications. The use of the term "SLO" within these specifications is a direct reference to the original contract between HIDOE and UH to develop KĀʻEO, which called for the development and adoption of Student Learning Outcomes. As such, "SLO" is now the preferred term, as it provides a more clear and accurate description of the place of these KĀʻEO-specific learning outcomes within the larger context

of KĀʻEO's content specifications. (NOTE: During the transition from the previous documentation to the Content Specifications documentation, however, the terms "KĀʻEO SLOs" and "Kaiapuni Standards" may be treated synonymously) (Table 4.1).

Table 4.1: HIDOE Summative Assessment Development Overview

reference: adapted from the *Content Specifications for the Summative Assessment of the Common Core State Standards*, accessible at: *http://www.smarterbalanced.org/wp-content/uploads/2015/08/ELA_Content_Specs.pdf*

Chapter 5: Test Content Development

The careful development of test content is one of the most critical steps in creating a high-quality assessment. A high-quality test development process assures that test blueprints adhere to test specifications, items are written to align to test blueprints and content standards, and forms are selected to align to test blueprints.

Content-related validity, a primary concern of high-quality testing programs, depends on a strong and demonstrable relationship between the test content standards and the specifications of the content domain. The following excerpts from *Standards for Educational and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2014) describe the relationship:

> **Standard 4.0** Tests and testing programs should be designed and developed in a way that supports the validity of interpretations of the test scores for their intended uses. (APA, AREA, NCME, 2014, p. 85)
>
> **Standard 4.12** Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications. (APA, AREA, NCME, 2014, p. 89)

AERA/APA/NCME (2014) also describes the responsibilities of test developers, including the careful and ongoing consideration of the examinee population and its characteristics:

> **Standard 3.2.1** Test developers are responsible for developing tests that measure the intended construct and for minimizing the potential for tests being affected by construct-irrelevant characteristics, such as linguistic, communicative, cognitive, cultural, physical, or other characteristics. (APA, AREA, NCME, 2014, p. 64)
>
> **Standard 4.0** Test developers and publishers should document steps taken during the design and development process to provide evidence of fairness, reliability, and validity for intended uses for individuals in the intended examinee population. (APA, AREA, NCME, 2014, p. 85)

To this end, the Kaiapuni Assessment of Educational Outcomes (KĀʻEO) offered a unique opportunity to develop a psychometrically rigorous assessment in the context of the Hawaiian language and culture.

5.1. Collaborative, Community-Based Approach to Test Development

Community and collaboration are important components of Hawaiian culture. The KĀʻEO test development process reflected these aspects of Hawaiian culture, in that it was created with the explicit inclusion and involvement of community members, educators, technical experts, and UH KĀʻEO Assessment staff. These experts were included at every step in the project to ensure the quality and relevancy of the assessment. Such steps included item writing, item review, standards and alignment review, and scoring, all of which were led and facilitated by the UH KĀʻEO assessment team staff and external experts. The development of the assessment was only possible through this collaborative structure and dedicated community involvement.

Figure 5.1 provides an overview of the test development cycle for the KĀʻEO. In this chapter, the steps specific to test content development are described in detail, from the creation of Kaiapuni test

specifications to the selection of operational test forms. At every development juncture, the KĀʻEO utilized many of the resources and research generated by the Smarter Balanced Assessment Consortium (SBAC) and NGSS guidance for science. These resources included:

- SBAC assessment blueprints;
- Item writing guidance;
- Item review guidance;
- Reading and listening passage review guidance;
- Assessment Claims and Targets in mathematics;
- Achievement level descriptors (ALD) and threshold descriptors for 3rd and 4th grade; and
- Guidance on Universal Design (UD) and technology-based assessment.

Figure 5.1: Test Development Cycle for KĀʻEO

5.2. KĀʻEO Test Specifications

AERA/APA/NCME (2014) Standard 4.1 states the following:

> *Test specifications should describe the purpose(s) of the test, the definition of the construct or domain measured, the intended examinee population, and interpretations for intended uses. The specifications should include a rationale supporting the interpretations and uses of test results for the intended purpose(s). (APA, AREA, NCME, 2014, p. 85)*

In 2019, a separate test specifications document was developed to clarify and consolidate the existing documentation and practices aimed at meeting this standard for KĀʻEO. As part of the KĀʻEO Content Specifications, the KĀʻEO Test Specifications describe KĀʻEO's purpose statement and provide descriptions of both the examinee population for which KĀʻEO is intended and the domains it aims to measure. The KĀʻEO Test Specifications describe the ways in which test blueprints are designed to support score reports, and they describe the capacity for subscore reporting across for each of the content domains and grade levels assessed. Examples of score reports are provided in the

Test Specifications, along with a discussion of how results are interpreted through both public and confidential score reporting.

Each KĀʻEO test form was selected according to established criteria documented in the test blueprints, which specify both the content and cognitive complexity requirements at each content area and grade level. A well-constructed test blueprint is a foundational element of an assessment program because it provides documentation regarding the content to be covered in the assessment and emphasis for each standard or learning objective. Test blueprints also describe the weighting of each standard or learning objective on the test as well as the weighting across different levels of cognitive complexity (e.g., how many items will ask students to recall information versus how many items will ask students to develop a strategy or employ a multi-step solution to a problem). A high-quality blueprint then facilitates the construction of a test that is conceptually grounded in the content by providing guidance to item writers, test review panels, test developers, and test users about the test objectives and the content assessed.

Through the entire development process (Figure 5.2), the assessment team reviewed and incorporated the methodology, research, and products generated by the Smarter Balanced Assessment Consortium. For blueprint development, the team specifically considered the SBAC assessment blueprints for English language arts and mathematics (for additional information about the development of the original blueprints, see the 2017 KĀʻEO technical manual). In this way, KĀʻEO blueprints were designed to maintain these foundational links to the Common Core State Standards and the Next Generation Science Standards. The Student Learning Objectives (SLOs) were the cornerstone of the KĀʻEO blueprints, as they identified the skills and knowledge eligible to be assessed in the Hawaiian pathway of the HIDOE summative assessment program.

Figure 5.2: KĀ'EO Development Process

reference: adapted from the *Content Specifications for the Summative Assessment of the Common Core State Standards*, accessible at: *http://www.smarterbalanced.org/wp-content/uploads/2015/08/ELA_Content_Specs.pdf*

5.3. Science Evidence Statements Science Evidence Statements

Evidence statements provide educators with additional information about what students should be able to know and do and performance expectations for each content standard. These evidence statements should be observable and measurable and should identify how a proficient student can demonstrate their understanding. In order to ensure that the 3-dimensional nature of the Next Generation Science Standards (NGSS) standards was considered, teachers and content experts generated evidence statements guided by NGSS documentation and based on the content of the Hawaiian medium Kaiapuni content specifications. The evidence statements were utilized during item development.

5.4. Achievement Level Descriptors

Achievement level descriptors (ALDs) provide information on student expectations of knowledge, skills, and competencies across the standards for an assessment. ALDs provide such context by describing the students' capabilities in terms of performance categories. These performance categories divide students into levels based on what they know (Figure 5.3). Level 1 students are students who can do basic skills. These skills progress across levels until students reach Level 4 where they demonstrate that they can accomplish more complex tasks.

Figure 5.3: Performance Categories

5.5. Types of ALDs

There are a variety of ALDs to meet different needs and purposes of the assessment system, and each type supports various development needs (Table 5.1) (Egan, Schneider, & Ferrara, 2012). Each type of ALD is written based on the task for which it is used and on the relevant stakeholder. Policy ALDs are the most general and are used by policymakers to understand high level descriptions of the levels across the system. Range ALDs are written early in the development process and describe the range of knowledge and skills within each performance level. Threshold ALDs describe the minimum knowledge students would need to get into the next performance level, which is critical to tasks such as standard setting. Finally, reporting ALDs are used to help stakeholders understand the performance levels on student reports.

Table 5.1: Types of ALDs

ALD Type	Purpose	Typical Stakeholder Audience	Notes
Policy ALDs	Written at a higher level that generally states goals and rigor for performance	Policy makers	Typically written as one set for use across the assessment program (not for each grade level)
Range ALDs	Describe the range of knowledge, skills, and cognitive processes required within each of the performance levels	Item writers	Usually written at the beginning of the test cycle. These are cumulative (e.g., if a student is in level 3, they have met the requirements of levels 1 and 2)
Threshold ALDs	State the minimum level of knowledge and skills required to advance to the next performance level	Standard setting participants	As with range ALDs, these represent cumulative skills.
Reporting ALDs	Written based on the results of standard setting and help stakeholders interpret assessment scores	Stakeholders	Used for reporting students' scores for the assessment
General	These are the ALDs that appear on the student reports	Parents, policy makers	

Importantly, ALDs support content validity by establishing a foundation of skills and knowledge across the performance levels and ensuring that the range of skills is considered as assessment system documents (e.g., standards, items, blueprint) are developed. This information is important to assessment tasks, such as standard setting and reporting; however, even before standard setting the KĀʻEO team began using ALDs to help inform the development process. For example, during item writing, it is important that item writers generate items across the continuum of skills to accurately measure the range of knowledge and skills. Figure 5.4 shows the development cycle of the assessment and the key junctures where ALDs were developed and used.

Figure 5.4: ALDs in the Development Cycle

5.6. Overview of ALD Development Process for Math and HLA

The development of the KĀʻEO ALDs began with consideration of the Smarter Balanced Assessment Consortium (SBAC) ALDs, which provided detailed descriptions of students' skills and knowledge across performance levels. (https://portal.smarterbalanced.org/library/en/technical-report-initial-achievement-level-descriptors.pdf). Starting with the SBAC ALDs supported the rigor of the assessment by ensuring KĀʻEO was grounded in a consistent set of skills and knowledge required by SBAC, again ensuring that these Hawaiian medium assessments were in line with the unified set of state standards.

Using the SBAC ALDs as a foundation, the team generated a suite of KĀʻEO ALDs for policy, threshold, range, and reporting. These were written in Hawaiian and included language from the Hawaiian medium Kaiapuni SLOs. It was important to have these documents in Hawaiian to support tasks such as item writing and standard setting, which were conducted exclusively in Hawaiian.

5.7. Overview of ALD Development Process for Science

Initial drafts of the science threshold and range ALDs were drafted by the UH team using the Kaiapuni science standards. The team also considered the previously developed math and HLA ALDs, as well as guidance from SBAC to ensure consistency in language and rigor across the content areas. During standard setting, panelists began by reviewing the draft ALDs, revising and finalizing these ALDs, and subsequently using them to inform standard setting (see Standard Setting Technical Report for additional information).

5.8. Kaiapuni Item Development: Phase I

Item development is a critical step in assessment. Item development for the Kaiapuni Assessment of Educational Outcomes (KĀʻEO) complies with AERA/APA/NCME (2014) standard 4.7:

> *The procedures used to develop, review, and try out items to select items from the item pool should be documented (APA, AREA, NCME, 2014, p.87).*

The KĀʻEO specifically focused on developing items using native language teachers, coaches, and higher education staff. Supporting documentation included training materials, forms, and blueprints. Item writing was especially critical because at the onset of the development process there were limited numbers of available items. Therefore, UH staff focused on leveraging resources to write new items that aligned to the content standards and fit the test blueprints. Consultants supported this effort by focusing on developing the training for teacher item writers and on developing procedures for collecting written items.

The development of the initial KĀʻEO items for mathematics and HLA started in January of 2015 and followed an abbreviated timeline to generate sufficient items for field testing. The team identified current teachers outside of the 3rd and 4th grade testing levels in Kaiapuni schools as the main source for generating test items. The team believed that these particular teachers were not only well versed in the content, but they might already have existing items from which to draw. However, it is important to note that while teachers might have expertise in developing classroom formative assessments, writing items for large-scale summative assessment presents unique challenges.

The item development for science followed many of the same steps as math and HLA item writing but with additional information from science specific sources. The KĀʻEO team specifically focused on developing items relying upon native language teachers, coaches, higher education staff, and content experts. This process for writing items also included training materials, forms, and blueprints. UH staff focused on leveraging resources to write new items that aligned to the content standards and fit the test blueprints.

5.9. Item Development Phase II (2016-Current)

The UH team is prioritizing additional item writing for KĀʻEO and is continuing to build the item pool. At the end of 2016, an external consultant was hired (Center Point Assessment Solutions) to work with teachers and expand the overall capacity for item development. The focus of this effort was to expand the existing knowledge of the Kaiapuni teachers with regard to item writing (based on what the program had learned from the past two years) and to use an increasingly sophisticated set of inputs to write targeted content and address areas in the item pool with potentially insufficient coverage.

The KĀʻEO Assessment Team compares KĀʻEO item pools against the assessment blueprints, using a host of analytical tools, including spreadsheet-based gap analyses, alignment studies, test form selection tools, ad hoc reviews, and other inputs. The comparison helps to determine which areas need to be addressed and where to place their collective item development efforts. Once these determinations are made, item writing templates are generated for specific standards, DOKs, claims, and other criteria; then teachers developing items are directed to focus on specific areas of content to ensure additional coverage where needed. In this manner, the KĀʻEO item development model has evolved from *bulk item writing and item pool generation* to *item pool maintenance and targeted supplementation*. Compliance with the established blueprint(s) is always a primary point of concern; current KĀʻEO development processes are designed to detect, analyze, and narrow (or eliminate) gaps in coverage in order to mitigate future test selection constraints within the item pool itself and to help ensure compliance with the blueprint requirements. This effort also includes the development of a separate KĀʻEO item development manual. The refined processes were part of a recent item writing workshop, which built upon teachers' existing item writing knowledge and included processes to better target items needed for the item bank (for details see KĀʻEO Item Development Manual (2019)).

During 2020, the assessment was not administered due to COVID-19. The UH team used the opportunity to write items for future field testing across all grades and content areas. This item writing focused on several priorities 1) addressing weaknesses identified in the independent alignment study (Davidson, & Egan, 2020) 2) identifying areas of the item pool that needed additional items identified through a gap analysis and 3) revising items that were flagged during field or operational testing.

5.10. Test Form Selection

For the 2022 operational assessments, the psychometric team used item metadata from the field test and test blueprints to specify operational forms. Items were stored in a spreadsheet that contained an item number and information generated from the item reviews and the field test (i.e., content

standard, the depth of knowledge or DOK, item type, and difficulty). Consultants created a series of tables to facilitate item selection in order to ensure that the content of the assessment matched the grade level blueprint. Items were selected to represent the percent ranges specified in the blueprint for each SLO/Claim and DOK level. Item difficulty also was considered. If items exceeded the specified blueprint range, adjustments were made. This iterative process continued until all blueprint criteria were satisfied. Once the psychometric team selected items that met the range of item numbers presented in the blueprint, the list of items was sent to the UH team for review to ensure a diversity of items within standards. The psychometric team then made adjustments and reran the frequency analyses to ensure blueprint coverage.

Item selection in 2022 focused on building the item pool specifically around standards that might have fewer associated items or where the alignment studies noted some weaknesses (e.g., DOK 4 items in grade 4 math). Numbers of items that were included in each assessment and numbers of items in the item pool are listed in Table 5.2. Item selection also addressed continual improvement in the assessments as identified in findings from the alignment study, item review, and psychometric analyses. Processes to ensure the results of such findings are addressed in future item selection efforts are documented through the use of KĀʻEO Action logs.

Table 5.2: Number of Items by Grade and Content Area

Grade	Subject	Number of Operational Items	Number of Operational Points	Number of Embedded Field Test Items
3	HLA	58	68	7
4	HLA	59	66	6
5	HLA	59	68	7
6	HLA	55	72	7
7	HLA	59	77	6
8	HLA	58	73	6
3	MA	55	58	7
4	MA	56	60	7
5	MA	58	66	6
6	MA	57	71	6
7	MA	56	63	7
8	MA	56	63	6
5	SC	51	64	7
8	SC	58	66	7

The KĀʻEO program uses an item selection tool, developed specifically for KĀʻEO by Center Point Assessment Solutions, to allow for greater efficiency and accuracy of item selection as the item pool expands. To ensure that KĀʻEO meets all testing specifications, this tool is integrated and aligned with each testing blueprint. By automating item selection, use of the tool reduces the likelihood of human error during item selection. The tool also provides visual indicators when the item numbers in each cell approach the minimum or maximum number, which prompts the item selection team to focus item development in these categories (See Figure 5.5 and Figure 5.6

Figure 5.5: Item Selector Tool Output I

Pilihelu (Mathematics)

Grade 8 OP Selection Output Report

Current Selection from OP Selector Tab

Reporting Category	Total Items Current Selection	Claim 1	vs. blueprint	Claims 2/4		Claim 3		Computer scored	SC MC DD STV	Hand scored	ER SA FTG	Total items within range?
Standard 1 NS/EE	15	9	ok	3	ok	3	ok	13	ok	2	ok	ok
1.1	2	2		0		0		2		0		
1.2	7	4		2		1		7		0		
1.3	3	0		1		2		1		2		
1.4	3	3		0		0		3		0		
Standard 2 F	12	5	ok	6	ok	1	ok	10	ok	2	ok	ok
2.1	6	5		1		0		6		0		
2.2	6	0		5		1		4		2		
Standard 3 G	17	7	ok	5	ok	5	ok	15	ok	2	ok	ok
3.1	9	4		0		5		8		1		
3.2	5	2		3		0		4		1		
3.3	3	1		2		0		3		0		
Standard 4 SP	10	4	ok	6	+2	0	ok	9	ok	1	ok	ok
4.1	10	4		6		0		9		1		
	54	25	ok	20	ok	9	ok	47	ok	7	ok	ok

Figure 5.6: Item Selector Output II

Current OP Selection

	Claim 1		Claims 2/4		Claim 3		Totals		
DOK 1	11	ok	4	ok	0	ok	15	ok	
DOK 2	14	ok	8	ok	5	ok	27	ok	
DOK 3	0	ok	6	ok	3	ok	9	ok	
DOK 4	0	ok	2	ok	1	ok	3	ok	
Totals	25	ok	20	ok	9	ok	54	ok	Item Count Total
Range Checks	ok		ok		ok		ok		

P-vals		count	%
0 to	0.099	8	16%
0.1 to	0.199	10	20%
0.2 to	0.299	19	37%
0.3 to	0.399	9	18%
0.4 to	0.499	3	6%
0.5 to	0.599	1	2%
0.6 to	0.699	1	2%
0.7 to	0.799	0	0%
0.8 to	0.899	0	0%
0.9 to	1.000	0	0%
		51	items

Difficulty	Totals		
Easy/Ma'alahi	22		
Moderate/Ma'amau	25		
Difficult/Pa'akikī	7		
	54		Item Count Total

Total OP selections	Totals		
Computer Scored	47	87%	
Hand Scored	7	13%	
	54		Item Count Total

Avg P-val
0.24

Hand scored only	Totals		
Short Answer/FTG	5	71%	> 70%
Extended Response	2	29%	
	7		Handscored Items

5.11. Technology, Graphic Design, and Layout

In the initial development process, the KĀʻEO assessment team worked with the university's College of Education's Distance Course Design and Consulting Group (DCDC). The DCDC team was initially tasked with placing the assessment online in a format similar to the SBAC assessment and in a manner that ensured consistency with the operational tests, thus ensuring students would be able to engage with the assessment using a computer-based format. Data could then be downloaded from the system, cleaned and formatted, and used to conduct subsequent item analyses and scaling. This work has continued with the KĀʻEO Assessment team's own programmer who was a part of DCDC from the beginning to ensure continuity.

Universal design (UD) guidelines are followed in response to Section 508 of the Rehabilitation Act of 1973 in the development of all educational technologies. UD is implemented via recommended web development practices outlined within the W3C Web Content Accessibility Guidelines (WCAG) 2.0 last updated in December 2008. To ensure implementation of all recommended guidelines during development, the KĀʻEO Assessment team employs a pair-programming process so that multiple

employees see and test code throughout creation. Accessibility issues are further exposed via usability testing with users and through external accessibility testing tools such as AChecker and WAVE.

Importantly, the computer format would allow for a range of assessment item types. This included single choice, multiple choice, fill-in-the blank, sorting values, and written responses, both short and long. The online format also facilitated access to accommodations and ensured aspects of universal design. All students were able to enlarge the text, pause the assessment, and listen at their own pace to audio passages (additional information on accommodations is provided in the administration section below). This also follows AERA/APA/NCME (2014) standards:

> **Standard 3.1** Those responsible for test development, revision, and administration should design all steps of the testing process to promote valid score interpretations for intended score uses for the widest possible range of individuals and relevant subgroups in the intended population. (APA, AREA, NCME, 2014, p. 63)
>
> **Standard 3.2** Test developers are responsible for developing tests that measure the intended construct and for minimizing the potential for tests' being affected by construct-irrelevant characteristics, such as linguistic, communicative, cognitive, cultural, physical, or other characteristics. (APA, AREA, NCME, 2014, p. 64)

5.12. Usability

During 2018 - 2019 cognitive interviews were conducted with students at three different schools on two different islands across the state to understand the usability of the assessment technology and platform. The design included standard characteristics of usability testing; defined objectives, real users, real tasks, analysis, and recommendations for improvements (Miami University of Ohio, 2004; Krug, 2010). This design was chosen in order to align this usability study with the main purpose to evaluate the ease-of-use and learner experience with the assessment software. The usability study design incorporated into the cognitive study was sufficient for the purpose and doable for the researchers. It included core usability design elements and was intended to capture insights that enabled the researchers to recommend improvements to what DCDC is building (Krug, 2010).

Observations made and questions asked of students during the cognitive interviews showed that students were not inhibited by the technology; they felt comfortable using all of the functions that were present on the online assessment system. This aligned with the results of the 2016 cognitive interviews with students in grades 3 and 4, which showed that the online assessment tool was accessible and that there were no visual or functional issues with the assessment from their perspective. The students did have minor feedback about the layout of fill-in-the-blank questions, which was used to make slight adjustments to the visual aspects of these types of questions on future administrations (for more information see the 2018 Technical Report).

5.13. Accessibility Tools

Accessibility supports for exam testing are delineated in the Designated Supports and Accommodations section of the Test Administration Manual. KĀ'EO relies on inherent system functionality for the following accessibility functionality:

Zoom: Available on all browsers supported by the testing software (Chrome, Firefox and Internet Explorer) by default

Magnification: Available on all operating systems supported by the testing software (Windows and Mac) by default

Color Contrast: Enables a student to adjust screen background or font color, based on his or her needs or preferences. This may include reversing the colors for the entire interface or choosing the color of font and background. (*Replaces the previous background colors on computer screen accommodation.*)

Masking: Enables a student to block off content that is not of immediate need or that may be distracting. A student is able to focus his or her attention on a specific part of the test item by masking. (*Replaces the previous accommodation that involved having a student hold a template provided by the school against the computer screen to reduce his or her visual field.*)

5.13.1. Features

The assessment software provides a series of features to assist the learner during the test taking process, which include:

Adjust the volume for listening passages: All students can adjust the volume on their headphones for the listening passages (Figure 5.7).

Figure 5.7: Volume Control

Visual progress: A list of the question numbers at the bottom of each test lets students monitor their progress visually onscreen (Figure 5.8).

Figure 5.8: Visual Progress

Designate a question for later review: Students can select any question to return to for later review. This can be marked using a checkbox available on each item and is identified on the question numbers as a warning symbol (Figure 5.9).

Figure 5.9: Designate for Later Review

Chapter 6: Test Administration

Administration of the assessment needed to be conducted in a consistent manner across sites to ensure that students could demonstrate their knowledge in a reliable manner. In addition, it was important that the administration conditions simulated the operational assessment. This resulted in the development of formal guidelines and procedures (for additional details see KĀʻEO Test Administration Manual). The UH staff and consultants framed the administration guidelines using current and past HIDOE procedures (e.g., the SBAC guidelines, the HSA for science and end-of-course assessments, and the Hawaiian Aligned Portfolio Assessment procedures). By considering these procedures, the assessment team was able to ensure that the test administration was aligned to state testing protocols.

6.1. Training

Separate sets of documents were developed by UH staff and implemented across the administration process including training, administration, and scoring. The assessment team developed administration training materials and Administration guides. These materials included a training video that demonstrated the basic features and functions of the test and familiarized teachers with what their students could expect to see when taking the assessment. The UH KĀʻEO assessment team also provided written test administration instructions in English and Hawaiian via the Test Administration Manual for both English and Hawaiian speaking Test Administrators and Coordinators. Specific details were provided regarding the roles and responsibilities of staff members including the school administrator, test coordinator, and test administrators, ensuring and maintaining test security, providing accommodations, and reporting incidents. School staff were then trained in relation to administration and procedures by the test coordinators in each school. Finally, a live webinar was conducted prior to the testing window to enable test coordinators and test administrators to ask any questions and obtain clarification and view demonstrations of the test procedures. The webinar was recorded and posted to the KĀʻEO website so that it could be accessed later.

Additionally, a help desk was opened prior to the testing window that testing coordinators and administrators could either phone or email to obtain answers to their questions. The help desk was open Monday to Friday from 7:30 am to 2:30 pm throughout the testing window and was staffed by Hawaiian and English speakers. School staff members taking part in the administration were required to complete the training and sign Appendix A of the Test Administration Manual, stating that they understood all testing procedures as they were presented. In addition, every test coordinator and test administrator was required to pass a certification test that ensured that all school personnel were well versed with the contents of the TAM and could securely administer the assessment; these tasks were required before each school was allowed to administer the assessment. UH staff collected documents, recorded receipt of materials, and followed up with schools to ensure that all documentation was complete.

6.2. Testing Environment and Security

The KĀʻEO prioritizes test security in order to protect student and school information, as well as to protect the integrity of the test. The data security plan is divided into three segments: prevention,

detection, and follow-up. Prevention includes a rigorous security process throughout test development (e.g., item writing, review, standard setting, and alignment) and test administration (e.g., test administrator training on security procedures). Detection includes reporting any irregularities during the test administration (e.g., the findings of HIDOE monitoring) as well as subsequent data forensics (e.g., examination of the time it takes students to answer items, and person fit statistics). Finally, HIDOE, in collaboration with the UH KĀʻEO assessment team, undertakes follow-up and identifies appropriate corrective action in response to any irregularities or violations of security procedures, as well as a system for detection collusion. For additional information, see the Test Security Section of the Test Administration Manual.

6.2.1. Test Security

Test security is critical for ensuring fair and equitable administration of the assessment. It is imperative that security procedures are maintained to ensure the integrity of the tests and the data, and thus the reliability of the results. It is also critical that student information is secured to protect the rights and privacy of all students.

This assessment is the property of the HIDOE. Thus, these testing procedures mirror the processes used for all tests within the Hawaiʻi Statewide Assessment System (See https://alohahsap.org/). It is critical that test security be maintained before, during, and after the administration of the HLA and mathematics tests. All testing incidents require documentation based on the degree of severity, as described below.

6.2.2. Testing Incidents

A testing incident is any disruption to the stated testing procedures that might have an impact on the integrity of the test scores. Three general types of testing incidents can occur, and school personnel are required to report these incidents to HIDOE. The three categories are outlined below.

> **Test Impropriety**: These incidents may involve one or more students but have only a small chance of impacting test results and interpretability. They include students talking, making gestures that disturb other students, and accessing the internet or electronic devices for purposes other than cheating, and teachers leaving instructional materials on the wall of the test venue.
>
> **Irregularities**: These incidents may involve one or more students and can impact test scores or results. They include such things as students cheating, disruptions to the test environment (e.g., a fire drill or electrical failure), and test administrators providing incorrect instructions, providing a test participant's login information to another user, coaching students, or providing test materials that are not on the approved list of materials.
>
> **Breaches**: Breaches are serious incidents that could threaten the validity of the test scores. Schools are required to immediately report breaches to UH staff. Examples of breaches include a school staff member altering the responses of one or more students, students using cellphones to take pictures of assessment items, unapproved printing of test items or reading passages, and any retention or distribution of test responses/answers (including improper

shredding of scratch paper, any reproduction of test materials, and removing any test materials from the test environment[1]).

6.2.3. Reporting Testing Incidents

It is extremely important that all testing incidents are reported. It is important in relation to the interpretability of the analyses that HIDOE and UH KĀʻEO assessment staff understand the type, breadth, and severity of the incident. Schools are trained to report testing incidents and submit appropriate documentation to HIDOE, who in turn follow a thorough process of internal evaluation and resolution.

6.2.4. Ancillary Materials

The following materials were provided to schools to facilitate training and administration:

- Help desk contact information: phone 808-260-2356; email kaiapuni@hawaii.edu
- Website: https://kaiapuni-wp.coe.hawaii.edu/kumu (which includes a list of frequently asked questions)
- Administration training video
- Student rosters (provided by HI DOE)
- Test log-in materials
- Test security and administration procedures (including a list of accommodations and a Hawaiian language script)
- Practice tests: https://kaiapuni.coe.hawaii.edu
- Testing forms in the Test Administration Manual
- Test Security and Administration Procedures Acknowledgment Form
- Accommodation Verification Form
- Designated Supports Verification Form
- Additional Accommodation/Designated Supports Request Form
- Testing Incident Report

6.3. Accommodations Information

The AERA/APA/NCME standards state that:

> **Standard 3.9** Test developers and/or test users are responsible for developing and providing test accommodations, when appropriate and feasible, to remove construct-irrelevant barriers that otherwise would interfere with examinees' ability to demonstrate their standing on the target constructs. (APA, AREA, NCME, 2014, p. 67)
>
> **Standard 6.2** When formal procedures have been established for requesting and receiving accommodations, test takers should be informed of these procedures in advance of testing. (APA, AREA, NCME, 2014, p. 115)

[1] *For additional examples of testing incidents, please see the HSA Science Assessment and End-of-Course Exams Test Administration Manual (pp. 11–13) under the "Test Administration Documents" heading on the HSA Science Resources page at alohahsap.org.*

The accommodations and designated supports policies below are based on the Hawai'i State Assessments and End-of-Course Exams Test Administration Manual. Assessment accommodations may be provided by school staff for students who are IDEA eligible or 504, and have an IEP or 504 plan. Accommodations are changes in procedures or materials that increase equitable access for IDEA-eligible and 504 students during the administration of KĀ'EO. A student's need for an embedded or non-embedded accommodation must be documented in his or her IEP or 504 Plan. School staff must use the guidelines for determining an accommodation as follows:

- The accommodation is based on the student's learning needs
- The accommodation is one that is currently used by the student in the classroom
- School staff that work with the student agree on the accommodation
- The accommodation is stipulated in the student's IEP or 504 plan

Designated supports are access features that are available for use by a student for whom a need has been indicated by an educator or team of educators, as well as a parent/guardian and the student. A consistent process must be used to determine which embedded and non-embedded designated supports (Table 6.1) are needed by a student for an assessment or exam. Educators who make these decisions for an identified student must have a clear understanding of the process of ensuring that this student is currently using the feature during classroom instruction and is given an opportunity to practice using any variation in the feature that will be provided during the administration of an assessment or exam.

The test administrator must complete an Accommodation Verification Form or Designated Support Verification Form, provided in Appendix B and Appendix C, respectively, of the Test Administration Manual for each student who receives an accommodation or designated support. These requests are then submitted to the HIDOE assessment section for verification based on HIDOE processes and procedures.

Table 6.1: KĀ'EO Accommodations

Embedded Accommodation
• **American Sign Language (ASL), Braille (BR), or Closed Captioning (CC):** Please contact the Help Desk if you need more information about this accommodation.
Non-embedded Accommodation :
• **100s Number Table**: A table listing numbers from 1-100 is a non-embedded accommodation only for students with visual processing or spatial perception needs as documented in their IEP or 504 plan. This table may be printed only for students approved for this accommodation. Guidelines for the 100s Number Table are provided in Test Administration Manual: Appendix H: Multiplication Table and 100s Number Table. • **Alternate Response Options:** Students with some physical disabilities, including both fine motor and gross motor skills, may need to use adapted keyboards, large keyboards, StickyKeys, MouseKeys, FilterKeys, adapted mouse, touch screen, head wand, and switches. • **Multiplication Table**: A single-digit (1–9) multiplication table is a non-embedded accommodation only for students with a documented and persistent calculation disability. This table may be printed only for students approved for this accommodation. Guidelines for the Multiplication Table are provided in Test Administration Manual: Appendix H: Multiplication Table and 100s Number Table. • **Print on Request**: A student may request printed copies of individual test items and stimuli based on a documented need. A request must be made for this accommodation for a student using the Appendix B form in the Test Administration Manual. Please call the Help Desk for additional information.
Embedded Designated Supports
• **Zoom functionality** to increase the font size for the entire assessment or exam is native to all web browsers supported by this testing application. Please contact the Help Desk if you need assistance.

- **Streamline, Color Overlay or Masking:** Please contact the Help Desk if you need more information about this accommodation.

Non-embedded Designated Supports

- **Color Overlays:** A student who meets the criteria for the Print on Demand accommodation may place color transparencies over the printed stimuli, items, and answer options in an Assessment if these color transparencies are used during classroom instruction.
- **Magnification:** A student may adjust the size of specific areas on the screen, e.g., text, formulas, tables, graphics, and navigation buttons using the native functionality available on all supported operating systems. Please contact us if you need assistance.
- **Noise Buffers:** A student wears equipment, e.g., ear mufflers, white noise, to block external sounds and will need to wear headphones unless tested individually in a separate setting.
- **Read Aloud:** Students who are struggling readers may have all or portions of an assessment or exam read aloud, e.g., stimuli, and/or items by a trained and qualified TA human reader. The reader should review and adhere to the Read Aloud Guidelines on alohasap.org and to ensure that the designated support is provided in Hawaiian. Please contact the Help Desk for further information. This designated support also requires a separate setting designated support.
- **Scribe:** A student who has documented significant motor or processing difficulties, or who has had a recent injury, such as a broken hand or arm, that makes it difficult to produce responses may dictate his or her responses to a trained and qualified TA human scribe who records the responses verbatim. The scribe must independently review the Scribing Guidelines on alohasap.org and adjust to ensure that the designated support is provided in Hawaiian. Please contact the Help Desk for further information.
- **Separate Setting:** Test location is altered so that the student is tested in a setting different from the setting made available for most students. Four previous settings that were accommodations are included.
  - Read Aloud to Self
  - Being Seated Near TA
  - Being Tested Individually
  - Being Tested in a Small Group
- **Simplified Test Directions:** Students who need additional support understanding the test directions may be provided with Simplified Test Directions as a designated support allowable across the assessments. This could include students with difficulties in auditory processing, short-term memory, attention, or decoding. This designated support may require testing in a separate setting to avoid distracting other test takers.

If a student requires an accommodation or designated support that is not listed above, it can be requested using the Additional Accommodations or Designated Supports Verification Form. Additional designated supports for Hawaiian language learners are currently being discussed and developed for future administrations of the assessment.

Chapter 7: Scoring

Scoring is a critical aspect of the assessment process. It is through accurate, reliable, and consistent scoring that assurances can be given that the resulting information is suitable for the purposes for which it was intended.

The AERA/APA/NCME standards specify that:

> **Standard 4.18** Procedures for scoring and, if relevant, scoring criteria, should be presented by the test developer with sufficient detail and clarity to maximize the accuracy of scoring. Instructions for using rating scales or for deriving scores obtained by coding, scaling, or classifying constructed responses should be clear. This is especially critical for extended-response items such as performance tasks, portfolios, and essays. (APA, AREA, NCME, 2014, p. 91)

The KĀʻEO includes both traditional selected-response items and open-ended items that contribute to the overall student score on the assessment. Selected-response items are machine-scored within the assessment delivery system, which is designed and hosted by UH. As a quality assurance measure, the UH KĀʻEO Assessment team checked 10% of the machine-scored items to ensure that they were scored correctly by the system. The KĀʻEO open-ended item scoring involved a three-step process. Each step is described briefly here, and in more detail below.

The first step was the development of the scoring materials. The thoroughness of the scoring materials was critical because these documents served as the foundation by which the items were scored. The details provided in these materials ensured that scorers understood the item and the range of student responses associated with each score point. The scoring materials also ensured that scorers made accurate determinations in relation to student responses.

The second step involved developing training materials and identifying and training scorers. Based on the AERA/APA/NCME standards:

> **Standard 4.20** The process for selecting, training, qualifying, and monitoring scorers should be specified by the test developer. The training materials, such as the scoring rubrics and examples of test takers' responses that illustrate the levels on the rubric score scale, and the procedures for training scorers should result in a degree of accuracy and agreement among scorers that allows the scores to be interpreted as originally intended by the test developer. Specifications should also describe processes for assessing scorer consistency and potential drift over time in raters' scoring. (APA, AREA, NCME, 2014, p. 92)

All open-ended (i.e., constructed response) items were scored by hand using trained scorers during a scoring meeting. UH KĀʻEO assessment staff recruited current or former Kaiapuni classroom teachers to participate as scorers. To be considered as scorers, participants were required to be fluent in Hawaiian and to possess a college degree in teaching or in the content area to which they were assigned. All participants were required to participate in scorer training. Prospective scorers were specifically trained on the scoring process and the items that they scored. Scorers were monitored throughout the scoring process by a scoring manager. The scoring manager was a current grade 5–8

teacher in the Kaiapuni system who had been trained by UH KĀ'EO assessment staff or a UH staff member.

Regarding the monitoring of the scoring process, the AERA/APA/NCME standards state that:

> **Standard 6.9** Those responsible for test scoring should establish and document quality control processes and criteria. Adequate training should be provided. The quality of scoring should be monitored and documented. Any systematic source of scoring errors should be documented and corrected. (APA, AREA, NCME, 2014, p. 118)

This standard was addressed in the final step, the actual scoring and analysis of the open-ended items. UH staff spent considerable time ensuring that the scoring was accurate and consistent, while also aiming to structure the meeting and discussion in a manner that would be respectful of and appropriate to the unique circumstances of educators in a Hawaiian language immersion setting. All scorers simultaneously worked through each question. UH staff led a discussion involving all scorers that included having all scorers read the question and answer it as they would expect a student at the grade level to answer it, discussing some of the grammatical and/or language issues contained in the question that were unique to a Hawaiian language immersion context, examining a number of anchor papers in order to "calibrate" and ensure consensus among all scorers regarding how each item was scored, and answering any questions or concerns related to the questions prior to scoring. This process was followed for every extended-response question that needed to be hand-scored, and proved to be a valuable process, albeit one that took a considerable amount of time.

The scoring meeting was held virtually over a five-day period with approximately 25-30 scorers participating every day. The UH staff ensured that the scorers were properly trained in scoring items in this unique context, had the opportunity to discuss any issues that arose, and that the responses were scored in a rigorous, meaningful, and accurate manner. The scorers read and scored items using a computer-based system. Ongoing monitoring ensured that they remained precise in their scoring and consistent with other scorers who were working on the same item. The scoring manager was also available to answer any questions from the scorers. Because the meeting was held virtually, additional security measures were put into place to ensure the security of test items that align with the procedures in the HIDOE test security manual. First, scorers signed a confidentiality and non-disclosure agreement to ensure that there was a common understanding of the security requirements of the virtual meeting. These requirements included maintaining the confidentiality of the assessment items, participation in the scoring meeting in a separate location that was secure and where their computer screen could not be seen by others, and the removal of all other electronic devices from the area where the participants worked. Second, the UH Assessment team utilized Digify to keep all items secure. Digify ensured that screenshots or the printing of items could not be done. It also required participant login at every question, and the program kept a log of participant activity that was monitored throughout the meeting. Once the question scored, participants no longer had access to that question. Finally, participants were required to keep their cameras on at all times so that UH Assessment staff could monitor the security of the scorer's environment during the course of the meeting.

7.1. Developing Scoring Materials

It is important for each open-ended item to be accompanied by a guide that contains all of the critical information about the item. Thus, the UH staff developed a guide for each open-ended item. Staff members reviewed the scoring materials published by the SBAC and the materials developed for NGSS-aligned assessments to ensure that the KĀʻEO scoring guides included all relevant information for each item that needed to be hand-scored (downloaded from http://www.smarterbalanced.org, see Figure 7.1). The development of the generic and item-specific rubrics followed the guidelines published by the NGSS, which used the mathematics rubrics of the CCSS as a guide, while integrating the three dimensions of the NGSS into the rubric (see https://www.nextgenscience.org/news/equip-ngss-rubric-development). Thus, following the SBAC- and CCSS-based mathematics rubrics allowed the development to be more closely aligned with the NGSS. The guides included the following information:

- Item images and question
- Item metadata (including standard, claim, target, DOK, and degree of difficulty)
- Generic item rubric for reference
- Item-specific rubric
- Anchor paper examples for each score point.

Figure 7.1: Scoring Guide for a Mathematics Item

7.1.1. Generic Rubrics

The first step in developing scoring materials was for the UH team to construct three generic content-based rubrics. These rubrics provided basic information on the meaning of each score point and were foundational in developing the item-specific rubrics.

HLA rubrics. The team used the generic rubrics presented by the SBAC to ensure the rigor and completeness of the rubrics. From these examples, generic rubrics were developed in Hawaiian, scorers were trained on how to use them during the scoring process, and they were made available throughout the scoring meetings (Table 7.1 through Table 7.4).

Table 7.1: KĀʻEO HLA General Rubric for 4-Point Item

Helu ʻAi	Nā Ana Loiloi no nā Nīnau Mākau ʻŌlelo
4	Ua hoʻonohonoho ʻia ke kākau i mōakāka loa ka manaʻo o ka haumāna. Hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e lawa ai ka maopopo loa o kona manaʻo a me ke kumu i manaʻo ʻia ai. Kākau ka haumāna me ka holo pono o kona mau manaʻo, mai kekahi manaʻo a i kekahi. Ma kēia kākau ʻana, he pololei loa ke ʻano o ke kaʻina kumuhana i pili kūpono i ka pōʻaiapili o ka paukū kākau. Ma ka wā e pono ai, e hoʻohana kūpono ʻia nā loina Hawai'i a me ʻike Hawai'i ʻiʻo kūpono e wehewehe piha ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua kū like ke ʻano o ia mahele i ke ʻano mōakāka loa no ia mau mahele a pau.
3	Ua hoʻonohonoho ʻia ke kākau a ʻano mōakāka ka manaʻo o ka haumāna akā he mau ʻike iki i pono ʻole a i ʻole i komo ʻole. Hoʻolauna ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e ʻano maopopo ai kona manaʻo nui. Kākau ka haumāna me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, akā ʻaʻole nō i piha loa. Ma kēia kākau ʻana, he pololei ke kaʻina kumuhana i pili kūpono. Ma ka wā e pono ai, e

Helu ʻAi	Nā Ana Loiloi no nā Nīnau Mākau ʻŌlelo
	hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua ʻano mōakāka ia mau mahele a pau.
2	Ua hoʻonohonoho ʻia ke kākau a mōakāka iki ka manaʻo. Hoʻolauna ʻia ka manaʻo (nui) akā ʻaʻole paha hoʻohana ʻia nā laʻana e kākoʻo ai i kona manaʻo nui. ʻAʻole kākau ka haumāna me ka holo o kona manaʻo, mai kekahi manaʻo a i kekahi, akā hiki ke kuhi, maopopo ka manaʻo nui o ka nīnau i ka haumāna. ʻAʻole paha hoʻokomo ʻia nā loina Hawai'i a me ka ʻike Hawai'i, akā hoʻokomo ʻia kekahi ʻike o ka ʻohana/kupuna. Ma loko o nā mahele a pau o ke kākau ʻana, mōakāka iki ia nā mahele a pau.
1	Ua hoʻonohonoho ʻia ke kākau a ʻaʻole nō i mōakāka loa ka manaʻo o ka haumāna. E ʻike ʻia ana ke ʻano pili ʻole o kekahi mau mahele o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻole nō i lawa nā laʻana e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili loa a maopopo loa kona manaʻo. Ma kēia kākau ʻana, ʻaʻole i pololei loa ke kaʻina kumuhana a me ka pōʻaiapili akā ua kokoke ka haʻina i ka manaʻo i pili a pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ʻaʻole mōakāka nā mahele a pau.
0	ʻAʻole i hoʻonohonoho ʻia ke kākau a ʻaʻole nō i mōakāka ka manaʻo o ka haumāna. Pili ʻole loa nō nā mahele a pau o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻohe laʻana kūpono e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili iki a maopopo iki kona manaʻo i ke kumuhana kūpono. Ma kēia kākau ʻana, ʻaʻole i pololei ke kaʻina kumuhana a me ka pōʻaiapili a ʻaʻole i kokoke iki ka haʻina i kekahi mea pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. He ʻano hopena kēia o ka hoʻāʻo ʻole e pane iki ma ke ʻano pololei a piha nō hoʻi.

Table 7.2: KĀʻEO HLA General Rubric for 3-Point Item

Helu ʻAi	Nā Ana Loiloi no nā Nīnau Mākau ʻŌlelo
3	Ua hoʻonohonoho ʻia ke kākau i mōakāka loa ka manaʻo o ka haumāna. Hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e lawa ai ka maopopo loa o kona manaʻo a me ke kumu i manaʻo ʻia ai. Kākau ka haumāna me ka holo pono o kona mau manaʻo, mai kekahi manaʻo a i kekahi. Ma kēia kākau ʻana, he pololei loa ke ʻano o ke kaʻina kumuhana i pili kūpono i ka pōʻaiapili o ka paukū kākau. Ma ka wā e pono ai, e hoʻohana kūpono ʻia nā loina Hawai'i a me ʻike Hawai'i ʻiʻo kūpono e wehewehe piha ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua kū like ke ʻano o ia mahele i ke ʻano mōakāka loa no ia mau mahele a pau.
2	Ua hoʻonohonoho ʻia ke kākau a ʻano mōakāka ka manaʻo o ka haumāna akā he mau ʻike iki i pono ʻole a i ʻole i komo ʻole. Hoʻolauna ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e ʻano maopopo ai kona manaʻo nui. Kākau ka haumāna me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, akā ʻaʻole nō i piha loa. Ma kēia kākau ʻana, he pololei ke kaʻina kumuhana i pili kūpono. Ma ka wā e pono ai, e hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua ʻano mōakāka ia mau mahele a pau.
1	Ua hoʻonohonoho ʻia ke kakau a ʻaʻole nō i mōakāka loa ka manaʻo o ka haumāna. E ʻike ʻia ana ke ʻano pili ʻole o kekahi mau mahele o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻole nō i lawa nā laʻana e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili loa a maopopo loa kona manaʻo. Ma kēia kākau ʻana, ʻaʻole i pololei loa ke kaʻina kumuhana a me ka pōʻaiapili akā ua kokoke ka haʻina i ka manaʻo i pili a pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ʻaʻole mōakāka nā mahele a pau.
0	ʻAʻole i hoʻonohonoho ʻia ke kākau a ʻaʻole nō i mōakāka ka manaʻo o ka haumāna. Pili ʻole loa nō nā mahele a pau o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻohe laʻana kūpono e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili iki a maopopo iki kona manaʻo i ke kumuhana kūpono. Ma kēia kākau ʻana, ʻaʻole i pololei ke kaʻina kumuhana a me ka pōʻaiapili a ʻaʻole i kokoke iki ka haʻina i kekahi mea pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. He ʻano hopena kēia o ka hoʻāʻo ʻole e pane iki ma ke ʻano pololei a piha nō hoʻi.

Table 7.3: KĀʻEO HLA General Rubric for 2-Point Item

Helu ʻAi	Nā Ana Loiloi no nā Nīnau Mākau ʻŌlelo

2	Ua hoʻonohonoho ʻia ke kākau i mōakāka loa ka manaʻo o ka haumāna. Hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e lawa ai ka maopopo loa o kona manaʻo a me ke kumu i manaʻo ʻia ai. Kākau ka haumāna me ka holo pono o kona mau manaʻo, mai kekahi manaʻo a i kekahi. Ma kēia kākau ʻana, he pololei loa ke ʻano o ke kaʻina kumuhana i pili kūpono i ka pōʻaiapili o ka paukū kākau. Ma ka wā e pono ai, e hoʻohana kūpono ʻia nā loina Hawai'i a me ʻike Hawai'i ʻiʻo kūpono e wehewehe piha ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua kū like ke ʻano o ia mahele i ke ʻano mōakāka loa no ia mau mahele a pau.
1	Ua hoʻonohonoho ʻia ke kakau a ʻaʻole nō i mōakāka loa ka manaʻo o ka haumāna. E ʻike ʻia ana ke ʻano pili ʻole o kekahi mau mahele o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻole nō i lawa nā laʻana e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili loa a maopopo loa kona manaʻo. Ma kēia kākau ʻana, ʻaʻole i pololei loa ke kaʻina kumuhana a me ka pōʻaiapili akā ua kokoke ka haʻina i ka manaʻo i pili a pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ʻaʻole mōakāka nā mahele a pau.
0	ʻAʻole i hoʻonohonoho ʻia ke kākau a ʻaʻole nō i mōakāka ka manaʻo o ka haumāna. Pili ʻole loa nō nā mahele a pau o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻohe laʻana kūpono e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili iki a maopopo iki kona manaʻo i ke kumuhana kūpono. Ma kēia kākau ʻana, ʻaʻole i pololei ke kaʻina kumuhana a me ka pōʻaiapili a ʻaʻole i kokoke iki ka haʻina i kekahi mea pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. He ʻano hopena kēia o ka hoʻāʻo ʻole e pane iki ma ke ʻano pololei a piha nō hoʻi.

Table 7.4: KĀʻEO HLA General Rubric for 1-Point Item

Helu ʻAi	Nā Ana Loiloi no nā Nīnau Mākau ʻŌlelo
1	Ua hoʻonohonoho ʻia ke kākau a ʻano mōakāka ka manaʻo o ka haumāna akā he mau ʻike iki i pono ʻole a i ʻole i komo ʻole. Hoʻolauna ʻia ka manaʻo nui o ka haumāna a hoʻohana ʻia nā laʻana e ʻano maopopo ai kona manaʻo nui. Kākau ka haumāna me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, akā ʻaʻole nō i piha loa. Ma kēia kākau ʻana, he pololei ke kaʻina kumuhana i pili kūpono. Ma ka wā e pono ai, e hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. Ma loko o nā mahele a pau o ke kākau ʻana, ua ʻano mōakāka ia mau mahele a pau.
0	ʻAʻole i hoʻonohonoho ʻia ke kākau a ʻaʻole nō i mōakāka ka manaʻo o ka haumāna. Pili ʻole loa nō nā mahele a pau o kēia paukū i ke kumuhana nui o ka haʻina. ʻAʻole i hoʻolauna pono ʻia ka manaʻo nui o ka haumāna a ʻaʻohe laʻana kūpono e maopopo ai kona manaʻo nui. ʻAʻole ka haumāna i kākau me ka holo o kona mau manaʻo, mai kekahi manaʻo a i kekahi, a no laila ʻaʻole nō i pili iki a maopopo iki kona manaʻo i ke kumuhana kūpono. Ma kēia kākau ʻana, ʻaʻole i pololei ke kaʻina kumuhana a me ka pōʻaiapili a ʻaʻole i kokoke iki ka haʻina i kekahi mea pololei. ʻAʻole nō i hoʻokomo ʻia nā loina Hawai'i a me ʻike Hawai'i e wehewehe ʻia ai ka manaʻo. He ʻano hopena kēia o ka hoʻāʻo ʻole e pane iki ma ke ʻano pololei a piha nō hoʻi.

Mathematics rubrics. Because the Kaiapuni math standards were a direct translation from the Common Core mathematics standards, scorers used the Smarter Balanced generic rubrics (Table 7.5 through Table 7.7).

Table 7.5: Smarter Balanced Math General Rubric for 3-Point Item

Score	Description
3	The student has demonstrated a **full and complete** understanding of all mathematical content and practices essential to this task. The student has addressed the task in a mathematically sound manner. The response contains evidence of the student's competence in problem solving, reasoning, and/or modeling to the full extent that these processes relate to the specified task. The response may, however, contain minor flaws that do not detract from a demonstration of full understanding.
2	The student has demonstrated a **reasonable** understanding of the mathematical content and practices essential to this task. The student has addressed most of the task in a mathematically sound manner. The response contains sufficient evidence of the student's competence in problem solving, reasoning, and/or modeling, but not enough evidence to demonstrate a full understanding of the processes he or she applies to the specified task. The response may contain errors that can be attributed to misinterpretation of the prompt; errors attributed to insufficient, non-mathematical knowledge; and errors attributed to careless execution of mathematical processes or algorithms.

Score	Description
1	The student has demonstrated a **partial** understanding of the mathematical content and practices essential to this task. The student's response contains some of the attributes of an appropriate response but lacks convincing evidence that the student fully comprehends the essential mathematical ideas addressed by this task. Such deficits include evidence of insufficient mathematical knowledge; errors in fundamental mathematical procedures; and other omissions or irregularities that bring into question the student's competence in problem solving, reasoning, and/or modeling related to the specified task.
0	The student has demonstrated **merely an acquaintance** with the topic, or provided a completely incorrect or uninterpretable response. The student's response may be associated with the task, but contains few attributes of an appropriate response. There are significant omissions or irregularities that indicate a lack of comprehension in regard to the mathematical content and practices essential to this task. No evidence is present that demonstrates the student's competence in problem solving, reasoning, and/or modeling related to the specified task.

Table 7.6: Smarter Balanced Math General Rubric for 2-Point Item

Score	Description
2	The student has demonstrated a **full and complete** understanding of all mathematical content and practices essential to this task. The student has addressed the task in a mathematically sound manner. The response contains evidence of the student's competence in problem solving, reasoning, and/or modeling to the full extent that these processes apply to the specified task. The response may, however, contain minor flaws that do not detract from a demonstration of full understanding.
1	The student has demonstrated a **partial** understanding of the mathematical content and practices essential to this task. The student's response contains some of the attributes of an appropriate response but lacks convincing evidence that the student fully comprehends the essential mathematical ideas addressed by this task. Such deficits include evidence of insufficient mathematical knowledge; errors in fundamental mathematical procedures; and other omissions or irregularities that bring into question the student's competence in problem solving, reasoning, and/or modeling related to the specified task.
0	The student has demonstrated **merely an acquaintance** with the topic, or provided a completely incorrect or uninterpretable response. The student's response may be associated with the task, but contains few attributes of an appropriate response. There are significant omissions or irregularities that indicate a lack of comprehension in regard to the mathematical content and practices essential to this task. No evidence is present that demonstrates the student's competence in problem solving, reasoning, and/or modeling related to the specified task.

Table 7.7: Smarter Balanced Math General Rubric for 1-Point Item

Score	Description
1	The student has demonstrated a **full and complete** understanding of all mathematical content and practices essential to this task. The student has addressed the task in a mathematically sound manner. The response contains evidence of the student's competence in problem solving, reasoning, and/or modeling to the full extent that these processes apply to the specified task. The response may, however, contain minor flaws that do not detract from a demonstration of full understanding.
0	The student has demonstrated **merely an acquaintance** with the topic, or provided a completely incorrect or uninterpretable response. The student's response may be associated with the task, but contains few attributes of an appropriate response. There are significant omissions or irregularities that indicate a lack of comprehension in regard to the mathematical content and practices essential to this task. No evidence is present that demonstrates the student's competence in problem solving, reasoning, and/or modeling related to the specified task.

Science Rubrics. The development of the generic science rubrics used guidance provided by the SBAC, but they were adjusted and revised to ensure their appropriateness for science (Table 7.8 through Table 7.10).

Table 7.8: KĀʻEO Science General Rubric for 3-Point Item

Helu ʻAi	Ke Ana Loiloi no nā Nīnau Akeakamai
3	He ʻike Hawai'i ko ka haumāna (ke ake akamai, ke aloha ʻāina, ka ʻike kahua) Hōʻike ʻia ke kūanaʻike kūpuna (ʻo ka noiʻi ʻoe, ʻo ka noke ʻoe, apwa) Kūpono ka ʻikepili kākoʻo, a kākoʻo ʻia nō kona manaʻo Pili nā lāliʻi kākoʻo i ke kumuhana nui Wehewehe mōakāka ʻia kona manaʻo Pololei ka ʻike ʻepekema (inā nō ʻokoʻa ia mai ka ʻike Hawai'i) Holo pono kāna hana (ka wehewehena, ka noiʻi, ka hoʻokolohua, apwa)
2	He ʻike Hawai'i mālani ko ka haumāna, akā he ʻike nō kona Hōʻike ʻia kekahi kūanaʻike, ʻaʻole naʻe ia he kūanaʻike kūpuna Hawai'i ʻAʻole paha kūpono ka ʻikepili no ke kākoʻo piha ʻana i ka manaʻo nui Pili kāpekepeke nā lāliʻi kākoʻo i ke kumuhana nui Wehewehe ʻia kona manaʻo, akā ʻaʻole paha akāka leʻa He ʻike ʻepekema kona Kūlanalana ka holo ʻana o kāna hana
1	ʻAʻole paʻa ka ʻike Hawai'i iā ia ʻAʻole akāka kona kūanaʻike ʻAʻole launa maikaʻi ka lāliʻi i ke kumuhana Pohihihi kona manaʻo ʻAʻole i paʻa kekahi ʻike ʻepekema iā ia ʻAʻole i hoʻonoho ʻia kāna hana ma kahi kaʻina holo pono
0	Ahuwale kona mākaukau ʻole ʻAʻohe noke, ʻaʻohe hoʻāʻo, auē ka minamina ē!

Table 7.9: KĀʻEO Science General Rubric for 2-Point Item

Helu ʻAi	Ke Ana Loiloi no nā Nīnau Akeakamai
2	He ʻike Hawai'i ko ka haumāna (ke ake akamai, ke aloha ʻāina, ka ʻike kahua) Hōʻike ʻia ke kūanaʻike kūpuna (ʻo ka noiʻi ʻoe, ʻo ka noke ʻoe, apwa) Kūpono ka ʻikepili kākoʻo, a kākoʻo ʻia nō kona manaʻo Pili nā lāliʻi kākoʻo i ke kumuhana nui Wehewehe mōakāk a ʻia kona manaʻo Pololei ka ʻike ʻepekema (inā nō ʻokoʻa ia mai ka ʻike Hawai'i) Holo pono kāna hana (ka wehewehena, ka noiʻi, ka hoʻokolohua, apwa)
1	ʻAʻole paʻa ka ʻike Hawai'i iā ia ʻAʻole akāka kona kūanaʻike ʻAʻole launa maikaʻi ka lāliʻi i ke kumuhana Pohihihi kona manaʻo ʻAʻole i paʻa kekahi ʻike ʻepekema iā ia ʻAʻole i hoʻonoho ʻia kāna hana ma kahi kaʻina holo pono
0	Ahuwale kona mākaukau ʻole ʻAʻohe noke, ʻaʻohe hoʻāʻo, auē ka minamina ē!

Table 7.10: KĀʻEO Science General Rubric for 1-Point Item

Helu ʻAi	Ke Ana Loiloi no nā Nīnau Akeakamai
1	He ʻike Hawai'i ko ka haumāna (ke ake akamai, ke aloha ʻāina, ka ʻike kahua) Hōʻike ʻia ke kūanaʻike kūpuna (ʻo ka noiʻi ʻoe, ʻo ka noke ʻoe, apwa) Kūpono ka ʻikepili kākoʻo, a kākoʻo ʻia nō kona manaʻo Pili nā lāliʻi kākoʻo i ke kumuhana nui Wehewehe mōakāk a ʻia kona manaʻo Pololei ka ʻike ʻepekema (inā nō ʻokoʻa ia mai ka ʻike Hawai'i) Holo pono kāna hana (ka wehewehena, ka noiʻi, ka hoʻokolohua, apwa)
0	ʻAʻole paʻa ka ʻike Hawai'i iā ia ʻAʻole akāka kona kūanaʻike ʻAʻole launa maikaʻi ka lāliʻi i ke kumuhana Pohihihi kona manaʻo ʻAʻole i paʻa kekahi ʻike ʻepekema iā ia ʻAʻole i hoʻonoho ʻia kāna hana ma kahi kaʻina holo pono

7.1.2. Item-specific Rubrics

Using the item information and the generic rubric, UH KĀʻEO assessment staff members constructed item-specific rubrics for each open-ended item. The number of score points was based on the degree to which scorers were thought to be able to accurately differentiate between responses at each score point, as defined by the generic rubric. For example, an item that only has one possible answer might be one score point. This could be compared to a written essay that is being scored on organization. In this case, a scorer might be able to accurately differentiate between several score points. The item-specific rubric contains precise information regarding which student responses could be associated with each score point.

- The item-specific rubrics were developed by UH staff prior to the scoring meeting using the following process:
- The target domain, standard, DOK, and dimension(s) were identified and a draft of the scoring rubric was written based on the question. This scoring rubric also included possible solutions or answers to the problem, while allowing for more than one possible answer if appropriate.
- A point value for the rubric (and question) was assigned based on guidance from SBAC generic rubrics, while also considering depth of knowledge and difficulty.
- The first draft of the scoring rubric was then reviewed by a Hawaiian language expert for appropriateness of vocabulary and grammatical structures.
- UH staff then randomly selected 10% of responses (which remained anonymous) per item and used these responses to verify that the rubric could be appropriately applied to score these sample responses.
- Any necessary revisions were made to the item-specific rubric based on this thorough review.

7.1.3. Extended Writing Prompt Rubrics

The writing portion of the assessment contains an extended writing prompt. The UH KĀʻEO assessment team was guided in terms of structure by the rubrics developed by the SBAC for extended response items, while also incorporating elements that were unique to HLA and the Hawaiian language. SBAC rubrics are divided into three separate categories which were also followed for the HLA rubrics: Organization/Purpose, Development/Elaboration, and Conventions. KĀʻEO rubrics followed a similar structure and content, with some adaptations. For example, one portion of the rubric specified that students must be scored on their use of appropriate, grade-level conventions, but the definition of what is appropriate in the Hawaiian language is slightly different to that in relation to English. Diacritical marks are an important aspect of spelling in the Hawaiian language, as the presence or absence of a diacritical mark can completely change the meaning of a word. Thus, this is one issue that was not accounted for in the SBAC examples but was addressed in the KĀʻEO rubrics. Another issue that complicated matters was the absence of standardized academic vocabulary or grammar in the Hawaiian immersion program, whereby the specific words used in relation to concepts varied on different islands or between different schools. Thus, the extended writing item-scoring guide provided some general guidance for scorers related to conventions, but it was critical for the scorers to be properly trained and calibrated as they worked through each question scoring responses to ensure that the same guidelines were applied across scorers. This was an issue that was discussed extensively, with common agreements reached before scoring began. Figure 7.2 shows an

example of the grade 5 writing conventions. These conventions were adapted from the Smarter Balanced guides.

Figure 7.2: Writing Conventions for Grade 5

Smarter Balanced – Conventions Chart
Updated January 2016

Grade 5

Spelling	Capitalization	Punctuation	Grammar Usage	Sentence Completion
Correctly spell words at grade level and below.	Use **capitalization** rules from the previous grades.	Use **commas** to • separate items in a series. • separate an introductory element from the rest of the sentence. • set off the words yes and no (e.g., Yes, thank you), to set off a tag question from the rest of the sentence (e.g., It's true, isn't it?), and to indicate direct address (e.g., Is that you, Steve?).	**Verbs:** • Correctly use the **perfect** tense (e.g., I had walked, I have walked; I will have walked). • Use **verb tense** to convey various times, sequences, states, and conditions. • Avoid inappropriate shifts in **verb tense**.* **Conjunctions:** • Correctly use **correlative conjunctions** (e.g., either/or, neither/nor). **Agreement:** • **Pronouns and antecedents agree** (He brought his dog to school; He and Gary brought their lunch). • **Subjects and verbs agree** (My friend and I go to recess together; Sally goes to recess with her friends). **Frequently Confused Words:** • Use **frequently confused words*** correctly.	Avoid **run-on sentences** (fused or run-together sentences, comma splices). Avoid sentence **fragments*** (e.g., Going into town). May correctly use **purposeful fragments** in dialogue (e.g., "Not us!").

*as appropriate for grade level

These conventions were written in Hawaiian, but a translated summary of how they were adapted is as follows:

- Spelling: correctly spell words that are appropriate for the grade level, using proper diacritical marks (kahakō and ʻokina).
- Capitalization: capitalize names, places, and titles of books or people.
- Punctuation: use commas appropriately to link ideas together or in dialogue. Apostrophes are not used in Hawaiian, but students should use the appropriate possessive marker (ko/ka/na/no/o/a) to show possession.
- Grammar usage: use markers correctly for singular or plural nouns (nā/ka); use markers correctly for verb tenses (Ua, E/ana, Ke/nei); use markers correctly for different kinds of verbs (static, transitive, intransitive, etc.); use correct grammatical placement of adjectives; use coordinating and subordinate conjunctions correctly, including with verbs.

7.2. Anchor Papers

After the rubrics were developed, UH KĀʻEO assessment staff scored a series of items. The number of items scored was four times the number of score points for each item (e.g., a two-point item would have eight student responses scored). From this sample of scored papers, one or two student responses were selected for each open-ended item score point. This set of papers provided examples of how student work was represented at each of the possible score points. Scorers and scoring managers used and referred to the anchor papers over the course of the scoring process for training, retraining, and to clarify any questions.

Once the anchor papers were selected by the staff, an anchor approval meeting was held. This meeting included UH KĀʻEO assessment staff and a team of educators and content experts consisting of at

least four individuals who were highly knowledgeable about the content and the students at the specific grade level. The team also included a UH facilitator who guided the team in a reflective dialogue about the item, the content it measured, the depth of knowledge, and the selected anchor papers. The team reviewed the sample papers selected and scored by UH KĀʻEO assessment staff. Each team member read through the specific open-ended item, the associated item scoring guide, and the sample student responses. The team then discussed each score point and selected at least one paper that served as the 'exemplar' student response at that score point. This paper became the anchor paper for that item and score point. Additional anchor papers were selected if the committee believed that the additional work more accurately captured the breadth and depth of the student responses. If the committee determined that none of the selected student responses provided an accurate indicator of a given score point, UH staff pulled additional papers until one was agreed on.

The UH staff made detailed notes regarding the final selection of the anchor papers. These notes included any scoring information the committee felt was helpful, including information about any subtleties in potential student responses, which was an important part of the discussions during the scoring meeting. Anchor papers were a major focus of the scoring training, which is summarized in later sections. The anchor papers were used as a jumping-off point during the anchor paper meeting, but the anchor paper team ensured that the papers that were selected for the scoring meeting were appropriate within a Hawaiian context. Each anchor paper was signed off on by a UH staff member and one of the review committee members.

The result of the anchor review meetings was a completed scoring guide for each open-ended item. This included a summary of the item that was used in discussion with scorers and a set of anchor papers for each score point.

7.3. Training

Training is critical for ensuring that items are accurately and consistently scored. It is only through this accuracy and consistency that we can begin to support score reliability. Furthermore, stakeholders cannot hope to make appropriate decisions or interpretations based on scores that are unreliable. This speaks directly to the issue of validity. Thus, thoughtful, and thorough training is critical in relation to the technical merits of the assessment.

Scorers were thoroughly trained to score each item in each assessment. Each scorer was instructed to read the scoring guide for the item they were scoring, the anchor papers, and the annotations for each anchor paper. The annotations that were generated during anchor paper selection were particularly important, as they provided the scorer with guidance on why the specific student response was an exemplar for that score point. The scorer was asked to reflect on the meaning of each score point. Scorers were encouraged to ask questions, and the trainer provided time for questions and answers. A more detailed description of this process is presented below.

Scorers then read through a series of training papers. There was a minimum of five papers at each grade and content level that had previously been scored by at least two UH staff members. Scorers practiced scoring these papers. Once the scorers completed their scoring, the scoring manager polled them about the scores they had assigned. Scorers were allowed to ask questions and discuss their scores.

An additional aspect of training for the scoring of the test administration was related to item and test security because the meeting was held virtually. These additional security steps were outlined in a previous section, but included training in the use of Digify, additional training related to the security of the scorer's work environment, and additional confidentiality training.

7.4. Certification

Before a scorer began scoring actual test items, they were certified to score papers in the relevant content area (McClellan, 2010). To make scorers comfortable with the process, the UH team used a collaborative process to ensure that the entire group of scorers was in agreement. This entailed looking at anchor papers that represented the range of possible score points for each item as a group. The group would then have an in-depth discussion about the score that each paper should be assigned and why. If there was disagreement on a paper, the group would continue to discuss the response, refer to the rubric, and talk through the disagreement until consensus was reached. This discussion occurred prior to the scoring of each item, and was used as a way to calibrate the group so that they would score each item in a consistent manner.

The UH team pulled a set of student responses that represented a range of scores in each content area (12 papers in total). Two team members scored each student paper and reached consensus on their scoring. These were the papers that each scorer needed to score correctly to become certified on that item. The papers were then divided into three sets: one for initial certification and two for recertification. The UH team included papers that might be difficult to score (e.g., the specific score point might not be clearly delineated).

Scorers were required to achieve a high level of agreement (80%) on all 12 papers relative to the scores generated by UH staff. If a scorer did not pass the first round, they were retrained and required to repeat the certification process. If they did not pass the second round, they were thanked for their time and excused from scoring. All scoring managers had passed two rounds.

7.5. Scoring

UH KĀʻEO assessment staff assigned an adequate number of scorers to each grade and content area. Because scorers needed to be proficient in the Hawaiian language, there was a limited pool of scorers. The size of the pool was considered when planning the timeline, and the time spent scoring items was carefully documented and monitored. Once a scorer was trained as described above, they were considered certified, and were assigned papers to score.

After training, scorers used a secure computer terminal where a student response was viewed on the screen. This was done anonymously so that the scorer could not identify the student or their school. The items were scored using the rubric and item-specific training materials. These materials were accessible on the computer screen and included the question, the standard and all metadata associated with the question, the scoring rubric, and the anchor papers. Scores were entered into the scoring database.

At this point, the sample anchor papers were thoroughly discussed and used to provide more in-depth training for the scorers. This was done for two reasons. First, as mentioned previously, academic vocabulary is not necessarily standardized across all schools on the different islands, although all islands were represented at the scoring meeting. This made it an opportune time to calibrate the

group, not only in relation to the specific scoring rubrics, but also in relation to the language that would be appropriate to see at this grade level in response to these specific questions. Achieving consensus on the score that would be assigned to an anchor paper and the discussion that took place to reach that consensus was an important part of ensuring that papers were scored consistently. Second, having these conversations in real time, rather than presenting the scorers with a summary of a conversation conducted in a previous meeting, provided the trainers with an opportunity to hear a range of thoughts, as well as the consensus that was reached, immediately prior to the scoring of an item. Once the scoring of an item began, however, conversation between scorers was stopped so that all student responses were scored independently and objectively.

All responses were then scored by another trained scorer, who was unaware of the score allocated by the first scorer. This helped to establish scoring reliability. The computer software that was used was created specifically for the KĀʻEO assessment program and was the same software that was used to administer the assessment. Thus, all student responses and scores were part of a fully integrated system, mitigating the possibility of human error. If the computer program recognized that scores from the double-scoring process were not in agreement, the relevant paper/item was sent to a scoring manager to be read and scored. The scoring manager was unaware of the first two scores. After the scoring manager had scored the paper/item, if the score allocated by the scoring manager was in agreement with one of the first two scores, the computer program recorded that as the final score and marked the response as complete. If no agreement was reached, another scoring manager was alerted and he/she scored the paper/item. This process was thoroughly documented, including the number of items the scoring manager rescored, the reasons for the discrepancy, and the final score. This process was fully automated and enabled UH staff to monitor the progress of scoring in real time, ensure that responses were scored properly, and respond to issues immediately. It also streamlined the scoring process, facilitated the efficient inputting of scores, and mitigated the possibility of human error.

If the scorer read anything in a response that was disturbing or inappropriate, he/she was instructed to immediately bring it to the attention of the scoring manager. Examples might include a student writing about self-harming, harming others, or being in a dangerous situation. If this occurred, the HIDOE Assessment Section Office was notified, a Test Incident form was completed detailing the response, and the Assessment Section followed up as necessary, notifying the KĀʻEO assessment staff if any further follow-up was needed. Once all the scoring for a question was complete, the group moved on to the next question.

7.6. Documentation

The scoring manager thoroughly documented the training and scoring processes. All scorers signed a confidentiality and non-disclosure agreement stating that they were thoroughly trained and would maintain the security of the items and the student responses. The training documentation included the name of each scorer's trainer and the date on which certification occurred. The scoring manager also documented which scorers were assigned to each content area and grade level. Finally, they documented any questions that arose, as well as any issues that occurred during scoring. All records are maintained by the project team.

7.7. Analysis

Reliability and precision of assessment scores is a critical consideration of any testing program. The Standards for Educational and Psychological Testing defined this as the degree to which students' scores would be the same across multiple administrations of the same assessment (AERA/APA/NCME, 2014). Part of building reliability evidence is examining the scoring processes to ensure consistency and accuracy of the methods.

The testing program analyzed scoring data for accuracy and reliability per AERA/APA/NCME (2014):

> **Standard 2.7** When subjective judgment enters into test scoring, evidence should be provided on both interrater consistency in scoring and within-examinee consistency over repeated measurements. A clear distinction should be made among reliability data based on (a) independent panel of raters scoring the same performances or products, (b) a single panel scoring successive performances or new products, and (c) independent panels scoring successive performances or products.

In each of the fourteen assessments, there were numerous open-ended items. As described above, these items were hand-scored by trained scorers. The scorers used rubrics to establish the value of each student's response to an item and to achieve consistency. All open-ended items were **double scored** and any discrepancies noted. Any response that did not receive an identical score from the two scorers was scored by the scoring manager. The project team psychometricians reviewed and analyzed all items to document the reliability. The goal of these analyses was to provide a thorough quality check and to assess the final reliability of the scores.

First, the psychometric team evaluated the scoring information to understand patterns in scoring. The first step was to analyze each item and calculate the percent agreement between scores on each item. Agreement was calculated as *exact* (the same score from each scorer) or *adjacent* (scores between the scorers differed by 1) between the first two scorers, Table 7.11 shows the consistency of the scorers and any variation in scoring. When combining exact and adjacent agreement categories, agreement ranged from 82% to 100%.

Table 7.11: Assessments: Items by Percent of Scorer Agreement*

Grade	Subject	Item	Maximum Points	n	Kappa	Percent Exact	Percent Adjacent	Percent Exact and Adjacent
3	HL	1284	2	308	0.549	74.7	23.4	98.1
3	HL	145	1	308	0.722	86.4	13.6	100.0
3	HL	138	2	308	0.439	74.0	24.7	98.7
3	HL	127	1	308	**0.316**	92.9	7.1	100.0
3	HL	379	2	308	**0.330**	73.5	24.9	98.4
3	HL	1020	2	309	0.607	82.5	15.2	97.7
3	HL	1024	3	309	0.428	66.7	29.4	96.1
3	HL	92	1	310	0.542	78.1	21.9	100.0
3	HL	99	1	311	0.648	82.6	17.4	100.0
3	HL	394a	2	314	0.511	69.7	28.7	98.4
3	HL	394b	2	314	**0.397**	60.8	35.4	96.2
3	HL	394c	1	314	**0.320**	68.8	31.2	100.0
4	HL	1705	3	282	0.602	72.7	25.9	98.6
4	HL	1013	3	282	0.554	72.0	22.7	94.7

Grade	Subject	Item	Maximum Points	n	Kappa	Percent Exact	Percent Adjacent	Percent Exact and Adjacent
4	HL	42	3	282	0.461	68.1	28.4	96.5
4	HL	35	2	282	0.448	84.1	13.8	97.9
4	HL	17	1	283	0.872	93.6	6.4	100.0
4	HL	11	1	283	0.907	97.2	2.8	100.0
4	HL	395a	2	282	0.477	68.4	29.8	98.2
4	HL	395b	2	282	0.489	69.9	28.4	98.3
4	HL	395c	1	282	**0.255**	71.6	28.4	100.0
5	HL	1646	3	247	0.457	61.1	32.0	93.1
5	HL	706	2	246	**0.392**	87.8	11.8	99.6
5	HL	712	4	246	0.432	64.6	22.4	87.0
5	HL	722	3	247	**0.377**	57.9	34.0	91.9
5	HL	690	1	247	0.753	87.9	12.1	100.0
5	HL	1030a	2	245	0.496	69.0	29.8	98.8
5	HL	1030b	3	245	**0.259**	44.9	40.4	85.3
5	HL	1030c	1	245	**0.294**	69.8	30.2	100.0
6	HL	1661	3	252	0.423	57.7	36.5	94.2
6	HL	694	2	252	0.435	75.6	22.0	97.6
6	HL	666	4	250	0.456	64.0	24.4	88.4
6	HL	680	4	250	0.520	62.9	25.9	88.8
6	HL	1173	3	251	0.400	59.8	31.1	90.9
6	HL	664	3	251	0.575	72.9	22.3	95.2
6	HL	643	3	252	0.533	65.5	31.7	97.2
6	HL	1031a	2	253	0.537	73.5	25.3	98.8
6	HL	1031b	3	253	0.412	57.7	36.4	94.1
6	HL	1031c	1	253	0.515	76.7	23.3	100.0
7	HL	1501	3	147	0.614	76.9	21.1	98.0
7	HL	770	2	147	0.446	70.1	24.5	94.6
7	HL	889	3	147	0.445	71.4	22.4	93.8
7	HL	872	4	147	0.426	76.2	14.3	90.5
7	HL	1096	3	147	0.599	72.1	21.1	93.2
7	HL	808	4	147	0.630	73.5	21.1	94.6
7	HL	878	3	149	**0.328**	64.4	28.2	92.6
7	HL	1097	3	149	0.585	69.8	26.8	96.6
7	HL	762	1	149	0.848	92.6	7.4	100.0
7	HL	1032a	2	147	**0.230**	56.5	39.5	96.0
7	HL	1032b	3	147	**0.294**	48.3	40.8	89.1
7	HL	1032c	1	147	0.442	72.1	27.9	100.0
8	HL	1676	3	168	0.517	66.1	31.5	97.6
8	HL	1214	4	167	0.415	59.9	30.5	90.4
8	HL	780	4	167	0.524	65.9	24.6	90.5
8	HL	820	4	167	0.463	65.9	26.3	92.2
8	HL	761	1	167	0.532	80.2	19.8	100.0
8	HL	911	3	167	0.488	67.1	26.3	93.4
8	HL	767	2	167	0.510	69.5	25.1	94.6
8	HL	1034a	2	168	0.425	64.9	31.0	95.9
8	HL	1034b	3	168	**0.297**	48.2	33.9	82.1
8	HL	1034c	1	168	**0.116**	70.2	29.8	100.0
3	MA	1516	3	309	0.609	86.7	11.7	98.4
3	MA	233	2	309	0.747	99.4	0.6	100.0

Grade	Subject	Item	Maximum Points	n	Kappa	Percent Exact	Percent Adjacent	Percent Exact and Adjacent
3	MA	235	2	309	0.538	88.3	11.0	99.3
3	MA	234	2	309	**0.377**	86.1	13.9	100.0
4	MA	1451	1	282	0.606	94.3	5.7	100.0
4	MA	375	2	281	0.693	82.9	16.7	99.6
4	MA	1010	2	281	0.661	98.6	1.1	99.7
4	MA	262	2	282	0.762	84.8	13.8	98.6
5	MA	1452	2	246	0.859	97.6	2.4	100.0
5	MA	464	2	245	0.863	94.3	5.7	100.0
5	MA	435	3	246	0.778	88.6	8.9	97.5
5	MA	1093	2	246	**0.362**	89.8	9.3	99.1
5	MA	414	3	246	0.661	86.6	5.3	91.9
5	MA	463	2	246	0.606	85.8	11.4	97.2
6	MA	1062	3	247	0.749	92.7	6.9	99.6
6	MA	1131	4	248	0.679	84.7	12.5	97.2
6	MA	502	2	248	0.728	88.3	10.1	98.4
6	MA	469	4	250	0.632	75.2	20.8	96.0
6	MA	491	3	241	0.423	66.7	29.5	96.2
7	MA	1560	1	148	0.724	93.9	6.1	100.0
7	MA	547	3	146	0.566	81.5	15.8	97.3
7	MA	555	1	147	0.664	99.3	0.7	100.0
7	MA	481	2	147	0.824	91.2	8.2	99.4
7	MA	467	3	150	0.787	94.7	5.3	100.0
7	MA	562	2	150	0.697	82.0	15.3	97.3
8	MA	1556	3	169	**0.395**	98.2	1.2	99.4
8	MA	613	3	168	0.636	86.9	12.5	99.4
8	MA	582	1	168	0.510	89.3	10.7	100.0
8	MA	1138	2	169	0.488	97.0	2.4	99.4
8	MA	618	1	169	0.938	97.0	3.0	100.0
8	MA	1135	2	169	0.724	97.6	2.4	100.0
8	MA	583	2	169	0.823	91.1	8.9	100.0
8	MA	1140	1	166	0.661	98.8	1.2	100.0
5	SC	1534	2	246	0.444	73.6	24.0	97.6
5	SC	1979	4	246	0.495	63.0	30.9	93.9
5	SC	1980	4	246	0.468	69.5	21.5	91.0
5	SC	1536	2	246	0.545	80.1	17.5	97.6
5	SC	1533	2	246	0.502	70.7	26.4	97.1
5	SC	1315	4	246	0.518	73.2	23.6	96.8
5	SC	1356	2	246	0.684	79.3	20.7	100.0
5	SC	1331	3	246	0.437	62.6	32.1	94.7
5	SC	1372	4	246	0.404	69.1	23.2	92.3
8	SC	945	4	165	0.571	79.4	18.2	97.6
8	SC	1114	3	167	0.433	65.9	29.9	95.8
8	SC	937	4	168	0.564	69.6	22.6	92.2

*Items with Kappa values less than .40, or less than 70% exact agreement are highlighted in bold in the table.

Next, standardized reliability coefficients (i.e., Cohen's Kappa) were generated to assess the overall reliability of the scorers (Haertel, 2006). The Kappa statistics provide information on the degree to which scorers rate students' responses consistently. Calculation of Cohen's Kappa is performed according to the following formula:

$$\kappa = \frac{Pr(a) - Pr(e)}{1 - Pr(e)}$$

**Where Pr(a) represents the observed agreement, and Pr(e) represents agreement that would occur by chance (McHugh 2012).*

Kappa values in Table 7.11 indicate that there was general agreement between the scorers for most items. Kappa values ranged between 0.116 and 0.938. Values of 0.21 to 0.40 are considered fair, 0.41 to 0.60 is generally seen as moderate agreement, and 0.61 to 0.80 as substantial (Cohen, 1960).

The results showed that all items were within established criteria for percent agreement and Kappa. However, there were some items with results that were low. Items with Kappa values less than .40 or exact agreement percentages less than .70 are highlighted in bold.

Of the 17 items that were highlighted, 1 item was removed from the operational assessment in 2023 and was blacklisted because it was historically a difficult item. The remaining 16 items were examined by the UH staff to discern if there might be patterns or reasons for the inconsistencies between the scorers (e.g., ambiguity in the rubric). If specific reasons were found for low consistency, training for next year will be modified to ensure consistent scoring. In addition, UH staff have been purposeful about participants in these meetings, ensuring there is representation from a variety of schools and different islands to properly represent the variety of language that is present across schools. Double-blind scoring as well as the use of scoring managers and scoring administrators ensures that there is a general consensus between as many as four scorers, despite some inconsistencies between two different scorers. The low reliability of these few items should not impact the overall student scores because all items where the two scorers disagree are scored by the scoring manager. In the event that the three scorers cannot agree (i.e., when the two scorers and the scoring manager cannot achieve agreement for a minimum of two scorers) the UH staff resolves differences by using an additional scoring manager to achieve score consensus.

In addition to monitoring the scoring of the handscored items, UH KĀʻEO assessment staff monitor the scoring of computer scored items. For each item, 10 percent of the total number of student responses are selected at random and manually checked against the answer keys. If any discrepancy exists, a thorough investigation is conducted until the underlying cause of the discrepancy is identified and all items are rescored.

Chapter 8: Validity

The 2022 validity analyses focused on generating statistics in support of content and internal validity.

To achieve these goals and provide the greatest amount of information on the KĀ'EO, researchers generated multiple statistics on both items and the overall assessment. Researchers started out by employing Classical Test Theory (CTT) methods such as point biserial correlations, and p-value statistics. These statistics provide information about the items and assessment in an easy-to-understand metric. The analysis plan also mapped each analytic method to the US DOE peer review requirements.

8.1. Participation

Currently, there are 28 Hawaiian language immersion schools. Twenty-one of these schools enroll students in grades 3-8 and are required to administer KĀ'EO. A breakdown of students and participation by grade and subject presented in Table 8.1.

Table 8.1: Participation by Subject and Grade

	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		All Grades	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
HLA	311	83.6%	282	84.2%	244	80.5%	250	82.8%	147	82.1%	166	80.2%	1400	82.4%
MA	309	83.1%	281	83.9%	245	80.9%	250	82.8%	149	83.2%	169	81.6%	1403	82.6%
SC	--	--	--	--	245	80.9%	--	--	--	--	168	81.2%	413	81.0%
Roster Count	372		335		303		302		179		207		1696	

The demographic characteristics of the assessment test takers is shown in Table 8.2.

Table 8.2: Demographics Frequency Table

	Grade											
	Third		Fourth		Fifth		Sixth		Seventh		Eighth	
Groups	n	%	n	%	n	%	n	%	n	%	n	%
Language Background												
English	279	90.3%	260	92.5%	232	94.7%	230	92.0%	131	87.9%	160	94.7%
French												
Hawaiian	26	8.4%	19	6.8%	12	4.9%	15	6.0%	18	12.1%		
Japanese												
Portuguese												
Samoan												
Spanish												
Tagalog												
IEP												
N	299	96.8%	268	95.4%	229	93.5%	237	94.8%	131	87.9%	157	92.9%
Y	10	3.2%	13	4.6%	16	6.5%	13	5.2%	18	12.1%	12	7.1%
504 Plan												
N												
Y												
Migrant												
N												
Y												
Gender												
F	161	52.1%	165	58.7%	126	51.4%	146	58.4%	77	51.7%	85	50.3%
M	148	47.9%	116	41.3%	119	48.6%	104	41.6%	72	48.3%	84	49.7%

	Grade											
	Third		Fourth		Fifth		Sixth		Seventh		Eighth	
Groups	n	%	n	%	n	%	n	%	n	%	n	%
Federal Ethnicity												
American Indian or Alaska Native												
Asian												
Hispanic	67	21.7%	59	21.0%	47	19.2%	53	21.2%	28	18.8%	35	20.7%
Multiple	42	13.6%	34	12.1%	25	10.2%	33	13.2%	13	8.7%		
Pacific Islander	192	62.1%	182	64.8%	164	66.9%	152	60.8%	105	70.5%	121	71.6%
White												
Free/Reduced Lunch												
N	162	52.4%	137	48.8%	119	48.6%	128	51.2%	61	40.9%	72	42.6%
Y	147	47.6%	144	51.2%	126	51.4%	122	48.8%	88	59.1%	97	57.4%
State Ethnicity												
American Indian or Alaska Native												
Black												
Hispanic												
Japanese	10	3.2%										
Multiple												
Portuguese												
Samoan												
White							14	5.6%				
Chinese												
Filipino	14	4.5%	10	3.6%			11	4.4%				
Native Hawaiian	244	79.0%	229	81.5%	196	80.0%	189	75.6%	129	86.6%	148	87.6%
Part-Hawaiian												
Korean												
Micronesian												
Tongan												
Guamanian/Chamorro												
Other Asian												
Other Pacific Islander												
ALL												
ALL	309		281		245		250		149		169	

8.2. Classical Test Theory (CTT) Analysis

Researchers examined the assessments and items using Classical Test Theory (CTT). Descriptive statistics were calculated for the total score on each assessment including case counts, mean, standard deviation, mean p-value, and alpha coefficient. Throughout these analyses, researchers conducted quality assurance checks to verify accuracy in coding data and examine any anomalies in the results. Students who omitted an individual item were treated as 'missing' the item response. Item statistics included point biserial correlations, proportion of students who answered the item correctly (p-value), and proportion of students in each of the response categories. All CTT analysis results presented here are for the final operational test forms. These analyses provided information about the difficulty of each item, the range of difficulty across the items, and the items' ability to discriminate between high and low performing students.

Analysts worked in teams of two to independently conduct the analyses which allowed for a comprehensive quality assurance check of the information. In general, the results indicated that the

items were functioning well, and there was a range of item difficulty within each test form. Point biserial and item test correlations (studied item excluded) also indicated that most items were discriminating between high and low performing students. The individual items that did not show strong point biserials were thoroughly reviewed by UH staff and identified for revision or deletion from the item bank.

8.2.1. CTT Test Statistics

Researchers examined the overall test statistics for the assessments (Table 8.3). The raw scores had a normal distribution with no evidence of floor or ceiling effects[2]. All assessments were difficult as evidenced by the test means, which ranged between 13 and 27 points. This difficulty was also reflected in the mean p-values .24 and .49. The alpha coefficients ranged from .73 to .91 which indicates the tests have good internal reliability. Comparing the means from this year to last year, the means were found to be fairly consistent (within 4 raw score points), with the exception of grade 8 Hawaiian Language Arts which had a mean score of 37 in 2021 and 26 in 2022.

Table 8.3: Summary Raw Scores Test Statistics for Operational Test

Subject	Grade	N Valid	N of items	Number of Points Possible	Mean	Std Deviation	Mean p-values	Cronbach's Alpha
HL	3	308	56	68	25.25	11.67	0.45	0.91
HL	4	281	57	66	27.47	11.01	0.48	0.89
HL	5	244	57	68	26.81	12.53	0.47	0.90
HL	6	249	53	72	26.98	12.24	0.49	0.89
HL	7	146	57	77	25.60	12.32	0.45	0.90
HL	8	166	56	73	26.44	12.15	0.47	0.90
MA	3	309	55	58	22.35	8.02	0.41	0.86
MA	4	279	56	60	21.15	8.07	0.38	0.83
MA	5	245	58	66	20.95	8.92	0.36	0.84
MA	6	236	57	71	17.58	9.28	0.31	0.86
MA	7	144	56	63	13.88	6.75	0.25	0.78
MA	8	166	56	63	13.68	5.84	0.24	0.73
SC	5	246	51	64	22.70	9.60	0.45	0.85
SC	8	165	58	66	14.93	7.63	0.26	0.81

8.2.2. CTT Item Analyses

Item analysis results are discussed below for each grade and test form (see Appendix C for CTT statistics on all items). In general, an item is a candidate for review if its:

- Point biserial < .15
  - A point biserial correlation of <.05 is considered very poor
  - A point biserial correlation between .05 and .1 is considered poor
  - A point biserial correlation between .1 and .15 is considered marginal
- Difficulty p-value <.20 (very difficult) or >.95 (very easy)

[2] *Floor and ceiling effects occur when many students score either at the lowest or highest scores, respectively of the assessment. This can compromise the accuracy of the assessment if students have a lower or higher achievement level than the test can actually measure.*

- Omit rate is higher than 10%. Omit rates exceeding 10% and increasing toward the end of the test might indicate *speededness* (i.e., students did not have enough time to respond to all items).

These items were specifically reviewed by the UH staff to disposition the items (e.g., remove from the item pool). For example, items might be reviewed to determine if the item was unclear and whether the item could be revised. Items were reviewed with these considerations:

- Is the answer key correct (did we select the correct answer and is there only one correct answer – if there are two answers, we can recode the file so that students who picked either can receive the point) and was it coded correctly in scoring system?
- Is the item clearly worded?
- Does the item contain unnecessary or burdensome language/text?
- Does the item contain academic vocabulary that not all students might not have access to?
- Is there any reason that the item might be biased against certain groups (e.g., gender)?

The classical test theory information is described below and subsequent Rasch item statistics were reviewed for these items.

8.2.2.1 Hawaiian Language Arts

Grade 3

For grade 3 HLA, thirteen items were flagged for CTT item review.

- One item was flagged for point biserial correlation of <.05 (very poor)
- One item was flagged for point biserial correlation between .05 and .1 (poor)
- Two items were flagged for point biserial correlation between .1 and .15 (marginal)
- Nine items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Twelve of the items were retained and one item was identified for revision and re-field testing.

Grade 4

For grade 4 HLA, twelve items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .1 and .15 (marginal)
- Three items were flagged for point biserial correlation of <.05 (very poor)
- Three items were flagged for p-values <.2 (very difficult)
- Five items were flagged for point biserial correlation between .05 and .1 (poor)

These items were reviewed to ensure they measured the construct and the response key was correct. All of the items were retained.

Grade 5

For grade 5 HLA, eleven items were flagged for CTT item review.

- One item was flagged for p-value <.2 (very difficult) and point biserial correlation of <.05 (very poor)
- One item was flagged for point biserial correlation of <.05 (very poor)

- Three items were flagged for point biserial correlation between .1 and .15 (marginal)
- Six items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Eight of these items were retained, one was identified for minor revisions, one for revisions and re-field testing and one for spiraling out of the item pool.

Grade 6

For grade 6 HLA, seventeen items were flagged for CTT item review).

- Two items were flagged for point biserial correlation between .05 and .1 (poor)
- Three items were flagged for point biserial correlation between .1 and .15 (marginal)
- Three items were flagged for p-values <.2 (very difficult), and point biserial correlation between .1 and .15 (marginal).
- Nine items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Fifteen of these items were retained and two items were identified for minor revisions.

Grade 7

For grade 7 HLA, twenty-one items were flagged for CTT item review

- One item was flagged for point biserial correlation of <.05 (very poor)
- One item was flagged for point biserial correlation between .05 and .1 (poor)
- One item was flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- One item was flagged for point biserial correlation between .1 and .15 (marginal)
- Two items were flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)
- Two items were flagged for p-values <.2 (very difficult), and point biserial correlation between .1 and .15 (marginal).
- Thirteen items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Sixteen of these items were retained, one item was identified for minor revisions, three items for revise and re-field tests, and two items to spiral out of the item pool.

Grade 8

For grade 8 HLA, thirteen items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .05 and .1 (poor)
- One item was flagged for p-values <.2 (very difficult), and point biserial correlation between .1 and .15 (marginal).
- One item was flagged for point biserial correlation between .1 and .15 (marginal)
- Two items were flagged for point biserial correlation of <.05 (very poor)

- Eight items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Eleven of these items were retained, one item was identified for minor revisions, and one item to revise and re-field test.

8.2.2.2 Mathematics

Grade 3

For grade 3 mathematics, sixteen items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .05 and .1 (poor)
- One item was flagged for point biserial correlation between .1 and .15 (marginal)
- One item was flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Two items were flagged for point biserial correlation of <.05 (very poor)
- Eleven items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Thirteen of these items were retained, one was identified for minor revisions, and two revise and re-field test.

Grade 4

For grade 4 mathematics, sixteen items were flagged for CTT item review

- One item was flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Two items were flagged for point biserial correlation of <.05 (very poor)
- Two items were flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Three items were flagged for point biserial correlation between .05 and .1 (poor)
- Four items were flagged for point biserial correlation between .1 and .15 (marginal)
- Four items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Fourteen of these items were retained, and two items were identified to spiral out of the item pool.

Grade 5

For grade 5 mathematics, eighteen items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .1 and .15 (marginal)
- One item was flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Two items were flagged for point biserial correlation of <.05 (very poor)
- Two items were flagged for point biserial correlation between .05 and .1 (poor)

- Two items were flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Ten items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Thirteen of these items were retained, two were identified for minor revisions, two for revisions and re-field testing, and one for spiraling out of the item pool.

Grade 6

For grade 6 mathematics, twenty-six items were flagged for CTT item review.

- One item was flagged for point biserial correlation of <.05 (very poor)
- One item was flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Two items were flagged for point biserial correlation between .05 and .1 (poor)
- Three items were flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)
- Three items were flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Three items were flagged for point biserial correlation between .1 and .15 (marginal)
- Eleven items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Twenty-two of the items were retained, two items were identified for minor revisions and one item was to revise and re-field test.

Grade 7

For grade 7 mathematics, thirty-four items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .05 and .1 (poor)
- Two items were flagged for point biserial correlation between .1 and .15 (marginal)
- Two items were flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Two items were flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Five items were flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)
- Nine items were flagged for point biserial correlation of <.05 (very poor)
- Thirteen items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Thirty-one of the items were retained, one item identified to spiral out of the item pool, and two items were marked to revise and re-field test.

Grade 8

For grade 8 mathematics, thirty-seven items were flagged for CTT item.

- One item was flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Two items were flagged for point biserial correlation between .05 and .1 (poor)
- Two items were flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Six items were flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)
- Seven items were flagged for point biserial correlation of <.05 (very poor)
- Seven items were flagged for point biserial correlation between .1 and .15 (marginal)
- Twelve items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Thirty of the items were retained, four items were marked for minor revisions, two items were identified to spiral out of the item pool, and one item was marked to revise and re-field test.

8.2.2.3 Science

Grade 5

For grade 5 science, eighteen items were flagged for CTT item review.

- One item was flagged for point biserial correlation between .05 and .1 (poor)
- One item was flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)
- One item was flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Two items were flagged for point biserial correlation of <.05 (very poor)
- Five items were flagged for p-values <.2 (very difficult)
- Eight items were flagged for point biserial correlation between .1 and .15 (marginal)

These items were reviewed to ensure they measured the construct and the response key was correct. Seventeen of the items were retained, and one items was identified to spiral out of the item pool.

Grade 8

For grade 8 science, thirty-three items were flagged for CTT item review.

- Two items were flagged for p-values <.2 (very difficult), and point biserial between .05 and .1 (poor)
- Three items were flagged for p-values <.2 (very difficult), and point biserial between .1 and .15 (marginal)
- Three items were flagged for point biserial correlation between .1 and .15 (marginal)
- Four items were flagged for point biserial correlation of <.05 (very poor)
- Four items were flagged for p-values <.2 (very difficult), and point biserial correlation of <.05 (very poor)

- Seventeen items were flagged for p-values <.2 (very difficult)

These items were reviewed to ensure they measured the construct and the response key was correct. Twenty-four of the items were retained, two items were identified for minor revisions, one item to revise and re-field test and six items were identified to spiral out of the item pool.

8.3. Item Response Theory Analyses

The CTT item and test statistics calculated above provide crucial information about the technical quality of the assessments and their items. To generate a more complete picture of the items and test forms, researchers conducted Rasch analyses. These analyses provide additional information about the item characteristics and test forms about the technical quality of the items. Rasch methods generate information about the reliability of the assessment as well as the functionality of the items. This information includes statistics about the difficulty of an item, the degree to which an item fits the Rasch model, and reliability coefficients. While researchers focused primarily on the item characteristics, consideration was also given to the overall assessment to build an understanding of any issues or concerns that might need to be addressed before the operational assessment.

The Rasch analyses were conducted using Winsteps 5.2.3.0 Winsteps software was chosen because it has been used and refined for over thirty years and is well established in the education research and assessment community. Analyses were conducted based on the Rasch model which accounts for a single difficulty parameter. Other IRT models accommodate additional parameters (e.g., guessing); however, the sample size of the current assessment did not allow for these models to be implemented. Rasch modeling is a method that allows for a measurement model to be developed while accommodating the small sample sizes from the assessment.

Rasch models are logit linear models and are expressed in Winsteps as follows:

"The dichotomous model:

> $\log_e(P_{ni1} / P_{nio}) = B_n - D_i$
> The polytomous 'Partial Credit' model:
> $\log(P_{nij} / P_{ni(j-1)}) = B_n - D_i - F_{ij} = B_n - D_{ij}$
> where
> P_{nij} is the probability that person n encountering item i is observed in category j,
> B_n is the 'ability' measure of person n,
> D_i is the 'difficulty' measure of item i, the point where the highest and lowest categories of the item are equally probable,
> F_j is the 'calibration' measure of category j relative to category j-1, the point where categories j-1 and j are equally probable" (p. 31, Linacre, 2012).

First, data files for the Rasch analysis were created in Stata (version 12) by one researcher and SPSS (version 24) by another researcher. By creating data files and conducting analyses independently, researchers were able to conduct quality checks of the analyses to ensure there were no coding errors, data cleaning concerns, or software issues. Second, Winsteps analyses were conducted independently by both researchers and results were matched to help ensure accuracy and technical quality. This thorough checking of the results ensured the veracity of the Rasch findings, which is critical for a high stakes assessment.

Researchers then analyzed each assessment by fitting the Rasch model to the examinee data. Using the joint maximum likelihood estimation process implemented by Winsteps, this analysis iteratively estimated item characteristics—difficulty parameters, standard errors, discrimination, and fit statistics—while also estimating student test scores. Rasch scores are often referred to as scaled scores. Through a process known as *calibration,* items (based on difficulty) and the students (based on performance) are placed on a scale where the increments of measurement are equal all along the scale.

8.3.1. Test and Item Fit Statistics

It was important to document how each assessment performed overall. These values can help inform whether any adjustments need to be made for the next year's assessment in areas such as item difficulty, number of items, and overall model fit. Researchers first examined the summary statistics generated by Winsteps for each assessment. These statistics include overall test and summary item fit statistics, person and test histograms, separation and reliability statistics, and the measure versus person statistics.

First, the results of the calibrations were checked. For each grade level, the calibration converged in a small number of iterations, suggesting good model fit. As a further quality control check, the item difficulties generated by Winsteps were cross-checked against the item difficulties generated by the CTT analyses, and these p-values agreed with each other. This is a further indication that the data are performing as expected.

Second, researchers generated descriptive statistics for each grade level and content area (Table 8.4). These descriptive statistics build information for the assessment team to understand the distribution of scores. In general, the descriptive statistics showed that the overall mean for each assessment is slightly negative indicating that the assessments were slightly difficult for the students. Logit means ranged from -1.65 to -0.33. If the assessment was perfectly matched to the students' ability, the overall mean would equal 0. If the person mean was greater than 2 or less than -2 we might consider the assessment too easy or difficult respectively (Green & Franton, 2002). Because these criteria were not exceeded, the psychometric team will continue to monitor these values and work with the UH staff to ensure the assessments do not fall outside these ranges.

Table 8.4: Logit Score Summary Statistics

Subject	Grade	N	Minimum	Maximum	Mean	Std. Deviation	SEM
HL	3	311	-2.77	2.03	-0.79	0.99	0.06
HL	4	282	-2.82	2.32	-0.33	0.91	0.05
HL	5	245	-2.75	1.79	-0.66	0.98	0.06
HL	6	251	-3.47	1.36	-0.81	0.88	0.06
HL	7	147	-3.34	1.38	-0.95	0.93	0.08
HL	8	166	-3.43	1.52	-0.71	0.94	0.07
MA	3	309	-2.58	2.09	-0.59	0.87	0.05
MA	4	309	-2.46	2.83	-0.37	0.89	0.05
MA	5	246	-2.07	1.30	-0.80	0.69	0.04
MA	6	251	-2.94	1.40	-1.24	0.72	0.05
MA	7	149	-3.41	0.59	-1.65	0.67	0.05
MA	8	169	-2.96	1.31	-1.48	0.58	0.04
SC	5	246	-2.91	0.80	-0.91	0.77	0.05
SC	8	168	-3.87	0.34	-1.63	0.74	0.06

Third, summary item fit statistics were reviewed which describe the degree to which items fit the Rasch model and are functioning in a logical and predictable manner. For example, a test that is *not* functioning correctly might be evidenced by high achievement students scoring easy items incorrectly. Misfit items may result from confusing wording, unnecessary item complexity, or mismatch of the construct. Person fit similarly reflects the degree to which a respondent's choices are logical and consistent across items (Green & Franton, 2002). For the assessment, fit was examined by looking at summary infit and outfit values (Table 8.5). Mean square infit and outfit values should have means of approximately 1 (values substantially higher indicate outliers in the data and values substantially lower indicate dependency (Linacre, 2012)). Person and item statistics for these assessments were acceptable and had means very close to 1 (+/- .2). Appendix D has Winsteps Summary Output for all assessments.

Table 8.5: IRT Summary Item Fit Statistics

Subject	Grade	Person Infit	Person Outfit	Item Infit	Item Outfit
HL	3	1.01	0.99	1.00	0.99
HL	4	1.01	1.01	1.01	1.01
HL	5	1.03	1.10	1.08	1.10
HL	6	1.04	1.02	1.03	1.02
HL	7	1.01	1.05	1.08	1.05
HL	8	1.07	1.15	1.13	1.15
MA	3	1.00	1.00	1.00	1.00
MA	4	1.03	1.05	1.03	1.05
MA	5	1.04	1.03	1.04	1.03
MA	6	0.98	1.04	1.04	1.05
MA	7	1.05	1.16	1.17	1.16
MA	8	1.01	1.07	1.07	1.08
SC	5	1.02	1.09	1.05	1.09
SC	8	1.00	1.07	1.07	1.07

Researchers also considered the items' distribution across students' abilities by examining histograms and item maps that compare these two sources of information (see Appendix E and F.). The histograms show how the items are spread out across a range of difficulties that align with students' abilities. It is important in test development that items reflect a range of difficulties across students' abilities. For example, a test will be more accurate at measuring students' ability if items are not vastly more difficult or easy relative to the students' ability. Examination of the curves shows that:

- HLA good alignment between person and item histogram for all grades
- MA students were skewed towards the lower end of the item difficulty for all grades
- Science students were skewed towards the lower end of the item difficulty for all grades

Next, the item maps were reviewed which indicated how specific items are spread across student abilities. These maps in general show that there are sufficient items across the range of student abilities. In particular, the item maps show the difficulty of each score point which indicates that for many of the tests. The development team noted that there was a higher proportion of items in the center as well as at the upper (more difficult) end of the distribution. This was particularly true for grades 5-8 math and science. These issues were also noted during the 2018 field test and have started to be addressed through new item development. For the 2019 assessment, items were added to the grade 5-8 tests to increase the numbers of items by 10 percent to improve reliability and separation. Items were specifically written that were easier items in order to better match students' abilities.

These additions improved the reliability and the UH assessment team will continue to focus on improving the distributions in the item map through new item development and field testing. In 2022, items were added specifically in grade 5 science to address the difficulty of the assessment (e.g., multiple items with low p-values). This resulted in a much better distribution of item difficulty to student ability (Figure 8.1). In the next administration, grades 6, 7, and 8 math will be the focus of additional, easier items.

Figure 8.1: Grade 5 Science Histograms

2022 2021

8.3.2. Item Analysis

The next step in the Rasch analysis was to examine the functioning of the items (see appendix G for Rasch item statistics). This analysis was conducted on the assessment using Winsteps software, which has the capacity to generate multiple statistics and output tables. For the purposes of this project, researchers focused their examination on several important criteria. These criteria included item fit statistics, which provide an indication of how well the item fits the Rasch model, and root mean square residual (RMSR), which provides information on the observed versus expected values. Results of the initial calibration for each grade level were examined to identify any instances that met the following indications of good model fit.

- General criteria and considerations for item analyses include (Linacre, 2012):
- Mean square infit between 0.6 and 1.4 (Underfit is indicated by values higher than the criteria and can indicate unusual response patterns while overfit can indicate redundancy in the items),
- Mean square outfit lower than 1.4 (values between 1.5 and 2.0 are generally considered as not degrading the measure),
- RASCH item discrimination typically between .5 and 2.0,

- Root mean square residual (RMSR) values close to 0. RMSR is a measure of the difference between the observed and expected values and is related to misfit,
- Rating scales functionality, and
- Differential Item Functioning (DIF) (which is addressed in Chapter 11: Fairness).

In general, the items fit the model well using the above criteria (see Appendix F) with a few exceptions as detailed below. Note: some of the items flagged during the IRT analyses are the same as those flagged in the CTT analyses.

8.3.2.1 Hawaiian Language Arts

Grade 3

For grade 4 HLA, eight items did not meet the IRT item criteria.

- Two items did not meet the outfit criteria.
- Six items did not meet the discrimination criteria.

These items were reviewed to ensure they measured the construct and the response key was correct. All items were retained.

Grade 4

For grade 4 HLA, ten items did not meet the IRT item criteria.

- 2 items did not meet the criteria for outfit and discrimination.
- 3 items did not meet the criteria for outfit.
- 5 items did not meet the discrimination criteria.

These items were reviewed to ensure they measured the construct and the response key was correct. All of the items were retained.

Grade 5

For grade 5 HLA, seven items did not meet the IRT item criteria.

- One item did not meet the criteria for infit, outfit and discrimination
- One item did not meet the criteria for outfit and discrimination.
- Two items did not meet the discrimination criteria.
- Three items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. Six items were retained, one item was identified to revise and re-field test and one item was identified to spiral out of the item pool

Grade 6

For grade 6 HLA, four items did not meet the IRT item criteria.

- Four items did not meet the discrimination criteria.

These items were reviewed to ensure they measured the construct and the response key was correct. All of the items were retained.

Grade 7

For grade 7 HLA, ten items did not meet the IRT item criteria.

- Two items did not meet the criteria for outfit and discrimination.
- Two items did not meet the discrimination criteria.
- Six items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. Eight items were retained, one was identified for minor revisions, and one item to revise and re-field test.

Grade 8

For grade 8 HLA, five items did not meet the IRT item criteria.

- One item did not meet the discrimination criteria.
- Two items did not meet the criteria for outfit.
- Two items did not meet the criteria for outfit and discrimination.

These items were reviewed to ensure they measured the construct and the response key was correct. Four of the items were retained, and one marked to revise and re-field test.

8.3.2.2 Mathematics

Grade 3

For grade 3 Mathematics three items did not meet the IRT item criteria.

- One item did not meet the criteria for discrimination.
- Two items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. Two of the items were retained, and one was identified for minor revisions.

Grade 4

For grade 4 Mathematics two items did not meet the IRT item criteria.

- Two items did not meet the criteria for discrimination.

These items were reviewed to ensure they measured the construct and the response key was correct. One item was retained and one identified to spiral out of the item pool.

Grade 5

For grade 5 Mathematics five items did not meet the IRT item criteria.

- Four items did not meet the discrimination criteria.
- One item did not meet outfit and infit criteria.

These items were reviewed to ensure they measured the construct and the response key was correct. All items were retained.

Grade 6

For grade 6 Mathematics two items did not meet the IRT item criteria.

- Two items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct and one will be retained. One item was marked to revise and re-field test.

Grade 7

For grade 7 Mathematics four items did not meet the IRT item criteria.

- One item did not meet the criteria for discrimination.
- Three items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. Three items will be retained and one will be spiraled out of the item pool.

Grade 8

For grade 8 Mathematics two items did not meet the IRT item criteria.

- Two items did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. Both items are marked for minor revisions.

8.3.2.3 Science

Grade 5

For grade 5 Science eight items did not meet the IRT item criteria.

- One item did not meet the criteria for outfit.
- One item did not meet the discrimination and outfit criteria.
- Six items did not meet the criteria for discrimination.

These items were reviewed to ensure they measured the construct and the response key was correct. Seven items will be retained and one was marked to spiral out of the item pool

Grade 8

For grade 8 Science four items did not meet the IRT item criteria.

- Three items did not meet the criteria for discrimination.
- One item did not meet the criteria for outfit.

These items were reviewed to ensure they measured the construct and the response key was correct. All items will be retained.

8.3.3. Rating Scale Review

Finally, researchers examined the score point estimation for the open-ended items. This was accomplished by examining the item curves to ensure that each score point was correctly ordered and the score points functioned as expected. The graphs below show each item's score point and its

respective correspondence to any increase in the overall respondent correct score (i.e., respondents with an overall higher score on the assessment should receive more points on open-ended items). The midpoint of each line on the graphs occurs where the probability is .5 for a respondent receiving that score level on the item given their overall score. This is an indication of the difficulty for each score point. For many of the open-ended items, the curves looked reasonable in terms of ordering, with the score points becoming sequentially more difficult (see Figure 8.2for an example curve). However, some probability curves did not form distinct peaks, indicating lower differentiation between this category and the adjacent ones. In addition, sometimes the score points did not have much separation in terms of difficulty (see Figure 8.3 for example). These items will be monitored in future administrations to see if the curves improve or if revising the items is warranted (Table 8.6).

Figure 8.2: Acceptable item response curve

Figure 8.3: Item response curve for monitoring

Table 8.6: Item numbers for monitoring the rating scales

Grade/Content	Rating scales need monitoring
Hawaiian Language Arts	
3	NA
4	NA
5	712
6	643, 664, 1173
7	808, 872, 889
8	767
Mathematics	
3	233, 234, 1516
4	262
5	463, 414, 1093, 435
6	469, 1131, 1062
7	481, 547, 467
8	1135, 1138, 1556, 613
Science	
5	1315, 1536, 1980, 1979
8	937, 1114, 945

8.3.4. Item Review

All item data is placed by grade and content area in the KĀʻEO Item Review System (KIRS). This system automatically flags items that do not meet pre-specified criteria. The UH team then accesses the KIRS to review the items that are flagged and makes a determination about item revisions or deletion from the item bank. (see Figure 8.4).

Figure 8.4: Item Review Ecosystem

Master Item List

Notes: For definitions of each term ("DIF ContrastG"), click column headings.
To filter items by flags only, go to *Data > Filter Views > View 1 - Flagged Items Only*

For UH review:
If there is a determination that an item should be deleted and the item was designated to be
please suggest a replacement item (if available) from the set of EFT items. Note the replacer

Admins: *Set flags by changing values in red text (bottom row only).*

OK to edit---->	> 0.5	< -0.5	< 0.05		< 0.0000	red, yellow, green .05, .1, .15	< or > .2 or .95		< or > .5 or 2	< or > .6 or 1.4	> 1.4	Response Distribution by * with *key (MCSA)						
ItemID	DIF ContrastG	DIF ContrastB	MH Prob	psychometric notes	Item-rest	Inter-item flag	P-Value flag	drift	Discrim-ination	IN_MSQ	OUT_MSQ	Item Type	op1	op2	op3	op4	op5	FLAG?
item_411		-0.582			0.1290	GREEN						MCSA	0.04	0.4*	0.52	0.04	0	YES
item_412												MCMA						
item_413												MCSA						
item_414												ES						
item_415												MCSA						
item_416	0.558		0.019			GREEN						MCMA						YES
item_417	0.618					GREEN	0.140					MCMA						YES
item_418					-0.0380	RED						MCSA	0.25	0.26	0.22	0.27*	0	YES
item_419					0.0820	YELLOW						MCSA	0.23	0.33	0.22*	0.22	0	YES
item_420						GREEN	0.060					MCMA						YES
item_421												MCSA						
item_422												MCSA						
item_423												MCMA						
item_424												MCSA						
item_425					0.0460	RED			0.362			MCSA	0.23	0.44*	0.25	0.08	0	YES
item_426												MCSA						
item_427					0.0250	RED	0.040					MCMA						YES
item_428					-0.0760	RED						MCSA	0.31*	0.33	0.24	0.12	0	YES
item_429	0.713		0.021		0.0180	RED	0.190					MCSA	0.19	0.19*	0.41	0.2	0	YES
item_430					-0.1130	RED						MCSA	0.25	0.28*	0.3	0.17	0	YES
item_431												MCSA						
item_432						GREEN	0.130					MCSA	0.43	0.12	0.31	0.13*	0	YES

8.4. Corrective Actions from Math, HLA and Science Assessments

Based on the review of the item statistics in 2016 through 2022, several items were determined to not be measuring the construct appropriately. As part of the KĀʻEO continuous improvement process (now documented formally in the *KĀʻEO Action Log Process*) new items were field tested in 2017, 2018, and 2019 and 2022 and were functioning appropriately. These items will be used to replace operational items that are not functioning well.

8.5. Validity Based on Internal Structure

Types of validity evidence should align to the purposes and priorities of the assessment. As such, psychometricians often specify types of validity when evaluating an instrument. For example, **construct validity** addresses the degree to which the test conforms to or measures the underlying construct or trait that is the target of the measure. This is often a statistical argument that focuses on such evidence as internal consistency in scores, relationships of scores to external factors, and understanding score patterns. Evidence of internal consistency can support the claim that the test conforms to or measures the underlying construct or trait that is the target of the measure.

Statistical Analyses of Assessment Data (Internal Structure): These analyses examine the degree to which the assessment represents the reporting structure. Psychometricians conducted correlation analyses and dimensionality analyses to better understand the KĀʻEO assessment structure.

8.5.1. Dimensionality

Measurement research should include the consideration of unidimensionality to support score interpretation (Yu, Popp, DiGangi, & Jannash-Pennel, 2007; Tennant & Conaghan, 2007). It is assumed that the KĀ'EO assessments are unidimensional and measure a single content domain. In order to test this assumption, Winsteps was used to conduct a Principal Component Analysis (PCA) of item residuals with the Rasch model (Yu, Popp, DiGangi, & Jannash-Pennel, 2007; Linacre, 2012; Tennant & Conaghan, 2007). If the assessment is represented by only one dimension (e.g., unidimensional), the results will indicate a random pattern of residuals. However, if the initial eigenvalues are higher than what would be expected by chance (i.e., above 2), this could indicate the presence of a second underlying dimension thus necessitating further examination. This approach is considered robust to detecting multiple dimensions (Tennant & Conaghan, 2007) (see results in Appendix J:Person By Test Information Functions).

The results suggested that each assessment had higher eigenvalues than might be attributed to chance (i.e., greater than 2). The results were examined for distinct content-related interpretations (Table 8.7).

Table 8.7: Contrasts from Rasch Dimensionality Analysis

Subject	Grade	Eigenvalue	Dimension 1 Items Loading Positively on Contrast 1	Dimension 1 Items loading negatively on contrast 1
HLA	3	2.71	84, 381, 94, 88, 90, 1026	1277, 123, 110, 143, 383, 119
HLA	4	3.21	63, 56, 51, 40, 57, 23	20, 389, 1013, 7, 64, 1014
HLA	5	2.69	644, 1030, 690, 722, 1222, 677	730, 1215, 627, 633, 1183, 718
HLA	6	2.28	643, 1661, 1173, 680, 1031, 664	655, 652, 700, 697, 1169, 683
HLA	7	3.26	869, 899, 902, 1182, 803, 1175	774, 876, 808, 1096, 1118, 1032
HLA	8	3.00	914, 826, 1105, 1212, 764, 1092	911, 921, 929, 917, 922, 901
MA	3	2.74	225, 205, 218, 211, 229, 995	187, 172, 169, 198, 174, 215
MA	4	2.60	378, 250, 267, 1981, 1005, 239	167, 254, 265, 241, 253, 170
MA	5	2.58	414, 1128, 416, 460, 1232, 428	1187, 1130, 443, 451, 453, 1223
MA	6	2.67	1062, 571, 1131, 579, 581, 537	466, 526, 534, 499, 480, 577
MA	7	3.20	549, 477, 506, 1234, 488, 486	498, 527, 536, 547, 481, 562
MA	8	3.23	530, 1230, 607, 532, 596, 576	599, 612, 1274, 1269, 613, 529
SC	5	2.95	1331, 1980, 1372, 1315, 1998, 1536	1348, 1347, 1338, 1333, 1365, 1344
SC	8	2.88	946, 932, 939, 1110, 1267, 945	970, 949, 972, 942, 1109, 1205

It was important to understand if different constructs were being measured within a test, which would violate the assumption of unidimensionality; for example, whether the math test had subtests that focused heavily on reading. The items in each contrast were reviewed by project staff. UH staff noted that the items within the contrasts typically represent challenging vocabulary (e.g., unfamiliar words) or content (e.g., fractions at lower grades and geometry and algebra at higher grades). UH staff also noted that there were items in the constrasts that also represented cultural knowledge and worldviews as indicated in the Kaiapuni SLOs. However, these differences were represented across both constructs and not embedded within a specific contrast. As a result, it was determined that it would not be productive to generate subtests to improve unidimensionality. The results for science indicated that there were no underlying dimensions and that the assessment was unidimensional.

8.5.2. Correlations

These analyses examined correlations between the assessment subdomains to examine if these factors correlate more highly with each other than with domains within a test of the other content area (e.g., algebra with measurement higher than algebra with reading literary text). Correlations were corrected for disattenuations to account for measurement error.

- For HLA (Appendix Table A-1), all but three disattenuated correlations were above 0.8. Three values in grade 8 fell below 0.8 between Heluhelu and Olelo (0.65), and Kakau and Olelo (0.77) and Oli and Heluhelu(0.79).
- For math (Appendix Table A-2), all disattenuated correlations were above 0.8.
- For science (Appendix Table A-3), all disattenuated correlations were above 0.8.

These values show a strong relationship between the domains in each of the content areas as expected. With median values of .97 for math, 1.0 for HLA and 1.0 for science. It is important to note that disattenuated values greater than 1.00 indicate non-randomly distributed measurement error and these values are reported as 1 (Schumacker, 1996). The observed correlations were slightly lower with values ranging between .40 and .82. (see Table 8.8 throughTable 8.10)

Table 8.8: HLA Observed and Disattenuated (in grey) Correlation & Cronbach's Alpha (in blue) for Subscores

Grade	Subscore	Ka_Olelo	Ka_Heluhelu	Ke Kakau	Ke Mele Oli
3	Ka_Olelo	0.74	0.85	0.83	0.93
	Ka_Heluhelu	0.63	0.76	0.99	0.86
	Ke_Kakau	0.60	0.73	0.71	0.93
	Ke_Mele_Oli	0.69	0.64	0.67	0.73
4	Ka_Olelo	0.70	0.84	0.91	1.02
	Ka_Heluhelu	0.61	0.75	1.00	0.83
	Ke_Kakau	0.61	0.72	0.65	0.90
	Ke_Mele_Oli	0.72	0.60	0.62	0.71
5	Ka_Olelo	0.69	0.97	1.00	0.97
	Ka_Heluhelu	0.72	0.80	1.00	0.93
	Ke_Kakau	0.74	0.78	0.66	1.00
	Ke_Mele_Oli	0.63	0.66	0.66	0.62
6	Ka_Olelo	0.39	1.00	1.00	1.00
	Ka_Heluhelu	0.65	0.71	1.00	1.00
	Ke_Kakau	0.71	0.78	0.76	1.00
	Ke_Mele_Oli	0.61	0.68	0.69	0.42
7	Ka_Olelo	0.60	0.89	0.86	0.81
	Ka_Heluhelu	0.60	0.78	1.00	0.93
	Ke_Kakau	0.58	0.82	0.77	1.00
	Ke_Mele_Oli	0.41	0.54	0.59	0.43
8	Ka_Olelo	0.69	0.65	0.77	1.00
	Ka_Heluhelu	0.49	0.81	1.00	0.79
	Ke_Kakau	0.55	0.80	0.75	1.00
	Ke_Mele_Oli	0.56	0.45	0.55	0.40

Table 8.9: Math Observed and Disattenuated (in grey) Correlation & Cronbach's Alpha (in green) for Subscores

Grade	Subscore	C1	C2_C4	C3
3	C1	0.70	0.94	0.92
	C2_C4	0.65	0.69	1.00

Grade	Subscore	C1	C2_C4	C3
	C3	0.53	0.59	0.48
4	C1	0.69	0.99	1.00
	C2_C4	0.66	0.65	1.00
	C3	0.59	0.56	0.40
5	C1	0.74	1.00	0.88
	C2_C4	0.72	0.61	0.87
	C3	0.56	0.50	0.55
6	C1	0.72	1.00	1.00
	C2_C4	0.66	0.60	0.98
	C3	0.73	0.61	0.64
7	C1	0.56	1.00	1.00
	C2_C4	0.56	0.45	1.00
	C3	0.65	0.60	0.55
8	C1	0.57	0.85	0.99
	C2_C4	0.38	0.36	0.97
	C3	0.55	0.43	0.56

Table 8.10: Science Observed and Disattenuated (in grey) Correlation & Cronbach's Alpha (in red) for Subscores

	Subscore	Halawai	Lalo	Luna
5	Lalo	NA	0.78	1.00
	Luna	NA	0.74	0.67
8	Halawai	0.50	1.00	1.00
	Lalo	0.65	0.74	1.00
	Luna	0.41	0.53	0.19

8.5.3. Validity Based on Relationship with External Variables

It is also important to consider the relationship between the assessment and scores from other tests of the same content area and/or tests of different content areas. These analyses provide information with regard to the degree to which the assessment reflects key content by relating scores to other variables. This type of evidence is typically generated by examining the relationships between assessment scores and scores from other similar assessments (e.g., the state assessment system and NAEP, TIMSS, college-readiness assessments, NWEA). However, there are no similar Hawaiian language assessments by which to make these comparisons. Future studies are planned to examine concurrent/external validity by collecting information from teachers and students about achievement and factors related to achievement.

In order to generate information regarding validity related to external variables, correlations were generated between subscores in math and HLA and science (see Table 8.11 through Table 8.16). Disattenuated results are in Appendix Table A-1. In general, the subscore correlations were lower than .80 math, HLA, and science (median value of the correlations across grades was .75) relative to the correlations seen between the math subscores and HLA subscores reported above (median values were approximately 1.0 for corrected correlations). There was a pattern of higher correlations between the HLA subscores and the math domain of "Communicating Reasoning" with correlations between .89 and 1.0. These higher correlations might be attributed to relationships between the two constructs; however, the team has identified the need to improve the reliability of C3 which might also improve the correlations across subscores (by reducing the impact of the disattenuation correction).

Table 8.11: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in blue) for Subscores Across subjects: Grade 3

	C1	C2_C4	C3	MA OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP
C1	0.70	0.94	0.92	1.00	0.76	0.79	0.90	0.88	0.87
C2_C4	0.65	0.69	1.00	1.00	0.76	0.84	0.86	0.81	0.85
C3	0.53	0.59	0.48	1.00	0.66	0.90	0.94	0.79	0.87
MA OP	0.90	0.88	0.76	0.84	0.75	0.84	0.91	0.85	0.88
Ka Olelo	0.54	0.55	0.39	0.59	0.74	0.85	0.83	0.93	1.00
Ka Heluhelu	0.58	0.61	0.54	0.67	0.64	0.76	0.99	0.86	1.00
Ke Kakau	0.64	0.60	0.55	0.70	0.60	0.73	0.71	0.93	1.00
Ke Mele Oli	0.63	0.57	0.47	0.67	0.69	0.64	0.67	0.73	1.00
HLA OP	0.69	0.68	0.58	0.77	0.82	0.89	0.89	0.84	0.91

Table 8.12: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in blue) for Subscores Across subjects: Grade 4

	C1	C2_C4	C3	MA OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP
C1	0.69	0.99	1.00	1.00	0.68	0.78	0.84	0.60	0.77
C2_C4	0.66	0.65	1.00	1.00	0.71	0.78	0.85	0.69	0.80
C3	0.58	0.56	0.40	1.00	0.90	0.92	0.94	0.91	0.95
MA OP	0.91	0.85	0.79	0.83	0.73	0.79	0.86	0.68	0.81
Ka Olelo	0.47	0.48	0.48	0.56	0.70	0.82	0.91	1.02	1.00
Ka Heluhelu	0.56	0.54	0.51	0.63	0.59	0.76	1.01	0.80	1.00
Ke Kakau	0.56	0.55	0.48	0.63	0.61	0.71	0.65	0.89	1.00
Ke Mele Oli	0.42	0.47	0.49	0.52	0.72	0.59	0.61	0.71	1.00
HLA OP	0.61	0.61	0.57	0.69	0.80	0.90	0.88	0.80	0.89

Table 8.13: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in bold blue) for Subscores Across subjects: Grade 5

	C1	C2_C4	C3	Math OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP	Lalo	Luna	Science OP
C1	0.74	1.08	0.87	1.00	0.79	0.80	0.86	0.71	0.80	0.73	0.77	0.74
C2_C4	0.72	0.60	0.87	1.00	0.83	0.89	0.91	0.81	0.87	0.78	0.84	0.80
C3	0.56	0.50	0.55	1.00	0.84	0.87	0.93	0.74	0.86	0.83	0.90	0.85
Math OP	0.93	0.86	0.76	0.84	0.82	0.85	0.90	0.75	0.84	0.78	0.83	0.79
Ka Olelo	0.56	0.53	0.51	0.62	0.68	0.97	1.00	0.97	1.08	0.93	0.98	0.94
Ka Heluhelu	0.62	0.62	0.57	0.70	0.72	0.80	1.00	0.93	1.00	0.94	0.87	0.91
Ke Kakau	0.60	0.58	0.56	0.68	0.74	0.78	0.66	1.00	1.00	1.00	1.00	1.00
Ke Mele Oli	0.48	0.49	0.43	0.55	0.63	0.66	0.66	0.62	1.05	0.92	0.99	0.94
HLA OP	0.65	0.64	0.60	0.74	0.85	0.93	0.92	0.79	0.90	0.97	0.95	0.96
Lalo	0.55	0.54	0.55	0.63	0.68	0.75	0.76	0.64	0.81	0.78	1.00	1.00
Luna	0.54	0.53	0.54	0.62	0.67	0.63	0.69	0.64	0.74	0.74	0.67	1.00
Science OP	0.59	0.57	0.58	0.67	0.72	0.76	0.78	0.68	0.84	0.97	0.89	0.85

Table 8.14: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in blue) for Subscores Across subjects: Grade 6

	C1	C2_C4	C3	MA OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP
C1	0.72	1.00	1.00	1.00	0.89	0.79	0.75	0.72	0.73
C2_C4	0.67	0.61	0.99	1.00	0.90	0.85	0.77	0.82	0.77
C3	0.73	0.62	0.65	1.00	0.92	0.85	0.79	0.89	0.79
MA OP	0.92	0.84	0.89	0.86	0.90	0.82	0.76	0.80	0.75
Ka Olelo	0.47	0.44	0.47	0.52	0.39	1.00	1.00	1.00	1.00
Ka Heluhelu	0.57	0.55	0.58	0.64	0.65	0.71	1.00	1.00	1.00
Ke Kakau	0.56	0.52	0.56	0.62	0.71	0.78	0.76	1.00	1.00
Ke Mele Oli	0.39	0.41	0.46	0.48	0.61	0.67	0.69	0.42	1.00
HLA OP	0.59	0.56	0.60	0.66	0.79	0.91	0.95	0.81	0.89

Table 8.15: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in blue) for Subscores Across subjects: Grade 7

	C1	C2_C4	C3	MA OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP
C1	0.72	1.00	1.00	1.00	0.89	0.79	0.75	0.72	0.73
C2_C4	0.67	0.61	0.99	1.00	0.90	0.85	0.77	0.82	0.77
C3	0.73	0.62	0.65	1.00	0.92	0.85	0.79	0.89	0.79
Ka Olelo	0.92	0.84	0.89	0.86	0.90	0.82	0.76	0.80	0.75
Ka Heluhelu	0.47	0.44	0.47	0.52	0.39	1.00	1.30	1.00	1.00
Ke Kakau	0.57	0.55	0.58	0.64	0.65	0.71	1.00	1.00	1.00
Ke Mele Oli	0.56	0.52	0.56	0.62	0.71	0.78	0.76	1.00	1.00
HLA OP	0.39	0.41	0.46	0.48	0.61	0.67	0.69	0.42	1.00
Ka Olelo	0.59	0.56	0.60	0.66	0.79	0.91	0.95	0.81	0.89

Table 8.16: Correlations between Observed and Disattenuated (in grey) and Cronbach's Alpha (in blue) for Subscores Across subjects: Grade 8

	C1	C2_C4	C3	MA OP	Ka Olelo	Ka Heluhelu	Ke Kakau	Ke Mele Oli	HLA OP	Halawai	Ko Lalo	Luna	SC OP
C1	0.59	0.83	0.98	1.34	0.52	0.57	0.68	0.75	0.64	0.50	0.61	0.83	0.58
C2_C4	0.38	0.36	0.98	1.37	0.47	0.68	0.75	0.69	0.71	0.65	0.76	0.67	0.70
C3	0.56	0.44	0.56	1.23	0.63	0.68	0.78	0.84	0.75	0.66	0.85	1.07	0.79
MA OP	0.88	0.71	0.79	0.74	0.55	0.64	0.74	0.78	0.70	0.59	0.73	0.88	0.68
Ka Olelo	0.33	0.23	0.39	0.39	0.69	0.63	0.72	1.01	0.81	0.63	0.61	0.84	0.61
Ka Heluhelu	0.40	0.37	0.46	0.50	0.47	0.81	1.02	0.80	1.08	0.81	0.88	0.73	0.82
Ke Kakau	0.45	0.39	0.51	0.55	0.52	0.80	0.76	1.00	1.15	0.87	0.89	1.04	0.86
Ke Mele Oli	0.36	0.26	0.40	0.43	0.54	0.46	0.55	0.40	1.06	0.91	0.82	1.03	0.83
HLA OP	0.47	0.40	0.53	0.57	0.64	0.92	0.95	0.64	0.90	0.85	0.88	0.92	0.84
Halawai	0.27	0.28	0.35	0.36	0.37	0.52	0.54	0.41	0.57	0.51	1.06	1.31	1.25
Lalo	0.40	0.39	0.55	0.54	0.44	0.68	0.67	0.45	0.72	0.65	0.75	1.40	1.23
Luna	0.28	0.17	0.35	0.33	0.30	0.29	0.39	0.29	0.38	0.41	0.53	0.19	1.62
SC OP	0.40	0.38	0.53	0.53	0.46	0.67	0.68	0.48	0.72	0.81	0.96	0.64	0.82

Finally, the team matched the students' scores for the three cohorts for which there were data. Cohort 1 included students in grade 3 in 2017, grade 4 in 2018, grade 5 in 2019, grade 7 in 2021, and grade 8 in 2022. Cohort 2 included students in grade 3 in 2018, grade 4 in 2019, grade 6 in 2021, and grade 7 in 2022. Cohort 3 included students in grade 3 in 2019, grade 5 in 2021, grade 6 in 2022. Correlations were generated to examine the relationships between their scores (Table 8.17). The correlations tended to be highest between the scores within a content area (e.g., between HLA tests – 0.52 to

0.84). Scores between math and HLA were generally lower, especially across grade levels (0.47 to 0.79).

Table 8.17: Correlations between students' scores across years

Grade/ Content	GR3 MA	GR4 HLA	GR4 MA	GR5 HLA	GR5 MA	GR6 HLA*	GR6 MA*	GR 7 HLA	GR7 MA	GR8 HLA	GR8 MA	GR8 SC
Cohort 1												
2017 GR3 HLA	0.75	0.77	0.62	0.71	0.60	N/A	N/A	0.59	0.49	0.59	0.52	0.55
2017 GR3 MA	--	0.74	0.77	0.65	0.69	N/A	N/A	0.53	0.52	0.58	0.59	0.49
2018 GR4 HLA	--	--	0.74	0.79	0.63	N/A	N/A	0.66	0.49	0.71	0.50	0.60
2018 GR4 MA	--	--	--	0.65	0.75	N/A	N/A	0.49	0.58	0.53	0.58	0.47
2019 GR5 HLA	--	--	--	--	0.67	N/A	N/A	0.70	0.47	0.70	0.48	0.70
2019 GR5 MA	--	--	--	--	--	N/A	N/A	0.60	0.68	0.54	0.62	0.54
2021 GR7 HLA	--	--	--	--	--			--	0.57	0.83	0.54	0.72
2021 GR7 MA	--	--	--	--	--			--	--	0.54	0.66	0.45
Cohort 2												
2018 GR3 HLA	0.67	0.76	0.69	N/A	N/A	0.71	0.63	0.69	0.67	--	--	--
2018 GR3 MA	--	0.56	0.74	N/A	N/A	0.57	0.63	0.56	0.55	--	--	--
2019 GR4 HLA	--	--	0.74	N/A	N/A	.078	0.62	0.73	0.57	--	--	--
2019 GR4 MA	--	--	--	N/A	N/A	0.69	0.70	0.72	0.73	--	--	--
2021 GR6 HLA	--	--	--	--	--	--	0.73	0.84	0.61	--	--	--
2021 GR6 MA	--	--	--	--	--			0.66	0.70	--	--	--
Cohort 3												
2019 GR3 HLA	0.72	N/A	N/A	0.73	0.59	0.68	0.58	--	--	--	--	--
2019 GR3 MA		N/A	N/A	0.64	0.63	0.58	0.61	--	--	--	--	--
2021 GR5 HLA					0.71	0.79	0.68	--	--	--	--	--
2021 GR5 MA						0.79	0.75	--	--	--	--	--

** There was no testing in 2020 due to the COVID-19 pandemic, so Cohort 1 did not test in grade 6 and Cohort 2 did not test in grade 5.*

Chapter 9: Reliability

Reliability and precision of assessment scores are a critical consideration of any testing program. The Standards for Educational and Psychological Testing defines this as the degree to which students' scores would be the same across multiple administrations of the same assessment (AERA/APA/NCME, 2014). Building evidence in support of reliability includes evaluating reliability statistics, generating estimates of classification consistency and accuracy, and examining the scoring processes to ensure consistency and accuracy of the scores provided.

The testing program analyzed operational test data for accuracy and reliability per AERA/APA/NCME (2014):

> **Standard 2.0** Appropriate evidence of reliability/precision should be provided for the interpretation for each intended score use.

This standard explicitly states that the reliability of the test should align with the uses of the test scores. As such, assessments with outcomes that are associated with high stakes decisions should demonstrate higher reliability. One of the purposes of the Kaiapuni Assessment of Educational Outcomes (KĀʻEO) is that the results be used for accountability and therefore analyses were conducted to demonstrate reliability in several ways.

9.1. Classical Test Theory Statistics

The first reliability analyses focused on Classical Test Theory (CTT) methods. These analyses included generating item p-values, point biserial correlations, and alpha if item removed (how the alpha values would change if the item was removed from the test) statistics for all items on each test. Item statistics showed that the items were functioning in a consistent manner to support the overall test reliability. Test level statistics were also computed for each test, including mean p-values, alpha coefficients, and mean scores (Table 9.1). Alpha values ranged from .73 to .91 and mean p-values ranged from .24-.49. These values indicate that each test has good internal reliability but also that these tests tended to be slightly difficult for students.

In addition, the average raw score SEM was calculated using the formula (where σX is the raw test score standard deviation and ρXX is the reliability):

$$\sigma_E = \sigma_X \sqrt{1-\rho_{XX}}$$

Table 9.1: Overall Reliability by Test

Subject	Grade	N Valid	N of items	Number of Points Possible	Mean	Std Deviation	Mean p-values	Cronbach's Alpha	SEM
HLA	3	308	56	68	25.25	11.67	0.45	0.91	3.58
HLA	4	281	57	66	27.47	11.01	0.48	0.89	3.62
HLA	5	244	57	68	26.81	12.53	0.47	0.90	3.90
HLA	6	249	53	72	26.98	12.24	0.49	0.89	4.11
HLA	7	146	57	77	25.60	12.32	0.45	0.90	3.95
HLA	8	166	56	73	26.44	12.15	0.47	0.90	3.92
MA	3	309	55	58	22.35	8.02	0.41	0.86	3.04
MA	4	279	56	60	21.15	8.07	0.38	0.83	3.33
MA	5	245	58	66	20.95	8.92	0.36	0.84	3.55

Subject	Grade	N Valid	N of items	Number of Points Possible	Mean	Std Deviation	Mean p-values	Cronbach's Alpha	SEM
MA	6	236	57	71	17.58	9.28	0.31	0.87	3.52
MA	7	144	56	63	13.88	6.75	0.25	0.80	3.16
MA	8	166	56	63	13.68	5.84	0.24	0.73	3.01
SC	5	246	51	64	22.70	9.60	0.45	0.85	3.72
SC	8	165	58	66	14.93	7.63	0.26	0.81	3.29

The reliability analyses also provide information on the degree to which the assessments were reliable for demographic subgroups. Cronbach alpha statistics and SEMs were calculated for each subgroup that showed consistency in reliability across the subgroups (Table 9.2), with reliability generally ranging from .6-.9 which was similar to the overall assessments. Lower reliabilities (less than 0.50) were observed for students with IEPs in grades 4, 5, 7, and 8 (all assessed subjects). After discussions with HIDOE's Technical Advisory Committee (TAC), the hypothesis is that these lower reliabilities are most likely the result of range restriction or the assessments being very difficult. In addition, there were three negative reliability values for these assessments. This is most likely to occur with small sample sizes or a misfit in the data (Nichols 1999). These values will be monitored in future administrations.

Table 9.2: Overall Reliability by Subgroup

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
HLA	3	Language Background	English	280	0.44	11.62	0.905	3.58
HLA	3	Language Background	Hawaiian	27	0.52	11.41	0.904	3.54
HLA	3	IEP	N	301	25.55	11.65	0.905	3.59
HLA	3	IEP	Y	10	16.30	8.80	0.889	2.93
HLA	3	Plan 504	N	--	--	--	--	--
HLA	3	Plan 504	Y	--	--	--	--	--
HLA	3	FRL	N	161	28.11	12.24	0.912	3.63
HLA	3	FRL	Y	147	22.12	10.17	0.882	3.49
HLA	3	Migrant	N	--	--	--	--	--
HLA	3	Migrant	Y	--	--	--	--	--
HLA	3	Gender	F	161	26.81	11.57	0.904	3.59
HLA	3	Gender	M	147	23.54	11.58	0.906	3.55
HLA	3	Federal Ethnicity	Asian	--	--	--	--	--
HLA	3	Federal Ethnicity	Hispanic	67	24.25	12.74	0.92	3.60
HLA	3	Federal Ethnicity	Multiple	42	25.05	10.73	0.891	3.54
HLA	3	Federal Ethnicity	Pacific Islander	191	25.31	11.31	0.9	3.58
HLA	3	Federal Ethnicity	White	--	--	--	--	--
HLA	3	State Ethnicity	Black	--	--	--	--	--
HLA	3	State Ethnicity	Chinese	--	--	--	--	--
HLA	3	State Ethnicity	Filipino	14	28.00	10.75	0.895	3.48
HLA	3	State Ethnicity	Japanese	10	25.30	12.50	0.927	3.38
HLA	3	State Ethnicity	Multiple	--	--	--	--	--
HLA	3	State Ethnicity	Native Hawaiian	244	24.99	11.66	0.906	3.58
HLA	3	State Ethnicity	Other Pacific Islander	--	--	--	--	--
HLA	3	State Ethnicity	Portuguese	--	--	--	--	--
HLA	3	State Ethnicity	Samoan	--	--	--	--	--

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
HLA	3	State Ethnicity	White	11	22.55	13.98	0.935	3.56
HLA	4	Language Background	English	260	27.04	10.61	0.884	3.61
HLA	4	Language Background	Hawaiian	19	32.58	14.54	0.933	3.76
HLA	4	IEP	N	268	28.10	10.87	0.888	3.64
HLA	4	IEP	Y	13	14.62	3.78	0.297	3.17
HLA	4	Plan 504	N	--	--	--	--	--
HLA	4	Plan 504	Y	--	--	--	--	--
HLA	4	FRL	N	137	31.15	11.75	0.903	3.66
HLA	4	FRL	Y	144	23.98	9.00	0.844	3.55
HLA	4	Migrant	N	--	--	--	--	--
HLA	4	Migrant	Y	--	--	--	--	--
HLA	4	Gender	F	164	28.71	10.43	0.88	3.61
HLA	4	Gender	M	114	25.74	11.60	0.902	3.63
HLA	4	Federal Ethnicity	American Indian or Alaska Native	--	--	--	--	--
HLA	4	Federal Ethnicity	Asian	--	--	--	--	--
HLA	4	Federal Ethnicity	Hispanic	56	26.44	8.90	0.838	3.58
HLA	4	Federal Ethnicity	Multiple	34	31.44	13.24	0.924	3.65
HLA	4	Federal Ethnicity	Multiple	--	--	--	--	--
HLA	4	Federal Ethnicity	Pacific Islander	182	27.09	11.11	0.893	3.63
HLA	4	State Ethnicity	American Indian or Alaska Native	--	--	--	--	--
HLA	4	State Ethnicity	Filipino	10	32.00	13.48	0.927	3.64
HLA	4	State Ethnicity	Hispanic	--	--	--	--	--
HLA	4	State Ethnicity	Japanese	--	--	--	--	--
HLA	4	State Ethnicity	Multiple	--	--	--	--	--
HLA	4	State Ethnicity	Native Hawaiian	229	26.98	10.70	0.885	3.63
HLA	4	State Ethnicity	Portuguese	--	--	--	--	--
HLA	4	State Ethnicity	Samoan	--	--	--	--	--
HLA	4	State Ethnicity	White	12	27.33	12.25	0.92	3.46
HLA	5	Language Background	English	230	26.55	12.35	0.901	3.89
HLA	5	Language Background	Hawaiian	12	29.83	14.67	0.924	4.04
HLA	5	IEP	N	227	27.90	12.28	0.9	3.88
HLA	5	IEP	Y	16	12.00	3.45	0.272	2.94
HLA	5	Plan 504	N	--	--	--	--	--
HLA	5	Plan 504	Y	--	--	--	--	--
HLA	5	FRL	N	120	29.57	12.83	0.904	3.98
HLA	5	FRL	Y	124	24.14	11.67	0.893	3.82
HLA	5	Migrant	N	--	--	--	--	--
HLA	5	Migrant	Y	--	--	--	--	--
HLA	5	Gender	F	126	30.02	12.42	0.901	3.91
HLA	5	Gender	M	117	23.44	11.79	0.891	3.89
HLA	5	Federal Ethnicity	Asian	--	--	--	--	--
HLA	5	Federal Ethnicity	Hispanic	46	25.00	11.24	0.88	3.89
HLA	5	Federal Ethnicity	Multiple	25	28.64	11.73	0.891	3.87

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
HLA	5	Federal Ethnicity	Pacific Islander	163	26.29	12.68	0.906	3.89
HLA	5	Federal Ethnicity	White	--	--	--	--	--
HLA	5	State Ethnicity	Chinese	--	--	--	--	--
HLA	5	State Ethnicity	Filipino	--	--	--	--	--
HLA	5	State Ethnicity	Japanese	195	33.63	11.38	0.876	4.01
HLA	5	State Ethnicity	Multiple	--	--	--	--	--
HLA	5	State Ethnicity	Native Hawaiian	--	--	--	--	--
HLA	5	State Ethnicity	Other Pacific Islander	--	--	--	--	--
HLA	5	State Ethnicity	Portuguese	--	--	--	--	--
HLA	5	State Ethnicity	Samoan	--	--	--	--	--
HLA	5	State Ethnicity	Tongan	--	--	--	--	--
HLA	5	State Ethnicity	White	--	--	--	--	--
HLA	6	Language Background	English	228	26.56	12.00	0.883	4.11
HLA	6	Language Background	Hawaiian	15	29.20	14.26	0.913	4.21
HLA	6	Language Background	Japanese	--	--	--	--	--
HLA	6	Language Background	White	--	--	--	--	--
HLA	6	IEP	N	235	27.81	12.02	0.882	4.13
HLA	6	IEP	Y	13	12.31	5.38	0.675	3.06
HLA	6	Plan 504	N	--	--	--	--	--
HLA	6	Plan 504	Y	--	--	--	--	--
HLA	6	FRL	N	129	28.86	12.57	0.892	4.13
HLA	6	FRL	Y	120	24.96	11.58	0.875	4.09
HLA	6	Migrant	N	--	--	--	--	--
HLA	6	Migrant	Y	--	--	--	--	--
HLA	6	Gender	F	145	29.07	12.18	0.885	4.13
HLA	6	Gender	M	103	24.09	11.82	0.882	4.06
HLA	6	Federal Ethnicity	Asian	--	--	--	--	--
HLA	6	Federal Ethnicity	Hispanic	53	25.87	11.95	0.886	4.03
HLA	6	Federal Ethnicity	Multiple	32	32.47	13.17	0.892	4.33
HLA	6	Federal Ethnicity	Pacific Islander	151	25.71	11.69	0.878	4.08
HLA	6	Federal Ethnicity	White	--	--	--	--	--
HLA	6	State Ethnicity	American Indian or Alaska Native	--	--	--	--	--
HLA	6	State Ethnicity	Chinese	--	--	--	--	--
HLA	6	State Ethnicity	Filipino	11	32.55	13.69	0.895	4.44
HLA	6	State Ethnicity	Japanese	--	--	--	--	--
HLA	6	State Ethnicity	Multiple	--	--	--	--	--
HLA	6	State Ethnicity	Native Hawaiian	188	25.85	11.81	0.881	4.08
HLA	6	State Ethnicity	Other Pacific Islander	--	--	--	--	--
HLA	6	State Ethnicity	Portuguese	--	--	--	--	--
HLA	6	State Ethnicity	Samoan	--	--	--	--	--
HLA	6	State Ethnicity	White	14	34.21	11.92	0.877	4.18
HLA	7	Language Background	English	128	25.50	12.25	0.896	3.95

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
HLA	7	Language Background	Hawaiian	18	26.33	13.16	0.909	3.97
HLA	7	IEP	N	129	27.45	11.84	0.887	3.98
HLA	7	IEP	Y	17	11.59	4.23	0.495	3.01
HLA	7	Plan 504	N	--	--	--	--	--
HLA	7	Plan 504	Y	--	--	--	--	--
HLA	7	FRL	N	59	28.59	13.59	0.913	4.01
HLA	7	FRL	Y	87	23.57	11.00	0.876	3.87
HLA	7	Migrant	N	--	--	--	--	--
HLA	7	Migrant	Y	--	--	--	--	--
HLA	7	Gender	F	76	28.92	13.07	0.906	4.01
HLA	7	Gender	M	70	22.00	10.38	0.864	3.83
HLA	7	Federal Ethnicity	Hispanic	28	22.75	12.58	0.904	3.90
HLA	7	Federal Ethnicity	Multiple	--	--	--	--	--
HLA	7	Federal Ethnicity	Pacific Islander	103	25.97	11.82	0.889	3.94
HLA	7	Federal Ethnicity	White	--	--	--	--	--
HLA	7	State Ethnicity	Filipino	--	--	--	--	--
HLA	7	State Ethnicity	Japanese	--	--	--	--	--
HLA	7	State Ethnicity	Native Hawaiian	127	25.52	12.05	0.893	3.94
HLA	7	State Ethnicity	Samoan	--	--	--	--	--
HLA	7	State Ethnicity	White	--	--	--	--	--
HLA	8	Language Background	English	159	26.33	12.16	0.897	3.90
HLA	8	Language Background	Hawaiian	--	--	--	--	--
HLA	8	IEP	N	157	27.24	11.78	0.889	3.93
HLA	8	IEP	Y	12	16.17	12.54	0.926	3.41
HLA	8	Plan 504	N	--	--	--	--	--
HLA	8	Plan 504	Y	--	--	--	--	--
HLA	8	FRL	N	71	28.01	13.48	0.913	3.97
HLA	8	FRL	Y	95	25.26	10.97	0.876	3.86
HLA	8	Migrant	N	--	--	--	--	--
HLA	8	Migrant	Y	--	--	--	--	--
HLA	8	Gender	F	83	30.71	11.91	0.887	4.00
HLA	8	Gender	M	83	22.17	10.87	0.888	3.64
HLA	8	Federal Ethnicity	Asian	--	--	--	--	--
HLA	8	Federal Ethnicity	Hispanic	34	26.79	12.88	0.902	4.03
HLA	8	Federal Ethnicity	Multiple	--	--	--	--	--
HLA	8	Federal Ethnicity	Pacific Islander	119	25.98	11.46	0.889	3.82
HLA	8	State Ethnicity	Filipino	--	--	--	--	--
HLA	8	State Ethnicity	Japanese	--	--	--	--	--
HLA	8	State Ethnicity	Native Hawaiian	146	26.36	11.83	0.892	3.89
HLA	8	State Ethnicity	Other Pacific Islander	--	--	--	--	--
HLA	8	State Ethnicity	Portuguese	--	--	--	--	--
HLA	8	State Ethnicity	White	--	--	--	--	--
MA	3	Language Background	English	279	22.42	8.14	0.86	3.05
MA	3	Language Background	Hawaiian	26	21.35	6.09	0.749	3.05

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
MA	3	IEP	N	299	22.56	8.00	0.855	3.04
MA	3	IEP	Y	10	16.20	6.30	0.782	2.94
MA	3	Plan 504	N	--	--	--	--	--
MA	3	Plan 504	Y	--	--	--	--	--
MA	3	FRL	N	162	23.96	8.60	0.874	3.05
MA	3	FRL	Y	147	20.58	6.94	0.809	3.03
MA	3	Migrant	N	--	--	--	--	--
MA	3	Migrant	Y	--	--	--	--	--
MA	3	Gender	F	161	22.32	7.84	0.852	3.02
MA	3	Gender	M	148	22.39	8.23	0.863	3.05
MA	3	Federal Ethnicity	Asian	--	--	--	--	--
MA	3	Federal Ethnicity	Hispanic	67	22.81	8.78	0.877	3.08
MA	3	Federal Ethnicity	Multiple	42	22.38	7.73	0.843	3.06
MA	3	Federal Ethnicity	Pacific Islander	192	21.83	7.58	0.841	3.02
MA	3	Federal Ethnicity	White	--	--	--	--	--
MA	3	State Ethnicity	Black	--	--	--	--	--
MA	3	State Ethnicity	Chinese	--	--	--	--	--
MA	3	State Ethnicity	Filipino	14	24.79	8.86	0.876	3.12
MA	3	State Ethnicity	Japanese	10	23.40	10.91	0.92	3.08
MA	3	State Ethnicity	Multiple	--	--	--	--	--
MA	3	State Ethnicity	Native Hawaiian	244	22.11	7.82	0.85	3.03
MA	3	State Ethnicity	Other Pacific Islander	--	--	--	--	--
MA	3	State Ethnicity	Part-Hawaiian	--	--	--	--	--
MA	3	State Ethnicity	Portuguese	--	--	--	--	--
MA	3	State Ethnicity	Samoan	--	--	--	--	--
MA	3	State Ethnicity	White	11	22.45	9.76	0.895	3.16
MA	4	Language Background	English	258	21.14	7.94	0.825	3.32
MA	4	Language Background	Hawaiian	19	20.16	8.78	0.859	3.30
MA	4	IEP	N	266	21.54	8.04	0.829	3.33
MA	4	IEP	Y	13	13.15	2.61	-0.373	3.06
MA	4	Plan 504	N	--	--	--	--	--
MA	4	Plan 504	Y	--	--	--	--	--
MA	4	FRL	N	137	23.88	8.86	0.858	3.34
MA	4	FRL	Y	142	18.51	6.19	0.717	3.29
MA	4	Migrant	N	--	--	--	--	--
MA	4	Migrant	Y	--	--	--	--	--
MA	4	Gender	F	164	21.52	8.07	0.828	3.34
MA	4	Gender	M	115	20.61	8.08	0.834	3.29
MA	4	Federal Ethnicity	American Indian or Alaska Native	--	--	--	--	--
MA	4	Federal Ethnicity	Asian	--	--	--	--	--
MA	4	Federal Ethnicity	Hispanic	59	21.14	7.19	0.782	3.36
MA	4	Federal Ethnicity	Multiple	34	24.85	9.91	0.887	3.33
MA	4	Federal Ethnicity	Pacific Islander	180	20.54	7.86	0.822	3.32
MA	4	Federal Ethnicity	White	--	--	--	--	--

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
MA	4	State Ethnicity	American Indian or Alaska Native	--	--	--	--	--
MA	4	State Ethnicity	Filipino	10	27.40	11.75	0.924	3.24
MA	4	State Ethnicity	Hispanic	--	--	--	--	--
MA	4	State Ethnicity	Japanese	--	--	--	--	--
MA	4	State Ethnicity	Multiple	--	--	--	--	--
MA	4	State Ethnicity	Native Hawaiian	227	20.57	7.81	0.819	3.32
MA	4	State Ethnicity	Portuguese	--	--	--	--	--
MA	4	State Ethnicity	Samoan	--	--	--	--	--
MA	4	State Ethnicity	White	12	22.17	6.39	0.715	3.41
MA	5	Language Background	English	231	20.81	8.82	0.838	3.55
MA	5	Language Background	Hawaiian	12	22.08	10.66	0.897	3.42
MA	5	IEP	N	228	21.48	8.96	0.841	3.57
MA	5	IEP	Y	16	13.19	3.06	0.006	3.05
MA	5	Plan 504	N	--	--	--	--	--
MA	5	Plan 504	Y	--	--	--	--	--
MA	5	FRL	N	119	23.39	9.64	0.858	3.63
MA	5	FRL	Y	126	18.65	7.52	0.789	3.45
MA	5	Migrant	N	--	--	--	--	--
MA	5	Migrant	Y	--	--	--	--	--
MA	5	Gender	F	125	22.17	9.41	0.852	3.62
MA	5	Gender	M	119	19.65	8.25	0.824	3.46
MA	5	Federal Ethnicity	Asian	--	--	--	--	--
MA	5	Federal Ethnicity	Hispanic	47	19.28	7.62	0.781	3.57
MA	5	Federal Ethnicity	Multiple	25	22.92	10.40	0.881	3.59
MA	5	Federal Ethnicity	Pacific Islander	163	20.71	8.85	0.841	3.53
MA	5	Federal Ethnicity	White	--	--	--	--	--
MA	5	State Ethnicity	Black	--	--	--	--	--
MA	5	State Ethnicity	Chinese	--	--	--	--	--
MA	5	State Ethnicity	Filipino	--	--	--	--	--
MA	5	State Ethnicity	Japanese	--	--	--	--	--
MA	5	State Ethnicity	Multiple	--	--	--	--	--
MA	5	State Ethnicity	Native Hawaiian	195	20.57	8.54	0.828	3.54
MA	5	State Ethnicity	Other Pacific Islander	--	--	--	--	--
MA	5	State Ethnicity	Portuguese	--	--	--	--	--
MA	5	State Ethnicity	Samoan	--	--	--	--	--
MA	5	State Ethnicity	Tongan	--	--	--	--	--
MA	5	State Ethnicity	White	15	20.53	9.10	0.857	3.44
MA	6	Language Background	English	215	17.19	8.89	0.845	3.50
MA	6	Language Background	Hawaiian	15	18.00	10.29	0.877	3.61
MA	6	IEP	N	222	17.99	9.36	0.857	3.54
MA	6	IEP	Y	13	10.77	4.44	0.601	2.80

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
MA	6	Plan 504	N	--	--	--	--	--
MA	6	Plan 504	Y	--	--	--	--	--
MA	6	FRL	N	122	18.85	10.01	0.873	3.57
MA	6	FRL	Y	114	16.22	8.27	0.824	3.47
MA	6	Migrant	N	--	--	--	--	--
MA	6	Migrant	Y	--	--	--	--	--
MA	6	Gender	F	135	18.02	8.68	0.829	3.59
MA	6	Gender	M	100	17.01	10.09	0.884	3.44
MA	6	Federal Ethnicity	Asian	--	--	--	--	--
MA	6	Federal Ethnicity	Hispanic	51	17.59	7.86	0.794	3.57
MA	6	Federal Ethnicity	Multiple	30	20.97	11.17	0.89	3.71
MA	6	Federal Ethnicity	Pacific Islander	143	16.50	8.81	0.846	3.46
MA	6	Federal Ethnicity	White	--	--	--	--	--
MA	6	State Ethnicity	American Indian or Alaska Native	--	--	--	--	--
MA	6	State Ethnicity	Chinese	--	--	--	--	--
MA	6	State Ethnicity	Filipino	11	20.82	6.62	0.671	3.79
MA	6	State Ethnicity	Japanese	--	--	--	--	--
MA	6	State Ethnicity	Multiple	--	--	--	--	--
MA	6	State Ethnicity	Native Hawaiian	178	16.93	8.71	0.84	3.48
MA	6	State Ethnicity	Other Pacific Islander	--	--	--	--	--
MA	6	State Ethnicity	Portuguese	--	--	--	--	--
MA	6	State Ethnicity	Samoan	--	--	--	--	--
MA	6	State Ethnicity	White	12	20.75	14.36	0.934	3.69
MA	7	Language Background	English	126	13.84	6.79	0.783	3.16
MA	7	Language Background	Hawaiian	131	14.17	6.64	0.778	3.13
MA	7	IEP	N	127	14.44	6.94	0.787	3.20
MA	7	IEP	Y	17	9.71	2.62	-0.053	2.68
MA	7	Plan 504	N	--	--	--	--	--
MA	7	Plan 504	Y	--	--	--	--	--
MA	7	FRL	N	59	15.85	7.90	0.825	3.31
MA	7	FRL	Y	85	12.52	5.47	0.693	3.03
MA	7	Migrant	N	--	--	--	--	--
MA	7	Migrant	Y	--	--	--	--	--
MA	7	Gender	F	74	14.01	6.86	0.791	3.14
MA	7	Gender	M	70	13.74	6.68	0.774	3.17
MA	7	Federal Ethnicity	Hispanic	27	14.19	8.20	0.845	3.23
MA	7	Federal Ethnicity	Multiple	--	--	--	--	--
MA	7	Federal Ethnicity	Pacific Islander	100	13.15	5.47	0.679	3.10
MA	7	Federal Ethnicity	White	--	--	--	--	--
MA	7	State Ethnicity	Filipino	--	--	--	--	--
MA	7	State Ethnicity	Japanese	--	--	--	--	--
MA	7	State Ethnicity	Native Hawaiian	125	13.38	6.18	0.743	3.13
MA	7	State Ethnicity	Samoan	--	--	--	--	--
MA	7	State Ethnicity	White	--	--	--	--	--

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
MA	8	Language Background	English	157	13.73	5.90	0.74	3.01
MA	8	Language Background	Hawaiian	--	--	--	--	--
MA	8	IEP	N	154	13.83	6.01	0.748	3.01
MA	8	IEP	Y	12	11.75	2.18	-0.715	2.85
MA	8	Plan 504	N	--	--	--	--	--
MA	8	Plan 504	Y	--	--	--	--	--
MA	8	FRL	N	71	14.87	7.70	0.844	3.04
MA	8	FRL	Y	95	12.79	3.70	0.353	2.98
MA	8	Migrant	N	--	--	--	--	--
MA	8	Migrant	Y	--	--	--	--	--
MA	8	Gender	F	84	13.87	5.79	0.726	3.03
MA	8	Gender	M	82	13.49	5.91	0.749	2.96
MA	8	Federal Ethnicity	Asian	--	--	--	--	--
MA	8	Federal Ethnicity	Hispanic	35	14.00	5.41	0.69	3.01
MA	8	Federal Ethnicity	Multiple	--	--	--	--	--
MA	8	Federal Ethnicity	Pacific Islander	118	13.59	6.03	0.753	3.00
MA	8	State Ethnicity	Filipino	--	--	--	--	--
MA	8	State Ethnicity	Japanese	--	--	--	--	--
MA	8	State Ethnicity	Native Hawaiian	145	13.83	5.99	0.747	3.01
MA	8	State Ethnicity	Other Pacific Islander	--	--	--	--	--
MA	8	State Ethnicity	Portuguese	--	--	--	--	--
MA	8	State Ethnicity	White	--	--	--	--	--
SC	5	Language Background	English	232	22.60	9.48	0.846	3.72
SC	5	Language Background	Hawaiian	12	24.42	11.80	0.906	3.62
SC	5	IEP	N	229	23.49	9.43	0.842	3.75
SC	5	IEP	Y	16	11.94	3.73	0.391	2.91
SC	5	Plan 504	N	--	--	--	--	--
SC	5	Plan 504	Y	--	--	--	--	--
SC	5	FRL	N	120	25.04	10.07	0.854	3.85
SC	5	FRL	Y	126	20.46	8.59	0.83	3.54
SC	5	Migrant	N	--	--	--	--	--
SC	5	Migrant	Y	--	--	--	--	--
SC	5	Gender	F	126	25.43	9.47	0.836	3.84
SC	5	Gender	M	119	19.89	8.91	0.842	3.54
SC	5	Federal Ethnicity	Asian	--	--	--	--	--
SC	5	Federal Ethnicity	Hispanic	47	21.98	7.90	0.783	3.68
SC	5	Federal Ethnicity	Multiple	25	25.48	10.37	0.855	3.95
SC	5	Federal Ethnicity	Pacific Islander	164	22.15	9.92	0.866	3.63
SC	5	State Ethnicity	Black	--	--	--	--	--
SC	5	State Ethnicity	Chinese	--	--	--	--	--
SC	5	State Ethnicity	Filipino	--	--	--	--	--
SC	5	State Ethnicity	Japanese	--	--	--	--	--
SC	5	State Ethnicity	Multiple	--	--	--	--	--
SC	5	State Ethnicity	Native Hawaiian	196	22.29	9.57	0.856	3.63

Subject	Grade	Category	Group	Valid n	Raw Score Mean	Raw Score SD	Cronbach's alpha	SEM
SC	5	State Ethnicity	Other Pacific Islander	--	--	--	--	--
SC	5	State Ethnicity	Portuguese	--	--	--	--	--
SC	5	State Ethnicity	Samoan	--	--	--	--	--
SC	5	State Ethnicity	Tongan	--	--	--	--	--
SC	5	State Ethnicity	White	15	22.73	6.87	0.663	3.99
SC	8	Language Background	English	--	--	--	--	--
SC	8	Language Background	Hawaiian	--	--	--	--	--
SC	8	IEP	N	153	15.26	7.74	0.816	3.32
SC	8	IEP	Y	12	10.75	4.62	0.613	2.87
SC	8	Plan 504	N	--	--	--	--	--
SC	8	Plan 504	Y	--	--	--	--	--
SC	8	FRL	N	70	16.44	8.66	0.84	3.46
SC	8	FRL	Y	95	13.82	6.61	0.773	3.15
SC	8	Migrant	N	--	--	--	--	--
SC	8	Migrant	Y	--	--	--	--	--
SC	8	Gender	F	84	17.18	7.87	0.811	3.42
SC	8	Gender	M	81	12.60	6.67	0.791	3.05
SC	8	Federal Ethnicity	Asian	--	--	--	--	--
SC	8	Federal Ethnicity	Hispanic	35	14.43	7.16	0.796	3.23
SC	8	Federal Ethnicity	Multiple	--	--	--	--	--
SC	8	Federal Ethnicity	Pacific Islander	117	14.92	7.84	0.822	3.31
SC	8	State Ethnicity	Filipino	--	--	--	--	--
SC	8	State Ethnicity	Japanese	--	--	--	--	--
SC	8	State Ethnicity	Native Hawaiian	144	14.96	7.74	0.817	3.31
SC	8	State Ethnicity	Portuguese	--	--	--	--	--
SC	8	State Ethnicity	White	--	--	--	--	--

**Any group <10 was removed from the report. If only one category met this rule then the redacted number is easily calculated from other categories in the demographic group. In that case, the category with the next fewest members was also removed.*

Statistics were also computed for all the subscales (Table 9.3). These alpha values generally ranged between .6 to .9, which exceeded the general guidance of .50 set for by the USDOE Institute for Education Sciences (WWC, 2020). The exceptions are noted in bold below including C3 in grades 3 and 4 mathematics, C2_C4 in grades 7 & 8 mathematics, Ka ʻŌlelo in grade 6 HLA Ke Kākau in grades 6, 7 & 8 HLA, and ʻO Ko Luna in grade 8 science. The reason for these low values might be attributed to a small number of items (between 6 and 14), range restriction, or to items that might be reducing reliability. The psychometric team identified items that could be removed in future administrations to improve reliability and will work with the UH team to add items to claims and domains. In addition, education disruptions related to the Covid pandemic contributed to decreases in overall scores and subscores on KĀʻEO. This in turn produced range restriction in the subscores that impacted reliability. These values will also be monitored in future years as schools move forward from the pandemic's impacts.

Table 9.3: Reliability by Subscale

subject	grade	Subscale	Total Possible Points	Raw Score Mean	Raw Score SD	Cronbach's Alpha	Items to review
HLA	3	Ka Heluhelu	22	7.74	4.06	0.76	
HLA	3	Ka ʻŌlelo	12	5.18	2.64	0.74	
HLA	3	Ke Kākau	22	7.17	4.11	0.71	
HLA	3	Ke Mele/ Oli	12	5.13	2.65	0.73	
HLA	4	Ka Heluhelu	27	9.61	4.84	0.76	
HLA	4	Ka ʻŌlelo	8	4.59	2.03	0.70	
HLA	4	Ke Kākau	22	5.79	2.31	0.71	
HLA	4	Ke Mele/ Oli	9	7.97	3.73	0.65	
HLA	5	Ka Heluhelu	26	8.99	5.10	0.80	
HLA	5	Ka ʻŌlelo	9	4.89	2.29	0.69	
HLA	5	Ke Kākau	24	3.99	2.08	0.62	
HLA	5	Ke Mele/ Oli	9	8.93	4.55	0.67	
HLA	6	Ka Heluhelu	26	8.39	4.07	0.71	
HLA	**6**	**Ka ʻŌlelo**	**6**	**2.90**	**1.67**	**0.39**	**1566 Item will be monitored**
HLA	**6**	**Ke Kākau**	**31**	**4.16**	**2.02**	**0.42**	**660 Item will be monitored**
HLA	6	Ke Mele/ Oli	9	11.53	5.88	0.76	
HLA	7	Ka Heluhelu	31	7.53	4.76	0.78	
HLA	7	Ka ʻŌlelo	7	2.79	1.71	0.60	
HLA	7	Ke Kākau	30	11.09	5.68	0.77	
HLA	**7**	**Ke Mele/ Oli**	**9**	**4.19**	**1.86**	**0.43**	**Subscale will be monitored**
HLA	8	Ka Heluhelu	28	8.74	5.25	0.81	
HLA	8	Ka ʻŌlelo	6	4.41	1.62	0.69	
HLA	8	Ke Kākau	33	10.30	5.73	0.75	
HLA	**8**	**Ke Mele/ Oli**	**6**	**2.99**	**1.26**	**0.40**	**913 Item will be monitored**
MA	3	C1	28	14.51	4.43	0.75	
MA	3	C2_C4	16	5.26	2.93	0.69	
MA	**3**	**C3**	**14**	**2.58**	**1.77**	**0.48**	**223 Item will be monitored**
MA	4	C1	27	10.08	4.19	0.72	
MA	4	C2_C4	18	5.63	2.81	0.65	
MA	**4**	**C3**	**15**	**5.44**	**2.33**	**0.40**	**265 Item will be replaced on 2023 form**
MA	5	C1	30	11.62	4.67	0.74	
MA	5	C2_C4	20	5.22	3.01	0.60	
MA	5	C3	16	4.13	2.67	0.55	
MA	6	C1	27	7.70	3.99	0.72	
MA	6	C2_C4	22	4.89	2.95	0.61	

subject	grade	Subscale	Total Possible Points	Raw Score Mean	Raw Score SD	Cronbach's Alpha	Items to review
MA	6	C3	22	4.98	3.51	0.64	
MA	7	C1	29	7.37	3.39	0.57	
MA	**7**	**C2_C4**	**20**	**4.44**	**2.39**	**0.45**	**486 Item will be replaced on the 2023 form**
MA	7	C3	14	2.08	2.05	0.55	
MA	8	C1	28	7.16	3.29	0.57	
MA	**8**	**C2_C4**	**22**	**3.76**	**2.08**	**0.37**	**544 Item will be replaced**
MA	8	C3	13	2.76	1.87	0.56	
SC	5	'O Ko Lalo	45	15.95	6.59	0.78	
SC	5	'O Ko Luna	19	6.74	3.65	0.67	
SC	8	'O Ko Halawai	14	3.56	2.29	0.50	
SC	8	'O Ko Lalo	39	9.87	5.25	0.74	
SC	**8**	**'O Ko Luna**	**13**	**1.50**	**1.18**	**0.18**	**1205 Item has be replaced on 2023 form**

9.2. Rasch Statistics

The psychometric team also considered the reliability of the assessments using the Rasch data. The Rasch modeling statistic called the separation index provides reliability information in standard error units. If the instrument has good person separation (i.e., above a 2.0), then it is highly likely the instrument is sufficiently sensitive to differentiate students (Linacre, 2012). For these assessments, model person separation ranged from 1.33 to 3.16 (Table 9.6), suggesting that in general, the assessments are reliably measuring student ability. However, there are 4 assessments that the UH content development team will focus on building assessment items to improve separation (mathematics in grades 7, and 8 math and grade 8 science). The content development team has been successful in improving separation indices for these grade levels which increased notably from the 2018 field test (on average separation statistics improved by .3 across the grades 5-8 assessments). In addition, the assessments' alpha values range between .64 and .90 and in general exceeded the criteria of .8 (Linacre, 2012). With the exception of the three tests noted above, these statistics indicate good overall test reliability.

In addition, researchers examined the item summary statistics, which provide an indication that there was a sufficient range of item difficulties. Model item reliability statistics were between .89 and .99 with separation values between 3.87 and 7.71 (Table 9.4). General criteria suggest that item reliability values below .9 and separation values below 3 might be indicative of the sample size being too small to confirm item difficulties. Good separation indicates that there are sufficient items and students to confirm the Rasch model. Grades 6, 7 & 8 HLA, all grades in math and all grades in science did not meet the criteria for item separation or item reliability. In particular, grades 7 and 8 math were low and decreased from 2019. These decreases could relate to score range restriction due to the pandemic disruptions and will be monitored in future years. For all tests that did not meet the criteria, items will be adjusted to improve range restriction and reliability. For example, in discussions with our

TAC, they suggested that range restriction was a potential cause of low reliability. Therefore, in math grades 7-8 and grade 8 science, 5-7 items were identified as being very difficult and were replaced by items with higher p-values for the 2023 operational assessment.

Table 9.4: Rasch Reliability Statistics

Subject	Grade	Person Separation	Person Reliability	Item Separation	Item Reliability
Criteria		Above 2	Above 0.8	Above 3	Above 0.9
HL	3	3.06	0.90	7.71	0.98
HL	4	2.91	0.89	7.20	0.98
HL	5	3.16	0.91	6.57	0.98
HL	6	2.95	0.90	7.01	0.98
HL	7	3.01	0.90	5.56	0.97
HL	8	3.03	0.90	6.27	0.98
MA	3	2.40	0.85	9.20	0.99
MA	4	2.14	0.82	6.61	0.98
MA	5	2.10	0.82	5.47	0.97
MA	6	2.01	0.80	5.06	0.96
MA	7	**1.62**	**0.72**	3.87	0.89
MA	8	**1.33**	**0.64**	4.07	0.94
SC	5	2.40	0.85	5.84	0.97
SC	8	**1.90**	**0.78**	4.25	0.95

9.3. Precision of Student Performance Score

These analyses examine the degree to which the assessment provides an adequate estimate of student achievement for the range of students taking the test (e.g., high achieving, low achieving). This includes examining the test information function (TIF) which provides important test information associated with students' scores, and the conditional standard error of measurement (CSEM) across students' scores.

9.4. Standard Errors

All tests have some degree of error which results in students scoring higher or lower than their "true ability." This error can result from numerous factors such as a student feeling ill on the test day or misunderstanding a test item. These factors are generally termed "measurement error." Tests should have low overall measurement error in order to generate accurate and reliable estimates of student ability. Researchers generated standard error of measurement (SEM) statistics associated with each scale score point (Appendix H: Standard Error Statistics). These values inform the team about the accuracy of the scale scores. For example, smaller standard errors would be expected at the middle of the distribution with higher values at the extremes. The SEM values provide an indication of how accurate the student's score is in relationship to his/her ability. An SEM value of 1 at a score of 50 would indicate that test developers are 68% sure that the student's true ability is between 49 and 51. This is of particular importance when applying cut scores, such as when we are assessing a student to be 'proficient.'

The importance of SEMs is that they should be lower at key points across the distribution of scores. This means that a criterion-referenced testing program should typically have smaller SEMs around the cut scores. For the 2022 assessment, the SEMs ranged from 13 to 29 (Table 9.5).

Table 9.5: Standard Errors at the Cut Points

Subject	Grade	Level 2 SE	Level 3 SE	Level 4 SE
HLA	3	14	14	20
HLA	4	16	15	21
HLA	5	14	14	14
HLA	6	14	14	14
HLA	7	17	16	15
HLA	8	14	13	13
MA	3	14	13	13
MA	4	20	19	20
MA	5	23	19	19
MA	6	22	18	17
MA	7	29	26	25
MA	8	26	23	23
SC	5	N/A	17	N/A
SC	8	22	20	18

9.5. Test Information Function (TIF)

The research team generated Test Information Functions (TIF). These analyses provide data about the information provided by the test across the range of scores (i.e., measure). The important considerations when examining TIF results are not necessarily the values but the shape of the distribution, in that each curve should peak at key points in the distribution (Linacre, 2012). In this case, the peaks should be approximately at the point where the proficiency cut score is located. The TIF graphs show that for each of these tests, the peak is approximately located at the cut score between level 2 and 3 (i.e., proficiency) (Appendix I).

9.6. Classification Consistency and Classification Accuracy

Student scores from educational assessments are estimates of student ability in the measured domain. These estimates include some random variations, referred to as measure error. Measurement error can lead to errors when student scores are used to classify students into performance levels. For example, a student's true ability may be such that he or she belongs in the Kelakela performance level, but due to measurement error, his or her test score may be below the minimum score needed to be classified as Kelakela. As a result, the student is classified into a lower performance level.

Two measures are commonly used to assess the degree to which measurement error influences student classifications into performance levels. Classification consistency is a measure of how consistently students are classified into performance levels from two independent administrations of the same test or from two parallel forms. Classification accuracy is a measure of agreement between the classification based on students' true scores (a theoretical score without measurement error) and the classification based on students' observed scores (the score on the test).

Repeated administrations of the same test or administration of parallel forms are costly and burdensome. Classification consistency, therefore, is typically estimated from a single administration of a test. Similarly, a student's true score is unobservable, so classification accuracy is also estimated from a single administration of a test.

Analysis examined consistency and accuracy for the four KĀʻEO performance levels Hoʻomaka, Holomua, Mākaukau, Kelakela and for a dichotomous split between Holomua and Mākaukau.

9.6.1. Method

Classification consistency and classification accuracy were estimated for all grade levels and content areas for the 2022 operational KĀʻEO assessments using the BB-CLASS computer software (Brennan, 2004). Estimates for consistency and accuracy were estimated using the Livingston and Lewis (1995) procedures in BB-CLASS, because the assessments included polytomous items. Classification consistency and classification accuracy were estimated using the four-parameter beta distribution, because Livingston and Lewis (1995) focused their procedure on this distribution.

For each student, BB-CLASS calculates the expected score based on the analytic model. Across the entire sample, expected scores are compared to actual scores in a cross-classification table. Students whose expected and actual performance levels agree are considered accurately classified. With four performance levels, this means that the analysis fills in a 4 by 4 matrix of expected and actual scores (see Table 9.6as an example).

Table 9.6: Example of cross-classification table using four performance levels

	Expected Kelakela	Expected Mākaukau	Expected Holomua	Expected Hoʻomaka
Actual Kelakela	Accurate			
Actual Mākaukau		Accurate		
Actual Holomua			Accurate	
Actual Hoʻomaka				Accurate

From the cross-classification table, BB-CLASS calculates the following indexes of consistency: proportion of consistent decisions, chance proportion of consistent decisions (the proportion of consistent decisions that can be expected to occur by chance), kappa (an index of agreement), and the probability of misclassification. For classification accuracy, BB-CLASS provides the following indices: the probability of correct classification, the false positive rate (the percentage of students classified in a performance level higher than expected by their true score), and the false negative rate (the percentage of students classified in a performance level lower than expected by their true score). For ease of interpretation, proportions and probabilities are converted to percentages in the tables below. BB-CLASS also provides two checks that the analytic procedure is functioning. Chi-square values are used to evaluate model fit.

9.6.2. Results

All the analyses ran well and checks of function and fit were well within expected values (

Table 9.7). The sum of bivariate probabilities should be 1.00 or very close to 1.00. The chi-square values should not be overly large relative to their degrees of freedom (df). These values are the same for the analysis of four performance levels and the analysis of the proficient/non-proficient split.

Table 9.7: Checks of Functioning and Fit with four performance levels

Subject	Grade	Sum of bivariate probabilities	Likelihood Ratio		Pearson	
			Chi-Square	Degrees of freedom	Chi-Square	Degrees of freedom
HLA	3	1.00	153.72	71	117.90	71
HLA	4	1.00	100.46	69	86.56	69
HLA	5	1.00	68.87	59	91.51	59
HLA	6	1.00	75.41	76	83.56	76
HLA	7	1.00	61.34	68	72.30	68
HLA	8	1.00	73.46	72	73.09	72
MA	3	1.00	265.15	81	202.70	81
MA	4	1.00	110.59	62	83.04	61
MA	5	1.00	71.83	65	58.48	65
MA	6	1.00	91.57	70	81.11	70
MA	7	1.00	64.63	63	52.72	63
MA	8	1.00	78.28	68	72.28	68
SC	5	1.00	41.08	59	38.75	59
SC	8	1.00	36.07	61	37.38	61

For analysis on four performance levels, classification consistency and accuracy results were reasonable given the small sample size and the number of cells within the cross-classification matrix (Table 9.8 and **Error! Reference source not found.**The proportion of consistent decisions ranged from 44.68% for grade 8 mathematics to 89.46% for grade 4 Hawaiian Language Arts (HLA). Quite consistently, the proportion of consistent decisions was higher for HLA than for mathematics. And generally, the proportion of consistent decisions was higher in the lower grade levels. The same was true for the probability of misclassification. Kappa values ranged from .22 for grade 7 mathematics to .65 for grade 3 HLA.

Table 9.8: Classification Consistency Results for four performance levels

Subject	Grade	Proportion of consistent decisions	Chance proportion of consistent decisions	Kappa	Probability of misclassification
HLA	3	78.48%	39.41%	0.645	21.52%
HLA	4	89.46%	64.76%	0.701	10.54%
HLA	5	69.30%	29.60%	0.564	30.70%
HLA	6	69.56%	31.99%	0.552	30.44%
HLA	7	66.51%	26.34%	0.545	33.49%
HLA	8	75.55%	33.77%	0.631	24.45%
MA	3	62.63%	31.28%	0.456	37.37%
MA	4	66.01%	34.93%	0.478	33.99%
MA	5	60.00%	29.70%	0.431	40.02%
MA	6	64.17%	33.54%	0.461	35.83%
MA	7	51.42%	29.73%	0.309	48.58%
MA	8	47.68%	31.01%	0.227	53.32%
SC	8	61.13%	29.91%	0.445	38.87%

Note. Grade 5 science is not included in analysis because in 2022 there was only a preliminary cut score for the non-proficient/proficient split.

The results for classification accuracy mirrored those for consistency. Grade 7 mathematics had the lowest probability of correct classification (54.07%) and grade 4 HLA had the highest (92.61%). The same was true for the false positive rate: grade 7 mathematics was 25.16%, and grade 4 HLA was 4.32%. The lowest false negative rate was for grade 4 HLA (3.07%), but the highest was for grade 8 M (32.26%). In general, correct classification and false positive rates were better for HLA than for mathematics, but the false negative rates tended to be better for mathematics than for HLA.

Table 9.9: Classification Accuracy Results for four performance levels

Subject	Grade	Probability of correct classification	False positive rate	False negative rate
HLA	3	84.58%	8.67%	7.06%
HLA	4	92.61%	4.32%	3.07%
HLA	5	76.91%	12.38%	10.72%
HLA	6	77.23%	11.97%	10.80%
HLA	7	75.10%	13.04%	11.86%
HLA	8	81.18%	9.82%	8.90%
MA	3	72.75%	14.41%	12.82%
MA	4	74.926	15.18%	9.87%
MA	5	69.92%	18.01%	12.06%
MA	6	74.14%	15.92%	9.94%
MA	7	61.12%	25.16%	13.72%3
MA	8	54.07%	13.66%	32.26%
SC	8	70.31%	16.86%	12.84%

Note. Grade 5 science is not included in analysis because in 2022 there was only a preliminary cut score for the non-proficient/proficient split.

Analyses were also conducted to estimate classification consistency and accuracy using a proficient/non-proficient split (Table 9.10 and Table 9.11). This split was between the Mākaukau and the Hoʻomaka performance levels. As expected, consistency and accuracy were much higher than those for the classification into four categories.

In terms of consistency, the proportion of consistent decisions ranged from 84.27% for grade 7 MA to 95.45% for grade 3 HLA. Probability of misclassification was lowest for grade 3 HLA (8.55%) and highest for grade 8 mathematics (23.72%). Across the tests, results for consistency were mixed but the mathematics tests tended to be slightly more consistent than the HLA tests when classifying students as either proficient or not proficient.

Table 9.10: Classification Consistency Results for a proficient/non-proficient split

Subject	Grade	Proportion of consistent decisions	Chance proportion of consistent decisions	Kappa	Probability of misclassification
HLA	3	91.45%	67.27%	.7388	8.55%
HLA	4	89.26%	62.32%	.715	10.74%
HLA	5	88.00%	51.73%	.751	12.00%
HLA	6	86.94%	51.69%	0.729	13.07%
HLA	7	86.53%	50.24%	0.729	13.47%
HLA	8	88.91%	52.84	0.764	11.09%
MA	3	85.57%	52.55%	0.696	14.43%
MA	4	90.43%	70.01%	0.680	9.57%
MA	5	88.43%	59.00%	0.718	11.57
MA	6	90.96%	66.50%	0.730	9.04%
MA	7	84.27%	58.76%	0.619	15.73%
MA	8	76.28%	57.78%	0.438	23.72%
SC	5	90.50%	74.15%	0632	9.50%
SC	8	86.01%	54.90%	0.690	13.99%

Results for accuracy were also somewhat mixed across all 14 tests, but as with consistency, the mathematics tended to be slightly more accurate than the HLA tests when classifying students as either proficient or not proficient. The probability of correct classification was lowest for grade 8 mathematics (83.89) and highest for grade 3 HLA (93.96%). The false positive rate ranged from 3.45% for Grade 3 HLA to 13.27% for grade 8 mathematics. The false negative rate was lowest for grade 6 mathematics (2.46%) and highest for grade 8 science (4.36%).

Table 9.11: Classification Accuracy Results for a proficient/non-proficient split

Subject	Grade	Probability of correct classification	False positive rate	False negative rate
HLA	3	93.96%	3.45%	2.60%
HLA	4	92.39%	4.35%	3.27%
HLA	5	91.48%	4.56%	3.97%
HLA	6	90.70%	4.94%	4.36%
HLA	7	90.39%	5.29%	4.32%
HLA	8	92.10%	4.50%	3.42%
MA	3	89.70%	6.12%	4.18%
MA	4	93.32%	3.94%	2.74%
MA	5	91.84%	4.68%	3.47%
MA	6	93.59%	3.95%	2.46%
MA	7	89.04%	7.32%	3.64%
MA	8	83.89%	13.27%	2.84%
SC	5	93.21%	4.21%	2.58%
SC	8	90.13%	5.51%	4.36%

9.6.2.1 Classification Consistency by subgroup

Classification Consistency and classification accuracy were estimated for student subgroups for all of the operational assessments. Analyses were restricted to subgroups with at least 30 students for the dichotomous split between proficient and non-proficient. Results are summarized in terms of the probability of correct classifications (accuracy) and proportion of consistent decisions (consistency). See Table 9.12 through Table 9.17).

Table 9.12: Subgroup Classification Consistency: Grade 3

Category	HLA			Math		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	162	93.3%	90.6%	161	89.4%	85.3%
Male	149	94.5%	92.1%	148	91.2%	87.6%
FRL eligible	149	95.2%	93.2%	147	91.4%	87.9%
FRL not eligible	162	93.1%	90.3%	162	91.4%	87.9%
IEP -N	301	94.0%	91.5%	299	89.8%	85.7%
504 - N	306	94.1%	91.7%	304	89.8%	85.7%
Migrant - N	307	94.0%	91.5%	305	89.7%	85.7%
Language Background - English	280	94.4%	92.0%	279	89.9%	85.8%
Federal Ethnicity -Pacific Islander	194	94.2%	91.7%	192	86.5%	86.1%
Federal Ethnicity - Multiple	42	94.4%	91.9%	42	90.8%	87.1%
Federal Ethnicity - Hispanic	67	93.3%	90.6%	67	90.0%	85.9%
State Ethnicity – Native Hawaiian	246	93.4%	90.7%	244	89.9%	85.8%

Table 9.13: Subgroup Classification Consistency: Grade 4

Category	HLA			Math		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	165	92.6%	89.6%	165	93.6%	90.7%
Male	117	93.4%	90.7%	116	93.6%	90.8%
FRL eligible	145	95.0%	92.9%	144	96.3%	94.4%
FRL not eligible	137	90.6%	86.8%	137	90.8%	86.9%
IEP -N	269	92.3%	89.1%	268	93.2%	90.3%
504 - N	275	92.3%	89.2%	274	93.5%	90.1%
Migrant - N	279	92.4%	89.4$	278	93.4%	90.5%
Language Background - English	261	93.2%	90.4%	260	93.3 %	90.4%
Federal Ethnicity – Pacific Islander	182	92.9%	90.0%	182	93.9%	91.1%
Federal Ethnicity - Multiple	34	91.4%	87.9%	34	90.4%	86.3%
Federal Ethnicity - Hispanic	60	92.5%	89.5%	59	93.3%	90.4%
State Ethnicity – Native Hawaiian	230	92.8%	89.8%	229	93.6%	90.9%

Table 9.14: Subgroup Classification Consistency: Grade 5

Category	HLA			Math			Science		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	126	91.0%	87.3%	126	89.8%	85.7%	126	91.9%	88.6%
Male	118	92.1%	88.9%	119	92.2%	89.9%	119	95.9%	94.1%
FRL eligible	125	93.0%	90.1%	126	94.1%	91.6%	126	95.7%	93.9%
FRL not eligible	119	90.5%	86.6%	119	88.9%	84.3%	120	91.9%	88.7%
IEP -N	228	91.2%	87.6%	229	90.0%	86.0%	229	93.1%	90.3%
504 - N	238	91.2%	87.6%	239	90.7%	86.9%	239	93.4%	90.8%
Migrant - N	240	91.3%	87.7%	241	90.7%	86.9%	241	93.6%	91.0%
Language Background - English	231	91.4%	87.9%	232	91.0%	87.3%	232	93.4%	91.4%
Federal Ethnicity – Pacific Islander	163	91.4%	88.0%	161	90.9%	87.1%	164	93.5%	90.1%
Federal Ethnicity - Hispanic	47	92.8%	89.8%	47	92.9%	90.0%	47	94.9%	93.0%
State Ethnicity – Native Hawaiian	195	91.5%	88.1%	196	91.0%	87.2%	196	93.6%	91.0%

Table 9.15: Subgroup Classification Consistency: Grade 6

Category	HLA			Math		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	146	89.9%	85.8%	146	94.6%	92.3%
Male	104	92.1%	88.9%	104	95.1%	93.0%
FRL eligible	122	91.7%	88.3%	122	96.1%	94.5%
FRL not eligible	128	89.8%	85.7%	128	93.1%	90.3%
IEP -N	237	90.2%	86.3%	237	94.2%	91.9%
504 - N	243	90.3%	86.4%	243	94.1%	91.7%
Migrant - N	246	90.3%	86.4%	246	92.3%	92.1%
Language Background - English	230	90.6%	86.8%	230	94.7%	92.5%
Federal Ethnicity - Pacific Islander	153	90.5%	86.8%	152	95.8%	94.0%
Federal Ethnicity - Multiple	32	91.2%	87.6%	32	92.1%	88.9%
Federal Ethnicity - Hispanic	53	92.0%	88.7%	53	93.2%	90.7%
State Ethnicity – Native Hawaiian	190	90.4%	86.6%	189	95.2$	93.2%

Table 9.16: Subgroup Classification Consistency: Grade 7

Category	HLA			Math		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	76	90.7%	86.9%	77	89.2%	84.6%
Male	71	92.1%	88.9%	72	90.1%	86.4%
FRL eligible	88	91.0%	87.4%	88	92.9%	89.8%
FRL not eligible	59	90.1%	84.1%	61	85.9%	79.5%
IEP -N	129	90.6%	86.8%	131	88.4%	83.2%
504 - N	140	90.1%	87.0%	142	89.7%	84.9%
Migrant - N	144	90.9%	87.3%	146	89.6%	84.8%
Language Background - English	129	91.1%	87.5%	131	89.8%	85.1%
Federal Ethnicity - Pacific Islander	104	91.0%	87.3%	105	90.3%	86.2%
State Ethnicity – Native Hawaiian	128	91.1%	87.6%	129	91.1%	86.9%

Table 9.17: Subgroup Classification Consistency: Grade 8

Category	HLA			Math			Science		
	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions	n	Probability of correct classification	Proportion of consistent decisions
Female	83	90.8%	87.1%	85	77.8%	70.0%	85	86.5%	81.1%
Male	83	93.6%	91.1%	84	87.4%	80.2%	83	94.0%	91.3%
FRL eligible	95	92.3%	89.1%	97	88.0%	83.2%	96	91.7%	88.0%
FRL not eligible	71	90.7%	87.1%	72	88.0%	83.2	72	87.1%	82.0%
IEP – N	154	91.1%	87.5%	157	83.3%	76.0%	156	87.1%	82.0%
504 - N	157	91.5%	87.5%	160	82.7%	74.9%	159	88.6%	83.9%
Migrant - N	163	91.5%	88.1%	166	83.5%	75.8&	165	90.0%	84.4%
Language Background - English	159	91.7%	88.4%	160	83.8%	76.2%	159	89.0%	84.5%
Federal Ethnicity - Pacific Islander	119	91.3%	87.9%	121	82.4%	74.9%	120	89.5%	58.1%
Federal Ethnicity - Hispanic	34	91.8%	88.6%	35	84.1%	74.2%	35	88.3%	83.8%
State Ethnicity – Native Hawaiian	146	91.2%	87.7%	148	82.8%	75.2%	147	89.1%	84.7%

9.6.3. Conclusions

In general, the classification consistency and accuracy of the KĀʻEO for all students using the four performance levels was reasonable and as expected given the number of performance levels and sample size. Classification accuracy was good for the proficient/non-proficient split. All but three tests had a probability of correct classification above 90%, and no test had a false negative rate over 5%.

Chapter 10: Fairness

Tests that impinge on the rights and life chances of individuals are inherently disputable. (Cronbach, 1988, p. 6).

10.1. Fairness and Accessibility

Fairness and accessibility of the assessment are a critical consideration of any testing program. The Standards for Educational and Psychological Testing emphasize the importance of tests minimizing construct irrelevant variance for all groups of students to allow for valid interpretations to be made from the test scores (AERA/APA/NCME, 2014). Building evidence in support of fairness includes statistical analysis of item functioning for different groups of students (e.g., Differential Item Functioning) and understanding how students are thinking about the items (e.g., cognitive interviews).

The testing program analyzed operational test data fairness as defined by AERA/APA/NCME (2014):

> **Standard 3.0** All steps in the testing process, including test design, validation, development, administration, and scoring procedures, should be designed in such a manner as to minimize construct-irrelevant variance and to promote valid score interpretations for the intended uses for all examinees in the intended population (p. 63).

For the Kaiapuni Assessment of Educational Outcomes (KĀʻEO), fairness and accessibility were an integral part of the development process. An important factor for this assessment was language. Language is the marker of identity, and has a vision of the past, present and future: "Language not only transmits visions of the past but also expressions of social relationships, individual friendships as well as community knowledge, a wealth of organizing experiences, rules about social relationships plus ideas about art, craft, science, poetry, song, life, death and language itself." (Baker, 2011, p.45) Learning what Skutnabb-Kangas (2009) terms a mother-tongue language, such as the Hawaiian language, is an act of reconnecting with ancestors, understanding one's current place in the world as indigenous peoples, and imagining the future of our language, culture, and community through a Hawaiian-language lens. These benefits and rights have been confirmed by the UN Declaration on the Rights of Indigenous Peoples (2008).

The language diversity of the Kaiapuni students represents a range based on their home language and time of entry into the Kaiapuni system. However, all students in 3rd and 4th grade are educated exclusively in Hawaiian. The language acquisition of emerging bilingual students presents a challenge to test development but also an opportunity to explore ways to more appropriately engage and assess students. Research has shown that emerging bilinguals possess "cognitive and linguistic practices that differ from monolinguals" (Menken, Hudson, & Leung, 2014, p. 602) and that these traits and differences should be examined and evaluated independently in order to best understand their unique characteristics (Menken, et al., 2014; Mislevy & Duran, 2014). Further, Solano-Flores & Trumbull (2003) state that these specific and unique mental processes of bilingual students should be a foremost concern in test development to ensure students are interpreting the items as intended. In addition, research suggests that myriad problems can arise when students are taught in one academic

language and tested in another. Therefore, a correspondence should exist between the language of assessment and the language of instruction (Abedi et al., 2004; Keiffer et al., 2009).

Accessibility for students with disabilities as well as students with varied Hawaiian language fluency is also a key factor in the development of the KĀʻEO. Assessment programs can often include items that are composed of complicated text and syntax. Through language and sentence modification, the assessment content can be made more accessible to students (Abedi, Hofstetter, & Lord, 2004). For example, research shows specific language modifications, such as reducing low frequency vocabulary and the use of the passive voice can improve scores for low and average ELL students (Abedi, Hofstetter, & Lord, 2004; Cavanaugh, 2008). This is one of the more effective modifications for emerging bilingual students. There is also little evidence that simplifying or modifying assessment language was a threat to validity (Keiffer et al., 2009). It is important to identify factors that may threaten validity, including students' level of language proficiency, differences in dialect, and differences in the school location if there are geographic differences based on the island students live on.

In addition, it is imperative that students with disabilities have opportunities to fully participate in the assessment. The KĀʻEO specifies accommodations for students with disabilities that mirror those used by the HIDOE for their statewide assessment programs. Students with a range of disabilities were considered when developing research focused on fairness and accessibility. Fairness and accessibility are monitored by the assessment program in several ways:

- Documentation of item writing and review: The KĀʻEO development included training in how to evaluate items for potential bias in order to explicitly support and guide educators who wrote and reviewed items. "Teachers can bring important information to the table concerning items and identifying potential sources of cultural and linguistic bias" (Trumbull & Solano Flores, 2011). This is most effective when teachers are trained specifically on what to look for with regard to bias, students with disabilities, and language. These aspects were included in item writing and review training. The training will continue to be revised as we understand more about the items through the validity studies (e.g., cognitive interview, alignment studies). (see section 13.7 for additional information).
- Cognitive Interviews: Items are included on an ongoing basis in the assessment programs' cognitive testing analyses to evaluate differences in cognitive processes required by a subset of items. Based on the focus of the interviews, a variety of items are used and students are sampled based on different factors (e.g., different levels of Hawaiian language background, achievement levels) (see Cognitive Interview Chapter 8 in the 2016 and Chapter 10 in the 2018 Technical Reports). These cognitive interviews explore the thought processes that students use to solve complex problems and tasks that comprise the KĀʻEO. Cognitive interviews were conducted with students in 2015, 2016, and 2018. Cognitive interviews were not conducted in 2017 due to increased levels of item development for grades 5-8. In 2018, cognitive interviews were conducted in grades 5-8 and will resume when schools are reopened to visitors post Covid-19.

10.2. Differential Item Functioning

The testing program conducted Differential Item Functioning (DIF) analyses to examine the degree to which individual items might have differential response patterns between demographic groups (e.g., boys versus girls). If a pattern emerged, items were examined for potential bias.

The sample size for the tests were notably low relative to statewide accountability assessments. Using Winsteps did allow the psychometric team to conduct DIF, and research supports the use of DIF for instruments of moderate length with the given sample size (Scott, Fayers, Aaronson, Bottomley, de Graeff, Groenvold, Gundy, Koller, Petersen, Sprangers, 2009). However, given the small sample size, the KĀʻEO Assessment Team focused on running DIF on only the gender and free or reduced-price lunch status subgroups, which were fairly balanced in terms of numbers of students. Other subgroups were considered but due to the imbalance across the subgroups, the research team deemed that there were insufficient data (i.e., in 2016, approximately 97% of students were not on an IEP or 504 plan, only 1% were migrant, and 85% of students were Hawaiian or Pacific Islander).

DIF was conducted in the Winsteps program using the Mantel-Haenszel (MH) procedure and a DIF contrast (Linacre 2012). Appendix I provides the Winsteps DIF outputs. The MH procedure calculates the odds that two groups of students who are at the same level of achievement will answer the item correctly. The MH procedure can accommodate polytomous responses and the Winsteps procedures are robust for missing data. However, in the Rasch model, MH can over identify items with DIF and statistical methods should not be used with small sample sizes. Linacre (2012) proposed that the preferable method for identifying DIF is by using the contrast method. The DIF contrast conducted in Winsteps compares the difference between the average measure score for the two groups of interest.

For the current DIF study, the team conducted the analyses for each of the grade and content level tests (Table 10.1). Items were flagged for potential DIF if the DIF contrast exceeded .64 (Linacre, 2012). items were flagged as having a contrast greater than .64 or less than -.64.

Any item flagged was reviewed by the UH team with the goal of understanding any context or wording issues that may have caused the differences. Across the items, the team was unable to identify any reasons for the DIF. Several items that were flagged for DIF also had been reviewed during the Rasch and Classical Test Theory analyses and, as part of that process, were identified as candidates to be removed in future administrations

Table 10.1: DIF Items and Review Results

Subject	Grade	Item Harder for Students eligible for FRL	Items Harder for Students not eligible for FRL	Item Harder for Girls	Items Harder for Boys
HLA	3	--	--	--	383, 1478
HLA	4	23, 36, 57, 46	16, 49, **1017**	27	25, **56**, **63**
HLA	5		708, 706	644, 721	1215, **730**
HLA	6	1985	691, 674, 694, 663, 1496	1567, 687, 674, 1496	1983, 683
HLA	7	**1118**, 888, **886**, 1178, 806, 879, **876**	784, 803, 903, **869**, **870**, **834**, 902, 1104, 822	**887**, 869, 870, 884, 822	774, 1502, 777, **891**, 1773
HLA	8	**810**, 906, 1546	785, **793**, 905, 1547, 901	917, 922	909, 914, **793**, **1105**, 1546, 893, **764**, 1092, 766
MA	3		1434, 1305	169, 234	**172**, 233, 185

Subject	Grade	Item Harder for Students eligible for FRL	Items Harder for Students not eligible for FRL	Item Harder for Girls	Items Harder for Boys
MA	4	257, 167, 243	**109**, 1451, **239**, 1981, 267, 246, 377, 252	244, 239, 264	103
MA	5	450, 416	1457, 413	**1229**, 1187	1136, **439**
MA	6	**580**, 524	581, 499, 466	1251	534, **482**
MA	7	483, **1234**, 485, 516, 1134, **1066**, 1460	555, **513**, 471, 474, 1241, 1264, **475**	564, 505, 525, 498, 1252, 533	1463, **1066**, 488, 1460, 1247, 555, 511
MA	8	620, 1218, 1695, 1268, **542**	1556, 1135, 1464, **548**, 1465, 612, 599, 1140	1236, **569**, 1135, **573**, 1269, **582**, 548, 529, 1274	1556, 597, 596, 531, 607, **1273**, 588, 542, 532, 530
SC	5	1366, 1370	1535	1998	1323
SC	8	1260, 971, 961, 1056, 1110, 983, 956	1258, 946, 939, 951, 959, 955	1111, 987, 938, **979**, 1056, 1110, 983	942, 971, 970, 949, 981, 951, 1109, 955, 1519, **1205**

Note: Items in bolded font were also flagged in 2021

UH staff conducted a review of potential bias of language used as well as content used for the question (i.e., knowledge or activities that traditionally were reserved for a specific gender or might be impacted by socio-economic status). First, this additional review found no apparent reason for gender bias. Two potential reasons for this lack of bias were identified. First, in the Hawaiian language, pronouns are not gender specific. For example, the word ʻo ia can mean he, she, or it and is dependent on the reader's interpretation or the context. Second, Hawaiian names in general are not gender specific, unless they are transliterations from an English name, and these types of names were not used on these questions. Because of this difference in language and the lack of gender-specificity, questions could potentially not be as prone to gender bias as they would be in English. UH staff will continue to review questions with potential gender bias during the item development process as well as in the analysis of future administrations of the assessment.

UH KĀʻEO assessment staff also reviewed these items for socio-economic bias and found no apparent reason for socio-economic bias towards non FRL students. In the review of items that were flagged as more difficult for FRL students, two potential reasons for this bias were identified. The first had to do with context, particularly for mathematics questions that were word problems or that had a context that may be unfamiliar for students from lower socio-economic backgrounds. While FRL students may not be as familiar to some of these contexts (i.e., flying in an airplane), these contexts are certainly familiar and should not have an impact on a student's understanding of a question. The second reason has to do with exposure to language. Many of the questions identified as being more difficult for FRL students included references and analysis of figurative language. Lower socio-economic students may have less exposure to language in general, and more figurative forms of the Hawaiian language in particular. This is not always the case but could be a reason for these items being flagged for this particular group. UH KĀʻEO assessment staff will continue to review questions with potential bias towards FRL students during the item development process, as well as in the analysis of future administrations of the assessment.

10.3. DIF Based on Survey Results

After completing the HLA or mathematics assessments, KĀʻEO students are administered a survey that asks about their Hawaiian Language usage (Table 10.2).

Table 10.2: Survey Items used to Determine Hawaiian Language Usage

Item
When I'm with friends at school, we speak Hawaiian
When I'm with friends outside of school, we speak Hawaiian
I understand what my teacher says in Hawaiian
My teacher speaks Hawaiian in the classroom
I think in Hawaiian
When I'm with my family, we speak Hawaiian
I like to write letters or stories in Hawaiian
I like to read stories in Hawaiian
It is easier for me to speak Hawaiian rather than English

The student responses were used to assign students a survey score on the RASCH logit metric. Any student with a logit score of less than 0 was categorized as having lower Hawaiian language usage. Any student with a logit score greater or equal to zero was categorized as having Hawaiian language usage. Table 10.3 shows the items flagged for DIF based on students' rating of their Hawaiian Language usage. These results were interpreted given the current COVID-19 impacts

Table 10.3: Hawaiian Language Usage DIF

Grade	subject	Harder for students rating their HI low	Harder for students who rated their HI high
3	HLA	127, 1286	107, 112, 1471
4	HLA	36	12, 30, 41, 62
5	HLA	631	640, **718**, 693
6	HLA		660, 1170, 701
7	HLA	843, 829, 839, 1104	**883**, 1089, 1178, 880, 1179, 884
8	HLA	**917**, 833, 1546, **766**	**793**
3	MA	**178**, 1303, 211, 204, 233	**992**, 223, 1305
4	MA	239, 1444	1010, 1447
5	MA	239, 1444	1010, 1447
6	MA	521	567, 520
7	MA	**475**, 564, **1066**, 1460, 1560, **513**, 616	488, **1247**, 552, 1461, **1252**, 1558
8	MA	1138, 1218, **1268**	544, 1556, 1230, 1695, 588, 532, 1140
5	SC	1326	1318
8	SC	**959**, 955, 964, 1258	971, 970, **1056**, **1110**

Note: Items in bolded font were also flagged in 2021

UH staff reviewed the items based on the students' survey response categorization and found that there was no discernable pattern for items flagged for lower or higher language use categorization. There were some questions that may have used higher level vocabulary or grammatical patterns, were word problems or extended response questions, as well as figurative language, but there was no pattern seen within an entire group of questions on one test or for either group of students. If questions did use high level language, it was done to align with a content standard.

Chapter 11: Scaling and Results

11.1. Scaling

Based on the results of the 2015 field test, researchers determined that Rasch analyses are appropriate for scaling test scores (e.g., the model converged with few iterations, test statistics were acceptable). The scaling process transforms the initial Rasch logit scale for the items and examinees into units of measurement that are more easily interpreted. The following criteria were used for creating the KĀʻEO test scales (Yen, 1991):

- Scale scores should be whole numbers.
- Scale scores need enough precision to handle the precision of the logit scores.
- Scale score scales need enough range, especially at the high end to allow for increase in difficulty of the tests over administrations and years.
- 3rd and 4th grade scales should be set so it's clear these tests are not on a vertical scale.
- Scales can be the same for the same grade in different content areas to aid in user friendliness, but the scales must meet other criteria.

Discussions between the psychometric staff and the project staff about scaling resulted in each grade level test form being transformed to have a mean of 500 and a standard deviation of 50. Table 11.1 shows the Rasch scaling constants used to place items and examinees on the KĀʻEO test scales for each year's test data.

Table 11.1: Scaling Constants

Grade	Mean	Standard Deviation
Hawaiian Language Arts		
3	528.7454	50.9541
4	514.1317	56.4491
5	527.8135	52.7446
6	537.5123	56.0902
7	562.559	60.5407
8	535.0402	52.4211
Mathematics		
3	515.7501	39.4276
4	551.1439	68.0442
5	565.924	74.9049
6	644.0309	84.5304
7	580.8718	72.1669
8	611.5326	72.6965
Science		
5	571.9933	69.4905
8	612.6851	67.8289

As part of transforming the test forms to an interpretable scale, lowest obtainable scale scores (LOSS) and highest obtainable scale scores (HOSS) also need to be set. These scores help ensure that students who score very low or very high on the test do not receive scores that are also associated with an

extremely large degree of error. The following criteria were taken into account when making recommendations for the LOSS and HOSS for each grade level (Yen 1991):

Setting LOSS

- The LOSS should be low enough that it does not create a floor effect.
- The LOSS should be high enough that the SE for LOSS < 15 x Min (SE); this criterion can be difficult to meet for some tests.
- Usually, the LOSS should be lower than the lowest number correct score but can be higher if this results in too high an SE.
- The SE should change smoothly over lower levels of the test.
- The LOSS gap (b/w LOSS and 1 item correct) should be in the same ballpark as the Penultimate Loss gap (b/w 1 item correct and 2 items correct).
- The LOSS gap should change smoothly over levels.

Setting HOSS

- The HOSS should be high enough that it does not create ceiling effects.
- The HOSS should be sufficiently high to allow for a high scale score at 1 item wrong.
- The HOSS should be low enough that the SE for Hoss < 10 x Min (SE).
- The SE should change smoothly over levels.
- The HOSS gap (b/w HOSS and 1 item wrong) should be in the same ballpark as the Penultimate HOSS gap (b/w 1 item wrong and 2 items wrong).
- The HOSS gap should change smoothly over levels; it is more difficult, and less important, to keep the gaps smooth over levels than it is to keep the SE(HOSS) values smooth over levels.

Table 11.2provides for LOSS and HOSS for each grade level as well as score intervals for the performance levels. Values for LOSS and HOSS were set for the KĀʻEO test scales and remain constant across test administrations from year to year. The values for the HOSS were specifically set with the consideration that the testing program would need to accommodate potential improvements in performance on future operational administrations and to avoid ceiling effects in later years.

Table 11.2: KĀʻEO Test Scale LOSS and HOSS

Grade	LOSS (SE)	Level 1	Level 2	Level 3	Level 4	HOSS (SE)
Hawaiian Language Arts						
3	350 (~32)	LOSS-493	494-530	531-640	641-HOSS	750 (~41)
4	350 (~29)	LOSS-498	499-519	520-576	577-HOSS	750 (~42)
5	350 (~33)	LOSS-485	486-508	509-550	551-HOSS	750 (~40)
6	350 (~30)	LOSS-487	488-509	510-558	559-HOSS	750 (~35)
7	350 (~37)	LOSS-483	484-514	515-559	560-HOSS	750 (~30)
8	350 (~30)	LOSS-494	495-520	521-532	533-HOSS	750 (~34)
Mathematics						
3	350 (~30)	LOSS-473	474-512	513-545	546-HOSS	750 (~72)
4	350 (~35)	LOSS-486	487-534	535-556	557-HOSS	750 (~35)
5	350 (~40)	LOSS-485	486-532	533-557	558-HOSS	750 (~33)
6	350 (~43)	LOSS-477	478-536	537-573	574-HOSS	750 (~31)
7	350 (~51)	LOSS-488	489-532	533-557	558-HOSS	750 (~28)
8	350 (~53)	LOSS-487	488-526	527-554	555-HOSS	750 (~27)
Science						
5	300 (~54)	LOSS-569		570-HOSS		750 (~32)

Grade	LOSS (SE)	Level 1	Level 2	Level 3	Level 4	HOSS (SE)
8	350 (~49)	LOSS-497	498-526	527-554	555-HOSS	750 (~26)

It should be noted that scaling is sample dependent. When data is scaled from a sample to have a mean of 500, that mean is a local mean. The average score of the sample could be given any value - 500, 1000, 27.50 - but it will always be the average of that particular sample. So transforming a logit scale to a scale score does not mean those test scores are independent of that sample. This means that steps must be taken to ensure that scores from administrations across successive years have equivalent meaning in terms of achievement for the different samples of students who participate in each administration. This process is known as equating.

11.2. Grades 3 and 4 Equating

The psychometric team equated scores from the 2022 operational tests in grades 3 and 4 for Hawaiian language arts, and mathematics to the KĀʻEO test scales established in 2016. The equating process places the operational tests onto the established scale for each respective grade and content area and helps ensure consistency in the interpretation of scores from one year to the next. For example, a student scale score of 500 on the 2022 operational test should mean the same in terms of achievement as a student scale score of 500 on the 2016 assessment.

Grade 3 and 4 operational test scores were equated to the established KĀʻEO test scales using an anchor item procedure—also known as common item linking—through the Rasch model and Winsteps program (Linacre, 2016). Anchor item equating uses known parameter values of items on the established scale to place items from a current administration onto the established scale.

Prior to the 2019 operational administration, all items from the test were used as anchors for the equating. Starting with the 2019 administration, the Hawaiian language arts and mathematics operational tests were updated by removing a selection of items and replacing these items with new items. Thus, anchor parameter estimates were not available for all items on these four operational tests. The 2019 operational tests were equated using a subset of items from the test, known as an anchor set.

The anchor sets for grades 3 and 4 Hawaiian language arts and mathematics will provide the foundation for equating for 2019 and beyond and will remain consistent from year to year. In general, the anchor sets were selected so that they represent a miniature version of the operational test, particularly in terms of the range of item difficulties and range of content. The following specific criteria were used to select the anchor sets.

The anchor sets were selected so that they represent the major content categories of the test (i.e., domains) in the same proportion as they are represented in the operational test. Ideally, this proportion is measured by the number of points rather than the number of items, with an allowable variance of ±10%. The anchor sets also were selected to span the range of difficulty of the operational test. In other words, the items included in the anchor sets varied in difficulty as the operational test items varied, except that the anchor sets do not include any items of extreme difficulty or easiness.

Other criteria for selecting the anchor sets included the following: The anchor sets include items from the different item types included in the operational test and in the same proportion (±10%). Extended response items, however, tend to be easily remembered by teachers and students, so the anchor sets

do not include this item format unless this format was the only one assessing a particular domain. If anchor items are associated with a reading passage, the passage will be of average length avoiding extremely long or extremely short passages. The anchor sets also were selected so that they represent approximately 20% of the operational test in terms of the number of points.

In terms of performance characteristics, the anchor sets do not include any items that exhibit poor model fit, bias, DIF, or low discrimination. Anchor items are placed in the same relative position in each operational test administration, with a minimum of being in the same third of the test, but anchor items are placed at the very beginning or end of the test or any session. Finally, no changes are allowed to anchor items once they have been selected and administered. Neither changes in wording nor changes in the way the item is administered are allowed. Either of these could affect the item's performance characteristics.

Prior to the 2019 operational administration of the tests, an equating study was conducted using data from previous operational assessments to evaluate the anchor sets in terms of content, psychometric properties and the potential impact of their use for equating on student scores (Englert, 2018). The equating study found that the content of the anchor sets for grades 3 and 4 Hawaiian language arts and mathematics was typically within 5% of each content criteria relative to the operational test, with only two exceptions for grade 4 math and only one instance where the content exceeded the 10% criterion by 1%.

Item parameters (i.e., difficulty and discrimination) from 2016 and 2018 were compared to evaluate stability over time. In general, item parameters were stable, although the analyses revealed some items with poor fit that were eliminated as potential anchor items.

Test statistics and impact on scores of the anchor sets was evaluated by comparing results from the 2018 tests equated using all items (the previous method) and the same tests equated using only the anchor sets. Tests statistics (difficulty, model SE, and reliability) from the two methods of equated were compared for all four tests and found to be similar, especially in terms of the model SE and reliability. The overall test difficulty did change slightly across each test, with grade 3 and 4 HLA becoming slightly more difficult and grade 3 and 4 Math becoming slightly easier. These differences in difficulty were less than .05.

The final analysis focused on the degree to which the use of the selected anchor sets affected the performance level of students by applying cut scores to the data equated using the two methods. In grade 3 math and grade 4 HLA, the two equating methods resulted in all students being placed in the same performance level. Anchor set equating resulted in 11 students in grade 4 math increasing by one performance level, and in 17 students in grade 3 HLA decreasing one performance level. No students in these two tests changed from proficient to not-proficient or vice-versa as a result of the anchor set equating.

For the 2022 operational analyses, anchor items were evaluated to ensure that they are functioning in the same manner across test administrations. For Hawaiian language arts and mathematics, items in the anchor sets were evaluated; for science, all items were used as anchors and evaluated. Evaluations included scatterplots of the best fit line to examine the degree to which the items fit across the two test administrations (see Englert, 2018). Also examined were other item indices, such as the difficulty

parameter, p-values, and item correlations to evaluate item stability. If an item differs between its operational parameter estimates and its anchor estimates, it might indicate that the item is not suitable as an anchor item and should be considered for removal from the anchor set. The two administrations also were compared to examine the overall difficulty, test characteristic curves, changes in percentages of students in the performance levels, and estimates of classification consistency and classification accuracy. These examinations showed that the anchor set equating was functioning sufficiently well.

Using the anchor items for each respective test, and the appropriate scaling constants and LOSS and HOSS described above, each test was placed on to the established KĀʻEO test scale. Score distributions for each grade and content area along with measurement errors are provided in Appendix H: Standard Error Statistics.

11.3. Grades 5, 6, 7 and 8 Equating

The psychometric team equated scores from the 2022 operational tests in grades 5, 6, 7, and 8 Hawaiian language arts, and mathematics; and grade 8 science to the KĀʻEO test scales established in 2019. The equating process places the operational tests onto the established scale for each respective grade and content area and helps ensure consistency in the interpretation of scores from one year to the next. For example, a student scale score of 500 on the 2022 operational test should mean the same in terms of achievement as a student scale score of 500 on the 2019 assessment.

Grades 5, 6, 7, and 8 Hawaiian language arts, and mathematics; and grade 8 science operational test scores were equated to the established KĀʻEO test scales using an anchor item procedure—also known as common item linking—through the Rasch model and Winsteps program (Linacre, 2016). Anchor item equating uses known parameter values of items on the established scale to place items from a current administration onto the established scale.

In 2022, all items from the Hawaiian Language Arts grades 6, 7, & 8, and from mathematics grades 5, 6, 7, & 8 tests were used as anchors for the equating. Due to a change in displacement from 2019 to 2021, one item was removed from the grade Hawaiian Language Arts anchor group and two items were removed from the grade 8 science anchor group.

After the 2022 administration, an anchor study will be conducted to determine the best items for an anchor set. Then starting with the 2023 administration, the Hawaiian language arts and mathematics operational tests will be updated by removing a selection of items and replacing these items with new items. And the 2023 operational tests will be equated using a subset of items from the test, known as an anchor set.

Using the anchor items for each respective test, and the appropriate scaling constants and LOSS and HOSS described above, each test was placed on to the established KĀʻEO test scale. Score distributions for each grade and content area along with measurement errors are provided in Appendix G: Item Response Theory Item Statistics.

11.4. Quality Assurance and Forensic Analysis

After the 2022 data were scaled, the psychometric team conducted a series of checks on the data (See Appendix K for additional details). These checks provided greater detail to the HIDOE about the veracity of the results before reporting. The analyses included:

- Examination of proficiency level distributions from 2016, 2017, 2018, and 2019;
- Examination of the changes in school level percent proficient results from year to year to understand patterns in growth;
- Forensic analyses that included examining student response patterns by school, person fit statistics.

These results were provided to the HIDOE and UH KĀʻEO assessment staff. While no definitive patterns could be seen in the test scores, these results could be used to inform future test administration training or monitoring.

11.5. Standard Setting Results

After the administration of the first operational assessment in each grade and content area, the UH KĀʻEO Assessment staff contracted with a leading national expert in standard setting, EdMetric (see Standard Setting report for a full description of the process, participants, and results).

11.5.1. Grades 3 - 8 Hawaiian Language Arts and Math & Grade 8 Science

The standard setting provided cut scores for each of four achievement levels: Hoʻomaka (Level 1), Holomua (Level 2), Mākaukau (Level 3), and Kelakela (Level 4). The cut score between Holomua and Mākaukau became the equivalent cut score for "proficient" in English language accountability tests. The results are reported below for each test and demographic reporting category.

Table 11.3: Redacted State Report -Hawaiian Language Arts Grade 3

Hawaiian Language Arts Grade 3 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	311	489	50	168	54.0%	84	27.0%	59	19.0%	0	0.0%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	67	484	56	39	58.2%	15	22.4%	13	19.4%	0	0.0%
Multiple	42	489	46	23	54.8%	12	28.6%	7	16.7%	0	0.0%
Pacific Islander	194	489	48	103	53.1%	55	28.4%	36	18.6%	0	0.0%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	14	503	45	7	50.0%	5	35.7%	2	14.3%	0	0.0%
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	10	489	53	6	60.0%	2	20.0%	2	20.0%	0	0.0%
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	246	488	50	132	53.7%	67	27.2%	47	19.1%	0	0.0%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	11	477	60	8	72.7%	1	9.1%	2	18.2%	0	0.0%

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	311	489	50	168	54.0%	84	27.0%	59	19.0%	0	0.0%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	67	484	56	39	58.2%	15	22.4%	13	19.4%	0	0.0%
Multiple	42	489	46	23	54.8%	12	28.6%	7	16.7%	0	0.0%
Pacific Islander	194	489	48	103	53.1%	55	28.4%	36	18.6%	0	0.0%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	14	503	45	7	50.0%	5	35.7%	2	14.3%	0	0.0%
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	10	489	53	6	60.0%	2	20.0%	2	20.0%	0	0.0%
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	246	488	50	132	53.7%	67	27.2%	47	19.1%	0	0.0%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	11	477	60	8	72.7%	1	9.1%	2	18.2%	0	0.0%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*

◻ *Data masked to comply with reporting privacy guidelines.*

Table 11.4: Redacted State Report -Hawaiian Language Arts Grade 4

Hawaiian Language Arts Grade 4 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	282	496	51	157	55.7%	39	13.8%	65	23.0%	21	7.4%
Language Background											
English	261	494	49	150	57.5%	36	13.8%	58	22.2%	17	6.5%
Hawaiian	19	516	71	6	31.6%	3	15.8%	7	36.8%	3	15.8%
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tagalog	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	269	499	50	144	53.5%	39	14.5%	65	24.2%	21	7.8%
No	13	433	26	13	100.0%	0	0.0%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	137	512	54	61	44.5%	15	10.9%	44	32.1%	17	12.4%
No	145	480	44	96	66.2%	24	16.6%	21	14.5%	4	2.8%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	165	502	48	83	50.3%	25	15.2%	45	27.3%	12	7.3%
Male	117	487	55	74	63.2%	14	12.0%	20	17.1%	9	7.7%

Hawaiian Language Arts Grade 4 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	282	496	51	157	55.7%	39	13.8%	65	23.0%	21	7.4%
Federal Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	60	493	45	34	56.7%	10	16.7%	14	23.3%	2	3.3%
Multiple	34	512	60	15	44.1%	3	8.8%	10	29.4%	6	17.6%
Pacific Islander	182	494	52	105	57.7%	24	13.2%	40	22.0%	13	7.1%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	10	516	60	5	50.0%	0	0.0%	3	30.0%	2	20.0%
Hispanic	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Korean	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	230	494	51	129	56.1%	34	14.8%	53	23.0%	14	6.1%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	12	495	55	7	58.3%	1	8.3%	3	25.0%	1	8.3%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.5: Redacted State Report -Hawaiian Language Arts Grade 5

Hawaiian Language Arts Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	244	493	52	105	43.0%	46	18.9%	56	23.0%	37	15.2%
Language Background											
English	231	492	51	101	43.7%	44	19.0%	54	23.4%	32	13.9%
Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	228	498	50	89	39.0%	46	20.2%	56	24.6%	37	16.2%
No	16	428	22	16	100.0%	0	0.0%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	119	505	53	39	32.8%	21	17.6%	36	30.3%	23	19.3%
No	125	483	48	66	52.8%	25	20.0%	20	16.0%	14	11.2%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	126	507	50	41	32.5%	29	23.0%	30	23.8%	26	20.6%
Male	118	479	50	64	54.2%	17	14.4%	26	22.0%	11	9.3%

Hawaiian Language Arts Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	244	493	52	105	43.0%	46	18.9%	56	23.0%	37	15.2%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	47	486	46	25	53.2%	9	19.1%	8	17.0%	5	10.6%
Multiple	25	502	47	8	32.0%	7	28.0%	7	28.0%	3	12.0%
Pacific Islander	163	491	53	71	43.6%	30	18.4%	39	23.9%	23	14.1%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	195	490	52	90	46.2%	35	17.9%	43	22.1%	27	13.8%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	15	505	46	4	26.7%	4	26.7%	4	26.7%	3	20.0%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.6: Redacted State Report -Hawaiian Language Arts Grade 6

Hawaiian Language Arts Grade 6 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	250	492	50	116	46.4%	35	14.0%	78	31.2%	21	8.4%
Language Background											
English	230	491	49	109	47.4%	34	14.8%	70	30.4%	17	7.4%
French	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hawaiian	15	499	58	7	46.7%	0	0.0%	6	40.0%	2	13.3%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	237	496	48	104	43.9%	34	14.3%	78	32.9%	21	8.9%
No	13	429	30	12	92.3%	1	7.7%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	128	500	52	50	39.1%	18	14.1%	46	35.9%	14	10.9%
No	122	485	46	66	54.1%	17	13.9%	32	26.2%	7	5.7%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	146	501	48	58	39.7%	19	13.0%	55	37.7%	14	9.6%
Male	104	480	49	58	55.8%	16	15.4%	23	22.1%	7	6.7%

Hawaiian Language Arts Grade 6 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	244	493	52	105	43.0%	46	18.9%	56	23.0%	37	15.2%
Federal Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	53	489	47	25	47.2%	9	17.0%	14	26.4%	5	9.4%
Multiple	32	512	54	8	25.0%	4	12.5%	14	43.8%	6	18.8%
Pacific Islander	153	487	48	80	52.3%	19	12.4%	47	30.7%	7	4.6%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	11	511	62	2	18.2%	2	18.2%	6	54.5%	1	9.1%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	190	488	48	96	50.5%	25	13.2%	58	30.5%	11	5.8%
Other Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	14	524	44	2	14.3%	2	14.3%	6	42.9%	4	28.6%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ *Data masked to comply with reporting privacy guidelines.*

Table 11.7: Redacted State Report -Hawaiian Language Arts Grade 7

Hawaiian Language Arts Grade 7 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	147	505	56	51	34.7%	32	21.8%	39	26.5%	25	17.0%
Language Background											
English	129	505	56	45	34.9%	30	23.3%	32	24.8%	22	17.1%
Hawaiian	18	507	63	6	33.3%	2	11.1%	7	38.9%	3	16.7%
IEP											
Yes	129	515	52	34	26.4%	31	24.0%	39	30.2%	25	19.4%
No	18	436	30	17	94.4%	1	5.6%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	59	518	60	15	25.4%	14	23.7%	15	25.4%	15	25.4%
No	88	496	52	36	40.9%	18	20.5%	24	27.3%	10	11.4%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	76	520	58	22	28.9%	11	14.5%	24	31.6%	19	25.0%
Male	71	489	50	29	40.8%	21	29.6%	15	21.1%	6	8.5%

Hawaiian Language Arts Grade 7 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	147	505	56	51	34.7%	32	21.8%	39	26.5%	25	17.0%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	28	491	60	13	46.4%	6	21.4%	5	17.9%	4	14.3%
Multiple	12	505	60	5	41.7%	2	16.7%	1	8.3%	4	33.3%
Pacific Islander	104	507	54	33	31.7%	23	22.1%	32	30.8%	16	15.4%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Korean	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	128	505	55	44	34.4%	28	21.9%	36	28.1%	20	15.6%
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.8: Redacted State Report -Hawaiian Language Arts Grade 8

Hawaiian Language Arts Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	166	498	50	82	49.4%	22	13.3%	15	9.0%	47	28.3%
Language Background											
English	□	□	□	□	□	□	□	□	□	□	□
Hawaiian	□	□	□	□	□	□	□	□	□	□	□
IEP											
Yes	154	502	47	71	46.1%	22	14.3%	15	9.7%	46	29.9%
No	12	450	56	11	91.7%	0	0.0%	0	0.0%	1	8.3%
504 Plan											
Yes	□	□	□	□	□	□	□	□	□	□	□
No	□	□	□	□	□	□	□	□	□	□	□
Lunch Status											
Yes	71	503	55	32	45.1%	6	8.5%	10	14.1%	23	32.4%
No	95	494	45	50	52.6%	16	16.8%	5	5.3%	24	25.3%
Migrant											
Yes	□	□	□	□	□	□	□	□	□	□	□
No	□	□	□	□	□	□	□	□	□	□	□
Gender											
Female	83	516	46	29	34.9%	12	14.5%	10	12.0%	32	38.6%
Male	83	480	47	53	63.9%	10	12.0%	5	6.0%	15	18.1%

Hawaiian Language Arts Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	166	498	50	82	49.4%	22	13.3%	15	9.0%	47	28.3%
Federal Ethnicity											
Asian	□	□	□	□	□	□	□	□	□	□	□
Hispanic	34	500	50	19	55.9%	2	5.9%	5	14.7%	8	23.5%
Multiple	□	□	□	□	□	□	□	□	□	□	□
Pacific Islander	119	496	48	57	47.9%	19	16.0%	10	8.4%	33	27.7%
State Ethnicity											
Filipino	□	□	□	□	□	□	□	□	□	□	□
Japanese	□	□	□	□	□	□	□	□	□	□	□
Korean	□	□	□	□	□	□	□	□	□	□	□
Native Hawaiian	146	498	49	71	48.6%	21	14.4%	14	9.6%	40	27.4%
Other Pacific Islander	□	□	□	□	□	□	□	□	□	□	□
Portuguese	□	□	□	□	□	□	□	□	□	□	□
Samoan	□	□	□	□	□	□	□	□	□	□	□
Tongan	□	□	□	□	□	□	□	□	□	□	□
White	□	□	□	□	□	□	□	□	□	□	□

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
□ *Data masked to comply with reporting privacy guidelines.*

Table 11.9: Redacted State Report -Mathematics Grade 3

Mathematics Grade 3 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	309	501	35	62	20.1%	147	47.6%	65	21.0%	35	11.3%
Language Background											
English	279	501	36	55	19.7%	132	47.3%	59	21.1%	33	11.8%
Hawaiian	26	497	27	6	23.1%	13	50.0%	6	23.1%	1	3.8%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Spanish	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tagalog	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	299	502	35	55	18.4%	145	48.5%	65	21.7%	34	11.4%
No	10	473	28	7	70.0%	2	20.0%	0	0.0%	1	10.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	162	508	37	25	15.4%	74	45.7%	36	22.2%	27	16.7%
No	147	493	31	37	25.2%	73	49.7%	29	19.7%	8	5.4%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	161	501	35	31	19.3%	79	49.1%	34	21.1%	17	10.6%
Male	148	501	36	31	20.9%	68	45.9%	31	20.9%	18	12.2%

Mathematics Grade 3 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	309	501	35	62	20.1%	147	47.6%	65	21.0%	35	11.3%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	67	503	38	14	20.9%	29	43.3%	13	19.4%	11	16.4%
Multiple	42	501	34	9	21.4%	23	54.8%	5	11.9%	5	11.9%
Pacific Islander	192	499	33	39	20.3%	92	47.9%	46	24.0%	15	7.8%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	14	512	38	2	14.3%	7	50.0%	3	21.4%	2	14.3%
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	10	505	47	3	30.0%	5	50.0%	0	0.0%	2	20.0%
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	244	500	34	48	19.7%	116	47.5%	56	23.0%	24	9.8%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	11	501	43	4	36.4%	3	27.3%	2	18.2%	2	18.2%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.10: Redacted State Report -Mathematics Grade 4

Mathematics Grade 4 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	281	494	50	137	48.8%	98	34.9%	16	5.7%	30	10.7%
Language Background											
English	260	494	49	125	48.1%	93	35.8%	16	6.2%	26	10.0%
Hawaiian	19	487	54	11	57.9%	5	26.3%	0	0.0%	3	15.8%
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tagalog	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	268	497	49	124	46.3%	98	36.6%	16	6.0%	30	11.2%
No	13	444	19	13	100.0%	0	0.0%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	137	510	54	51	37.2%	48	35.0%	13	9.5%	25	18.2%
No	144	479	40	86	59.7%	50	34.7%	3	2.1%	5	3.5%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	165	496	49	75	45.5%	65	39.4%	9	5.5%	16	9.7%
Male	116	491	50	62	53.4%	33	28.4%	7	6.0%	14	12.1%

Mathematics Grade 4 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)											
Federal Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	59	494	44	26	44.1%	24	40.7%	5	8.5%	4	6.8%
Multiple	34	516	61	14	41.2%	11	32.4%	2	5.9%	7	20.6%
Pacific Islander	182	491	49	92	50.5%	63	34.6%	8	4.4%	19	10.4%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	10	533	74	3	30.0%	4	40.0%	0	0.0%	3	30.0%
Hispanic	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Korean	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	229	491	48	115	50.2%	80	34.9%	12	5.2%	22	9.6%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	12	499	39	4	33.3%	7	58.3%	1	8.3%	0	0.0%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ *Data masked to comply with reporting privacy guidelines.*

Table 11.11: Redacted State Report -Mathematics Grade 5

Mathematics Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	245	506	52	91	37.1%	94	38.4%	19	7.8%	41	16.7%
Language Background											
English	232	505	51	86	37.1%	91	39.2%	18	7.8%	37	15.9%
Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	229	509	51	77	33.6%	92	40.2%	19	8.3%	41	17.9%
No	16	458	25	14	87.5%	2	12.5%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	119	520	55	31	26.1%	48	40.3%	12	10.1%	28	23.5%
No	126	492	44	60	47.6%	46	36.5%	7	5.6%	13	10.3%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	126	513	54	40	31.7%	51	40.5%	10	7.9%	25	19.8%
Male	119	498	48	51	42.9%	43	36.1%	9	7.6%	16	13.4%

Mathematics Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	245	506	52	91	37.1%	94	38.4%	19	7.8%	41	16.7%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	47	496	45	19	40.4%	20	42.6%	3	6.4%	5	10.6%
Multiple	25	517	58	7	28.0%	11	44.0%	1	4.0%	6	24.0%
Pacific Islander	164	504	51	64	39.0%	60	36.6%	14	8.5%	26	15.9%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	196	504	50	75	38.3%	75	38.3%	17	8.7%	29	14.8%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	15	503	51	6	40.0%	6	40.0%	1	6.7%	2	13.3%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.12: Redacted State Report -Mathematics Grade 6

Mathematics Grade 6 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	250	491	52	118	47.2%	84	33.6%	32	12.8%	16	6.4%
Federal Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	53	495	43	25	47.2%	18	34.0%	8	15.1%	2	3.8%
Multiple	33	509	60	11	33.3%	12	36.4%	6	18.2%	4	12.1%
Pacific Islander	152	484	51	78	51.3%	51	33.6%	15	9.9%	8	5.3%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	11	513	36	2	18.2%	5	45.5%	4	36.4%	0	0.0%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	189	487	50	92	48.7%	66	34.9%	21	11.1%	10	5.3%
Other Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	14	515	72	5	35.7%	4	28.6%	3	21.4%	2	14.3%

Mathematics Grade 6 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	250	491	52	118	47.2%	84	33.6%	32	12.8%	16	6.4%
Language Background											
English	230	489	50	110	47.8%	80	34.8%	27	11.7%	13	5.7%
French	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hawaiian	15	494	54	8	53.3%	4	26.7%	2	13.3%	1	6.7%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	237	494	51	107	45.1%	82	34.6%	32	13.5%	16	6.8%
No	13	447	38	11	84.6%	2	15.4%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	128	499	54	54	42.2%	43	33.6%	20	15.6%	11	8.6%
No	122	483	48	64	52.5%	41	33.6%	12	9.8%	5	4.1%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	146	496	48	62	42.5%	53	36.3%	23	15.8%	8	5.5%
Male	104	486	57	56	53.8%	31	29.8%	9	8.7%	8	7.7%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ *Data masked to comply with reporting privacy guidelines.*

Table 11.13: Redacted State Report -Mathematics Grade 7

Mathematics Grade 7 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	149	504	56	63	42.3%	49	32.9%	13	8.7%	24	16.1%
Language Background											
English	131	504	57	55	42.0%	44	33.6%	11	8.4%	21	16.0%
Hawaiian	18	507	56	8	44.4%	5	27.8%	2	11.1%	3	16.7%
IEP											
No	131	509	58	49	37.4%	45	34.4%	13	9.9%	24	18.3%
Yes	18	468	29	14	77.8%	4	22.2%	0	0.0%	0	0.0%
504 Plan											
No	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Yes	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
FRL Eligible											
No	61	520	62	22	36.1%	16	26.2%	7	11.5%	16	26.2%
Yes	88	493	50	41	46.6%	33	37.5%	6	6.8%	8	9.1%
Migrant											
No	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Yes	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Gender											
Female	77	505	58	33	42.9%	25	32.5%	7	9.1%	12	15.6%
Male	72	504	56	30	41.7%	24	33.3%	6	8.3%	12	16.7%

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	149	504	56	63	42.3%	49	32.9%	13	8.7%	24	16.1%
Federal Ethnicity											
Asian	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Hispanic	28	508	61	13	46.4%	10	35.7%	1	3.6%	4	14.3%
Multiple	13	507	69	6	46.2%	1	7.7%	4	30.8%	2	15.4%
Pacific Islander	105	499	49	44	41.9%	38	36.2%	8	7.6%	15	14.3%
White	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
State Ethnicity											
American Indian or Alaska Native	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Black	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Chinese	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Filipino	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Japanese	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Korean	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
Native Hawaiian	129	501	52	56	43.4%	46	35.7%	8	6.2%	19	14.7%
Samoan	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫
White	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫	▫

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
▫ Data masked to comply with reporting privacy guidelines.

Table 11.14: Redacted State Report -Mathematics Grade 8

Mathematics Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	169	504	42	63	37.3%	69	40.8%	23	13.6%	14	8.3%
Language Background											
English	160	504	43	59	36.9%	66	41.2%	21	13.1%	14	8.8%
Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Spanish	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	157	505	43	59	37.6%	61	38.9%	23	14.6%	14	8.9%
No	12	492	21	4	33.3%	8	66.7%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	72	510	54	26	36.1%	25	34.7%	9	12.5%	12	16.7%
No	97	499	30	37	38.1%	44	45.4%	14	14.4%	2	2.1%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	85	506	42	28	32.9%	37	43.5%	15	17.6%	5	5.9%
Male	84	502	43	35	41.7%	32	38.1%	8	9.5%	9	10.7%

Mathematics Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	169	504	42	63	37.3%	69	40.8%	23	13.6%	14	8.3%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	35	507	39	11	31.4%	16	45.7%	4	11.4%	4	11.4%
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Pacific Islander	121	503	43	47	38.8%	49	40.5%	17	14.0%	8	6.6%
State Ethnicity											
Filipino	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Korean	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	148	505	43	54	36.5%	61	41.2%	21	14.2%	12	8.1%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

** Total for all four achievement levels combined may not equal 100% due to rounding.*
◻ Data masked to comply with reporting privacy guidelines.

Table 11.15: Redacted State Report -Science Grade 8

Science Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	168	502	51	80	47.6%	35	20.8%	19	11.3%	34	20.2%
Language Background											
English	159	501	50	76	47.8%	34	21.4%	18	11.3%	31	19.5%
Hawaiian	□	□	□	□	□	□	□	□	□	□	□
Spanish	□	□	□	□	□	□	□	□	□	□	□
IEP											
Yes	156	504	51	71	45.5%	33	21.2%	18	11.5%	34	21.8%
No	12	476	36	9	75.0%	2	16.7%	1	8.3%	0	0.0%
504 Plan											
Yes	□	□	□	□	□	□	□	□	□	□	□
No	□	□	□	□	□	□	□	□	□	□	□
Lunch Status											
Yes	72	510	58	32	44.4%	8	11.1%	10	13.9%	22	30.6%
No	96	496	44	48	50.0%	27	28.1%	9	9.4%	12	12.5%
Migrant											
Yes	□	□	□	□	□	□	□	□	□	□	□
No	□	□	□	□	□	□	□	□	□	□	□
Gender											
Female	85	518	48	29	34.1%	19	22.4%	12	14.1%	25	29.4%
Male	83	486	48	51	61.4%	16	19.3%	7	8.4%	9	10.8%

Science Grade 8 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	168	502	51	80	47.6%	35	20.8%	19	11.3%	34	20.2%
Federal Ethnicity											
Asian	□	□	□	□	□	□	□	□	□	□	□
Hispanic	35	499	48	15	42.9%	8	22.9%	7	20.0%	5	14.3%
Multiple	□	□	□	□	□	□	□	□	□	□	□
Pacific Islander	120	502	52	60	50.0%	23	19.2%	12	10.0%	25	20.8%
State Ethnicity											
Filipino	□	□	□	□	□	□	□	□	□	□	□
Hispanic	□	□	□	□	□	□	□	□	□	□	□
Japanese	□	□	□	□	□	□	□	□	□	□	□
Korean	□	□	□	□	□	□	□	□	□	□	□
Native Hawaiian	147	502	51	70	47.6%	30	20.4%	18	12.2%	29	19.7%
Other Pacific Islander	□	□	□	□	□	□	□	□	□	□	□
Portuguese	□	□	□	□	□	□	□	□	□	□	□
Samoan	□	□	□	□	□	□	□	□	□	□	□
Tongan	□	□	□	□	□	□	□	□	□	□	□
White	□	□	□	□	□	□	□	□	□	□	□

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
□ *Data masked to comply with reporting privacy guidelines.*

11.5.2. Grade 5 Science

Due to the COVID-19 pandemic the initial grade 5 standard setting provided cut scores for each of two achievement levels: Holomua (Level 2), and Mākaukau (Level 3)). The cut score between Holomua and Mākaukau became the equivalent cut score for "proficient" in English language accountability tests. After the 2023 administration, cut scores will be reestablished for the four KAEO achievement levels. The results are reported below for each test and demographic reporting category.

Table 11.16: Redacted State Report -Science Grade 5

Science Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.			n	% of Students in Level 2* Developing	n	% of Students in Level 3* Proficient		
Total (All HLIP Schools)	245	509	54			212	86.5%	33	13.5%		
Language Background											
English	232	509	53			202	87.1%	30	12.9%		
Hawaiian	□	□	□			□	□	□	□		
Japanese	□	□	□			□	□	□	□		
IEP											
Yes	229	514	52			196	85.6%	33	14.4%		
No	16	443	32			16	100.0%	0	0.0%		
504 Plan											
Yes	□	□	□			□	□	□	□		
No	□	□	□			□	□	□	□		
Lunch Status											
Yes	119	522	54			97	81.5%	22	18.5%		
No	126	497	50			115	91.3%	11	8.7%		
Migrant											
Yes	□	□	□			□	□	□	□		
No	□	□	□			□	□	□	□		
Gender											
Female	126	525	50			102	81.0%	24	19.0%		
Male	119	493	53			110	92.4%	9	7.6%		

Science Grade 5 — Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.			n	% of Students in Level 2* Developing	n	% of Students in Level 3* Proficient		
Total (All HLIP Schools)	245	509	54			212	86.5%	33	13.5%		
Federal Ethnicity											
Asian	□	□	□			□	□	□	□		
Hispanic	47	507	44			44	93.6%	3	6.4%		
Multiple	25	525	52			20	80.0%	5	20.0%		
Pacific Islander	164	505	56			141	86.0%	23	14.0%		
White	□	□	□			□	□	□	□		
State Ethnicity											
Black	□	□	□			□	□	□	□		
Chinese	□	□	□			□	□	□	□		
Filipino	□	□	□			□	□	□	□		
Guamanian/Chamorro	□	□	□			□	□	□	□		
Japanese	□	□	□			□	□	□	□		
Multiple	□	□	□			□	□	□	□		
Native Hawaiian	196	506	54			171	87.2%	25	12.8%		
Other Pacific Islander	□	□	□			□	□	□	□		
Part-Hawaiian	□	□	□			□	□	□	□		
Portuguese	□	□	□			□	□	□	□		
Samoan	□	□	□			□	□	□	□		
Tongan	□	□	□			□	□	□	□		
White	15	512	39			15	100.0%	0	0.0%		

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.

* *Total for all four achievement levels combined may not equal 100% due to rounding.*
□ *Data masked to comply with reporting privacy guidelines.*

Chapter 12: Reporting

Each year, the KĀʻEO program provides reports for distribution to parents, schools, and the community. Assessment results are delivered in the form of Student Reports, School Reports, Roster Reports (PDF and Excel versions), and State Reports. Each report type is also provided in parallel versions: Hawaiian and English. Report production and distribution follows a standard protocol for both public and internally released state- and school-level results. Each of these formats is described below, along with its distribution protocol(s).

Parents receive student-level information via Student Reports. A report document is provided for each content area (Hawaiian Language Arts, Mathematics, and Science) and grade level at which the KĀʻEO assessment is administered. Prior to 2021, these reports displayed information that allowed parents to compare their own student's scores with average (mean) scale scores calculated at the school and state level; in 2021, Student Report designs were modified to include information about the impacts of COVID-19, and data previously used to compare the student's scale score to school- and state-level scores was omitted in light of the impacts of the pandemic.

Schools receive student-level information via Roster Reports. Each roster report provides a list of students for the school, along with the relevant scale scores and performance levels for each content area and grade levels assessed via KĀʻEO. Schools are also provided with an electronic (MS Excel) version of the Roster Reports in spreadsheet form. These electronic files are now known as Excel Roster Reports (previously referred to as "Roster Tables").

Schools are also provided with School Reports, which show both school- and state-level information in the form of average (mean) scale scores for each content area and grade level assessed.

State Reports are provided only to the state (HIDOE). They show both aggregated and disaggregated assessment performance for key demographics such as free/reduced lunch, gender, IEP, federal/state ethnicities, et cetera. These reports are provided in both confidential/redacted and unredacted forms. Parents and schools do not have the opportunity to view State Reports until they are publicly released (in redacted form) by the state.

Each report type is designed, produced, and supplied to KĀʻEO-participating schools in both Hawaiian and English versions Figure 12.1 and Figure 12.2 illustrate the dual-language design of the KĀʻEO reporting system.

Figure 12.1: Example of Student Reports in Hawaiian

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 Palapala Kaha Haumāna

He palapala kēia e hōʻike ana i nā kaha haumāna no ka Hōʻike KĀʻEO, he hōʻike i hoʻohana ʻia ma Ka Papahana Kaiapuni. ʻO ka ʻōlelo Hawaiʻi ka ʻōlelo hoʻokahi o ka hoʻonaʻauao ʻia ʻana ma Ka Papahana Kaiapuni a hiki i ka papa 5.

Kula: Sample School
Mokupuni: Sample Island
Papa: 5

Inoa Haumāna: Sample Student

Mākau ʻŌlelo Papa 5

Kaha: 513

513
350 - 485 Pae Hoʻomaka | 486 - 508 Pae Holomua | **509 - 550 Pae Mākaukau** | 551 - 750 Pae Kelakela

No ka Haumāna Pae Mākaukau:

Kō nā pahuhopu mākaukau o kēia papa no ka hoʻomaopopo ʻana, ke kākau ʻana, a me ka heluhelu ʻana i ka ʻōlelo Hawaiʻi i hiki ke holomua i ia papa aku.

He manaʻo hoʻākāka: he mea maʻamau ka loli ʻana o ke kaha inā hana ʻia ka hōʻike he mau manawa. Inā hana hou ʻia ka hōʻike, aia ana paha ke kaha ma 499-527.

Nā Hopena o ka Maʻi Ahulau COVID-19

I ka nānā ʻana i nā kaha, e noʻonoʻo pū i nā hopena o ka maʻi ahulau COVID-19. Ua ana manaʻo ʻia nā haumāna a me nā kumu i mea e noiʻi ai i nā hopena like ʻole o ka maʻi ahulau ma ka pae mākaukau ʻōlelo Hawaiʻi, ke aʻo ʻana aku me ke aʻo ʻana mai, a me ke komo ʻana i ka hana, a eia mai nā haʻina:

Hōʻike mai he 30% o nā haumāna, ua hana kelea ʻo lākou no 2 pule a ʻoi aku paha ma ka makahiki kula 2021-2022.

Hōʻike mai he 41% o nā kumu, ua emi mai ke komo ʻana o nā haumāna ma ka hana ma muli o ka maʻi ahulau COVID-19, a he "loli nui" ka hopena ma ka poeko ʻōlelo Hawaiʻi.

Hōʻike mai he 66% o nā kumu, ua pā ka mākaukau o nā haumāna i ka maʻi ahulau COVID-19 no kēia makahiki kula e hiki mai ana.

No ka ʻikepili hou aku, e nānā ma:
http://aokaiapuni.weebly.com/

Figure 12.2: Example of Student Reports in English

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 Student Report

This report reflects student performance for KĀʻEO: Kaiapuni Assessment of Educational Outcomes, an assessment used in conjunction with the Hawaiian Language Immersion Program. Ka Papahana Kaiapuni delivers instruction exclusively through the medium of Hawaiian language until grade 5.

School: Sample School
Island: Sample Island
Grade: 5

Student: Sample Student

Hawaiian Language Arts Grade 5

Score: 513

513
350 - 485 Beginning | 486 - 508 Developing | **509 - 550 Proficient** | 551 - 750 Distinguished

Description of a Proficient Student:

This demonstrates proficiency of achievement standards at this grade level in Hawaiian language arts necessary for proceeding to the next grade level.

Note: a student's score can vary if the test is taken several times. If your child was tested again, the likely score would be between 499 and 527.

COVID-19 Impacts

Please consider the unprecedented impacts of COVID-19 when reviewing your child's results. Surveys given to both educators and students to help determine the impact of COVID-19 on Hawaiian language proficiency, instruction and learning, and engagement showed:

30% of students reported spending at least 2 weeks on remote or distance learning during the 2021-2022 school year.

41% of educators reported their students were less engaged in school due to COVID-19 and that Hawaiian language proficiency was impacted "to a great extent."

66% of educators reported COVID-19 impacted students' readiness for the next school year.

For more information, visit:
http://aokaiapuni.weebly.com/

The same KĀʻEO reporting formats used in 2022 have been provided consistently to parents, schools, and the state since the first operational administration of KĀʻEO in 2016. The KĀʻEO reporting system has also implemented improvements each year since inception, such as the use of report templates customized to each school's level of participation in the KĀʻEO program (2021) or the

delivery of student-level data in a more timely manner (e.g., schools can receive Excel Roster Reports in spreadsheet form well before the PDF versions are made available).

In 2022, electronic files containing PDF versions of Student, School, and Roster Reports were distributed directly to schools using a secure electronic delivery system, and these files were designed to be physically printed. Excel Roster Reports, which were provided in the MS Excel format, are not designed for physical printing but are also delivered as part of each school's reporting package.

In 2022, the logistical plan for report distribution required each school to access its own secure online file download location. Each school was provided with a unique URL link and a unique password to access the reports electronically, and access was monitored via auditing tools available within the secure delivery system.

As a matter of policy, KĀʻEO reporting protocol follows HIDOE policy, which requires official approval by the HIDOE Superintendent. Upon approval, actual report production with live data begins; until then, all reporting and data aggregation work is considered preliminary and part of a preparatory stage.

Each year, the key milestones of the KĀʻEO report distribution protocol include:

- early delivery of Excel Roster Reports in spreadsheet format to each school via secure file transfer service;
- production of all report types in PDF form: Student, Roster, School, and State Reports;
- delivery, either via FedEx (physical) or electronic (PDF) format, of a reporting package including Student, School, and Roster Reports to each school that participated in the assessment; and
- delivery, via secure electronic means, of State Reports with state-level data to HIDOE exclusively, in both redacted and confidential formats (both in Hawaiian and English).

12.1. Student Reports

From inception, KĀʻEO reports were designed to communicate an overall scale score along with a relevant KĀʻEO achievement level. The overall score indicates how the student performed on the entire test in a scale score metric. These scores are then assigned to a performance level as shown in Appendix Figure A-1. These performance levels were established following the 2016 administration of KĀʻEO (grades 3-4 mathematics and HLA), 2017 (grade 4 science), and 2019 (grades 5-8 mathematics and HLA, grade 8 science). Cut score recommendations are made based on the results of standard-setting workshops which takes place during the summer of the first operational field test. Recommended cut scores were approved by the HIDOE Superintendent and remain in place for subsequent years.

For 2022, achievement level information was communicated using both graphics and text, as shown in the screenshot example of Figure 12.3. Both Hawaiian and English versions of the reports use the associated terms for the achievement levels (for example, Hawaiian reports show Hoʻomaka, Holomua, Mākaukau, and Kelakela) and the student's scale score is indicated both numerically and graphically for each content area (Hawaiian language arts, mathematics, and science).

Figure 12.3 illustrates how KĀʻEO Student Reports show scale scores with a prominent visual indicator on the report. In this example, the overall score is 502, which is in Level 2 (Developing/Pae Holomua).

Figure 12.3: Example of Scale Scores and Performance Levels on Student Reports

A reference to SEM is also represented via text near the bottom of each Student Report, as shown in Figure 12.4. Users are provided with a note of explanation about the potential for variability of student scores (which represents the SEM) and its applicability to their own student's score. This information is displayed near the bottom of the KĀʻEO Student Reports.

Figure 12.4: Example of SEM reference in Student Reports

12.2. Interpretive Guide

Teachers and administrators in Kaiapuni schools are encouraged to discuss results with their students' families. To this end, interpretive guides are provided to schools to facilitate these discussions (Figure 12.5).

Figure 12.5: Example of Interpretive Guide

There may be occasions when students or parents do not agree with their (or their child's) assessment results. In that case, students or parents have the right to protest such scores. The KĀʻEO program follows HIDOE's process for protesting assessment scores if and when these events occur.

12.3. Other Report Types

KĀʻEO reporting also includes Roster Reports, which contain the same essential elements as the Student Reports (scale scores and performance levels) grouped for an entire school/classroom.

Roster reports allow schools and/or teachers to make a simultaneous comparison of student scale scores and performance levels for both Hawaiian language arts and mathematics. Separate roster reports for science are provided to make similar comparisons but are produced only for those grade levels in which the science assessment is administered.

The graphic representations of the Roster Reports for 2022 are shown in Figure 12.6 and Figure 12.7.

Figure 12.6: Example of a Roster Report, page 1

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 Roster Report

This report reflects school-level performance for KĀʻEO: Kaiapuni Assessment of Educational Outcomes, an assessment administered in conjunction with the Hawaiian Language Immersion Program. For more information about the program, see: http://aokaiapuni.weebly.com/.

School: Sample School
Island: Sample Island
Grade: 5

IMPORTANT

Please consider the unprecedented impacts of COVID-19 when reviewing these results. The degree to which your school was able to engage students, cover your standard curriculum, and provide instruction may impact your scores.

These results should be used with multiple sources of evidence (such as formative assessments, attendance, and previous summative assessment results) in considering student achievement. This approach will allow you to use the data to plan in a manner that is most productive for your school community.

If you have questions, please contact: hsa@k12.hi.us

Scores and Achievement Levels by Student and Content Area

Sample School
Grade 5

	Hawaiian Language Arts		Mathematics	
Student	Scale Score	Achievement Level	Scale Score	Achievement Level
Sample Student 01	**650**	Distinguished	**650**	Distinguished
Sample Student 02	**550**	Proficient	**550**	Proficient

1 of 2

Figure 12.7: Example of a Roster Report, page 2

Scores and Achievement Levels by Student and Content Area

Sample School
Grade 5

Student	Hawaiian Language Arts		Mathematics	
	Scale Score	Achievement Level	Scale Score	Achievement Level
Sample Student 03	499	Developing	490	Developing
Sample Student 04	375	Beginning	375	Beginning
Sample Student 05	650	Distinguished	650	Distinguished
Sample Student 06	550	Proficient	550	Proficient
Sample Student 07	499	Developing	490	Developing
Sample Student 08	375	Beginning	375	Beginning
Sample Student 09	650	Distinguished	650	Distinguished
Sample Student 10	550	Proficient	550	Proficient

2 of 2

School reports for KĀʻEO display the distribution of students by achievement level (as a percentage of 100% total for all four levels) along with an average (mean) scale score for the school's students at the relevant grade level.

Textual guidance, along with the graphic representations made in school summary reports for KĀʻEO in 2022, are illustrated in Figure 12.8.

Figure 12.8: Example of a School Report

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 School Report

This report reflects school-level performance for KĀʻEO: Kaiapuni Assessment of Educational Outcomes, an assessment administered in conjunction with the Hawaiian Language Immersion Program. For more information about the program, see: http://aokaiapuni.weebly.com/.

School: Sample School
Island: Sample Island
Grade: 5

Sample School Grade 5
Average Scale Score
for Hawaiian Language Arts: 517

517

350 - 485 Beginning | 486 - 508 Developing | **509 - 550 Proficient** | 551 - 750 Distinguished

Average for all HLIP schools: 500

The average scale score for Sample School is within the Proficient achievement level. This demonstrates proficiency of achievement standards at this grade level in Hawaiian language arts necessary for proceeding to the next grade level.

Sample School
Grade 5
Distribution by Achievement Level

Distinguished 20%
Proficient 50%
Developing 20%
Beginning 10%

IMPORTANT

Please consider the unprecedented impacts of COVID-19 when reviewing these results. The degree to which your school was able to engage students, cover your standard curriculum, and provide instruction may impact your scores.

These results should be used with multiple sources of evidence (such as formative assessments, attendance, and previous summative assessment results) in considering student achievement. This approach will allow you to use the data to plan in a manner that is most productive for your school community.

If you have questions, please contact: hsa@k12.hi.us

State Reports are also produced as part of the KĀʻEO reporting package to show state-level summary data (Figure 12.9 and Figure 12.10). State level data is presented in aggregated groups that include gender, ethnicity, SES, and other categories. Data is reported in standard report tables that include the percentage of students at each performance level. Notes about rounding and the use of the mathematical median are included to help qualify the data presented:

Figure 12.9: Example of a State Report (page 1 of 2)

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 State Report

This report reflects state-level performance for the 2022 administration of KĀʻEO: Kaiapuni Assessment of Educational Outcomes, an assessment used in conjunction with the Hawaiian Language Immersion Program.

School: All Schools
Island: All Islands
Grade: 3

Hawaiian Language Arts Grade 3

Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	311	489	50	168	54.0%	84	27.0%	59	19.0%	0	0.0%
Language Background											
English	280	487	50	156	55.7%	74	26.4%	50	17.9%	0	0.0%
Hawaiian	27	504	48	10	37.0%	9	33.3%	8	29.6%	0	0.0%
Japanese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Spanish	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tagalog	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
IEP											
Yes	301	490	50	160	53.2%	82	27.2%	59	19.6%	0	0.0%
No	10	448	45	8	80.0%	2	20.0%	0	0.0%	0	0.0%
504 Plan											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Lunch Status											
Yes	162	501	52	74	45.7%	44	27.2%	44	27.2%	0	0.0%
No	149	475	45	94	63.1%	40	26.8%	15	10.1%	0	0.0%
Migrant											
Yes	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
No	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Gender											
Female	162	496	49	76	46.9%	49	30.2%	37	22.8%	0	0.0%
Male	149	481	51	92	61.7%	35	23.5%	22	14.8%	0	0.0%

* Total for all four achievement levels combined may not equal 100% due to rounding.
◻ Data masked to comply with reporting privacy guidelines.

(page 1 of 2)

** Total for all four achievement levels combined may not equal 100% due to rounding.*

Figure 12.10: Example of a State Report (page 2 of 2)

KĀʻEO
Kaiapuni Assessment of Educational Outcomes

2022 State Report

This report reflects state-level performance for the 2022 administration of KĀʻEO: Kaiapuni Assessment of Educational Outcomes, an assessment used in conjunction with the Hawaiian Language Immersion Program.

School: All Schools
Island: All Islands
Grade: 3

Hawaiian Language Arts Grade 3

Summary Data - Spring 2022

	Number of Students Tested	Average Scale Score	Std. Dev.	*n*	% of Students in Level 1* Beginning	*n*	% of Students in Level 2* Developing	*n*	% of Students in Level 3* Proficient	*n*	% of Students in Level 4* Distinguished
Total (All HLIP Schools)	311	489	50	168	54.0%	84	27.0%	59	19.0%	0	0.0%
Federal Ethnicity											
Asian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Hispanic	67	484	56	39	58.2%	15	22.4%	13	19.4%	0	0.0%
Multiple	42	489	46	23	54.8%	12	28.6%	7	16.7%	0	0.0%
Pacific Islander	194	489	48	103	53.1%	55	28.4%	36	18.6%	0	0.0%
White	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
State Ethnicity											
American Indian or Alaska Native	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Black	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Chinese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Filipino	14	503	45	7	50.0%	5	35.7%	2	14.3%	0	0.0%
Guamanian/Chamorro	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Japanese	10	489	53	6	60.0%	2	20.0%	2	20.0%	0	0.0%
Micronesian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Multiple	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Native Hawaiian	246	488	50	132	53.7%	67	27.2%	47	19.1%	0	0.0%
Other Pacific Islander	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Part-Hawaiian	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Portuguese	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Samoan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
Tongan	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻	◻
White	11	477	60	8	72.7%	1	9.1%	2	18.2%	0	0.0%

Note: The numbers of students in the federal and state ethnicity categories can vary because of the different rules for aggregating demographic categories.
* Total for all four achievement levels combined may not equal 100% due to rounding.
◻ Data masked to comply with reporting privacy guidelines.

(page 2 of 2)

Chapter 13: Continuous Improvement

The high stakes nature of the assessment program necessitates a careful and thorough analysis and verification process. Each phase of the proposed analyses is critical to build evidence about the assessment. Throughout these analyses, researchers worked in parallel to conduct quality assurance checks to verify accuracy in coding data and to examine any anomalies in the results. Results from the analyses continue to inform improvements to the testing processes.

Assessment programs should be continually monitored for quality and relevance. Kaiapuni Assessment of Educational Outcomes (KĀʻEO) will consider multiple forms of evidence in an effort to ensure quality and promote continuous improvement throughout the life of the program.

13.1. Communication with Community Members

A central focus of KĀʻEO's ongoing improvement is working with Hawaiian language community members to improve the assessment and to allow for transparency in our processes. In 2022, this occurred in several ways. First, UH staff attend all quarterly Kaiapuni Principal and ʻAha Kauleo community stakeholder meetings. These meetings allow for a dialogue about improving the test and discussing milestones and results. Second, we communicate with educators during regularly scheduled meetings (e.g., HIDOE Assessment Roadshow), through yearly surveys, and in specific data collection efforts (e.g., focus groups).

13.1.1. Community Validity Study

In one study conducted this year, a focus group was conducted with teachers about how they use data, their priorities for reports, and how reports could be improved. Researchers have noted that educators often do not use or deem test score reports useful (Lara & Chia, 2011). Therefore, one of the priorities of the testing program is to work with stakeholders to understand their needs and priorities for KĀ'EO results. The goal is to ensure that data supports and is aligned with the instructional needs of teachers, administrators, and parents. Ideally, it should be useful in making decisions in a non-punitive manner. Additionally, the project aims to give stakeholders ownership of their assessment data by ensuring that it is not externally derived or provided in a non-contextualized report used to judge schools and students.

To that end, the tools of community validity are employed to inform our thinking and centralize the community to improve our data collection and dissemination. If data is not used in a manner consistent with the priorities of the community, it can be detrimental to Kaiapuni students and communities.

The study provided a valuable first step in collecting community feedback about KĀʻEO reports. The participating educators said they liked the current simple and clean visuals, and contextual information that supports data interpretation. They also provided concrete suggestions for improving the reports by including links to academic standards and family resources. Further, discussions included providing additional data such as longitudinal and interim data. Most importantly, they voiced a need for additional support for parents and teachers in using the data to support students. The KĀʻEO assessment team will look at how to incorporate suggested changes into future reports and share the request for more professional development with the Hawaiʻi Department of Education's

Assessment Section and Office of Hawaiian Education. (for additional information see KĀ'EO Community Validity Studies Report, 2023)

13.2. Communication with the Technical Advisory Committees (TACs)

The KĀʻEO program works closely with the Hawaiʻi Department of Education (HIDOE) TAC and provides progress reports twice a year. The committees are composed of technical staff who guide and advise the program. Meeting minutes, agendas, PowerPoints, and follow-up actions are documented.

13.3. Item Data Reviews

Periodic data reviews are an important part of the continuous improvement process. With each new administration, KĀʻEO developers gain access to new information about new field test items as well as operational items with a well-established "data history." These reviews are typically conducted shortly after new item data becomes available, and may be conducted in conjunction with or prior to the test form selection process. In addition, independent bias and sensitivity reviews are conducted on all items by panels of Kaiapuni educators (details provided later in this chapter).

13.4. Feedback Integration Documents

KĀʻEO developers utilize a continuous improvement process that may be documented in a variety of ways, including the use of an item action log. The item action logging process allow KĀʻEO developers to receive feedback or recommended actions in almost any form (e.g., alignment studies, cognitive labs, internal item data reviews, external reviews) and a dedicated plan for tracking the action steps and progress needed to reconcile or fully address the feedback given. Action steps may require any number of specific changes such as blacklisting items, modifying the next round of field test content, modifying or updating item development procedures or processes, and/or making changes to any existing criteria for future KĀʻEO test form selections.

13.5. Inventory Audits and Other Item Quality Measures

Item quality can be a relatively subjective determination which can become a matter of reinterpretation over time. To this end, KĀʻEO's item bank (referred to internally as "the item inventory") is subject to periodic review and reconsideration from one administrative year to the next. Audits may be conducted as part of this review to identify items which may be subject to content drift due to age, overuse, alignment drift, and/or clarifications or refinements in the way KĀʻEO Student Learning Objectives are interpreted over time.

13.6. Item Refreshing

The KĀʻEO is a relatively new assessment system and, as such, a primary focus of our ongoing work will be to build an item bank. On a yearly basis, we will embed field test items (5-10 items) in the operational assessment. This will ensure that the burden to schools is small while still allowing for increases in the number of items in the item bank.

Assessment programs often provide multiple forms of a test within or between school years. While the KĀʻEO assessment does not use multiple forms, we refresh the assessment by adding in new items. In 2017, we started an embedded field test of items in the operational assessment. Approximately 10% of each operational test form will include embedded field test items. These items were checked for model fit and functionality but were not included in the calculation of student scores. Once items are field

tested, they will be available for selection in future operational tests and later administrations. The result will be that each operational test will have a portion of new items every year. This approach will allow for new items to be spiraled in each year in order to help ensure items are not overexposed.

13.7. Anchor Set Equating

Spiraling in new items will mean that anchor equating with all items on the test will not be possible without potentially introducing item drift. Anchor equating, therefore, is conducted using a subset of items or an anchor set. The anchor set provides the foundation for the equating moving forward and will remain consistent from year to year. Prior to administering the 2019 KĀʻEO assessments, anchor sets were selected for grades 3 and 4. In 2022, anchor items will be selected for grades 5-8 HLA and math and grade 8 science. An equating study will be conducted to demonstrate the efficacy of the anchor set prior to the 2023 administration.

13.8. Item Bias and Sensitivity Review

Methods have long been established by testing organizations to study item accessibility and fairness using panels of experts (AERA/APA/NCME, 2014). Panels typically review items with consideration for fairness issues related to such topics as gender bias, socio-economic bias, and linguistic bias, as well as accessibility and universal design. The item review undertaken for the Kaiapuni Assessment of Educational Outcomes (KĀʻEO) certainly included definitions and examples from industry best practices. However, the KĀʻEO panels also took a more comprehensive approach to the review in order to provide space for Kaiapuni educators to consider how these issues might be represented in an assessment developed in the Hawaiian language and grounded in Hawaiian wisdom and culture. For example, in Hawaiian language, pronouns and given names tend to be gender neutral. The panel members were asked to consider gender bias knowing that the presentation in items might be more subtle necessitating deeper conversations amongst the members.

For item reviews, the University of Hawai'i staff recruit item reviewers with a range of Kaiapuni schools and grade level expertise. This diversity of thought and experience is extremely important for the review process because academic language use can vary between schools. To address this issue, reviewers were invited from different islands, different schools, and different universities to ensure that the language used in items was appropriate for students at that grade level, that vocabulary and grammatical patterns used were familiar enough for all schools to access, and that items did not reflect a bias toward a particular language community. The Item Review Committees were composed of representatives from various backgrounds whose purpose was to screen the items for content match to the appropriate academic standard, as well as racial, socioeconomic, gender, and other sensitivity issues, particularly within the context of the Hawaiian immersion program. All item reviewers were proficient in both English and Hawaiian. This follows AERA/APA/NCME (2014) standards 3.1 and 3.2, which state:

> **Standard 3.0** All steps in the testing process, including test design, validation, development, administration, and scoring procedures, should be designed in such a manner as to minimize construct-irrelevant variance and to promote valid score interpretations for the intended uses for all examinees in the intended population.

Standard 3.1 Those responsible for test development, revision, and administration should design all steps of the testing process to promote valid score interpretations for intended score uses for the widest possible range of individuals and relevant subgroups in the intended population. (APA, AREA, NCME, 2014, p. 63)

Standard 3.2 Test developers are responsible for developing tests that measure the intended construct and for minimizing the potential for tests' being affected by construct-irrelevant characteristics, such as linguistic, communicative, cognitive, cultural, physical, or other characteristics. (APA, AREA, NCME, 2014, p. 64)

Standard 4.8 The test review process should include empirical analyses and/or the use of expert judges to review items and scoring criteria. When expert judges are used, their qualifications, relevant experiences, and demographic characteristics should be documented, along with the instructions and training in the item review process that the judges receive. (AERA/APA/NCME, 2014, p 88)

These standards are particularly critical for this assessment program. The intended uses of test scores described in Chapter 2 include the use of test scores for purposes of accountability, as well as appropriately measuring students in their language of instruction. The review process was implemented in order to solicit information from reviewers about typical review criteria (e.g., alignment of the item to the appropriate standard, gender sensitivity). However, because the test needed to consider important information regarding Hawaiian language and culture, reviewers were also asked to review items in terms of linguistic appropriateness and educational value. For additional information on past item reviews, see the KĀʻEO 2017 Technical Report, the 2020 KĀʻEO Item review reports, and the KĀʻEO Item Development Manual.

13.8.1. October 2022 Item Review

An item review meeting was held October 2022 that built off previous reviews. This section provides an overview of the findings, for more details see the KĀʻEO Item Review Report 2022. A panel of Kaiapuni school educators conducted a thorough review of all items to identify issues about bias/fairness/sensitivity and accessibility. The items reviewed were the items on the 2021 independent field test (IFT) and the embedded field test items on the 2022 administration form. The goal of the review was to guide future item development by identifying items that reviewers considered to be potentially biased, contain sensitive content, or had accessibility concerns; and then identifying the characteristics that could be causing these issues.

The review included Kaiapuni school educators, assessment consultants, and University of Hawaiʻi (UH) staff. Kaiapuni educators provided expert judgments in the form of ratings on bias/fairness/sensitivity and accessibility. The online item review workshop began with assessment experts providing training. The training was divided into two sections: bias/fairness/sensitivity and accessibility. Both sections were organized so that participants received the content information as a whole group, reviewed sample items in their assigned panels and then returned to the larger group to debrief on their small panel discussion and questions. After training, participants broke up into assigned small groups and reviewed all of the items on their assigned content area assessments. An online review tool gave panelists access to the items and provided space for panelists to record

individual ratings for bias, fairness, sensitivity and accessibility and a single place for comments. During the item review, if a participant flagged an item as 2 (potential issues) or 3 (significant issues), facilitators prompted panelists to discuss their ratings and were encouraged to provide a comment to support their rating(s). Given the context of the project to focus on bias/fairness/sensitivity and accessibility in the context of the Hawaiian language and culture, the ratings allowed individual panel members to highlight items for discussion. The comments indicated that the panelists discussed issues related to understanding how the items reflected cultural and linguistic considerations. These ratings did not necessarily indicate an issue with the item but instead presented an opportunity to jointly interpret the item for any concerns related to bias or accessibility. This provided a rich source of data for item developers to consider for future item development and when revising current items.

After the review meeting, analysts examined the information provided by panelists in their review sheets. Analysts used the individual ratings to calculate median item fairness and accessibility ratings. The analysts then qualitatively categorized and coded panelists' comments. Both the item and the comment analysis are presented by individual assessment and overall for each subject area. Overall, very few items were flagged for BFSA.

13.9. Cognitive Interview Analysis and Summary

Cognitive interviews were conducted in 2019-2020. Cognitive interviews were not conducted in 2020-2021 because of COVID. They will restart when schools reopen to visitors.

Chapter 14: Longitudinal Trends

As KĀʻEO becomes a more mature assessment program, it is important to track longitudinal trend in item and test characteristics. This chapter takes a longitudinal look at the statistics reviewed in this reports' validity, reliability, and fairness chapters. These chapters have outlined the importance of monitoring these assessment characteristics

14.1. Validity

This section looks at the longitudinal trends in participation, and item statistics.

14.1.1. Participation Trends

The trends in participation should be interpreted taking into account the small sample sizes of Kaiapuni students (see Table 8.1 for current year numbers). Participation from 2016 through 2019 was relatively stable (Table 14.1). The participation drop in 2021 can be attributed to the COVID-19 pandemic, which resulted in fewer students coming to school in person to take KĀʻEO. In 2022, participation increased but still did not return to the 2019 rate. The 2022 participation rates are also affected by lack of participation by school 563, one of the larger Kaiapuni schools (Table 14.2).

Table 14.1: Historic Participation

Subject	Grade	2016	2017	2018	2019	2021	2022
HLA	3	98.2%	98.1%	97.1%	97.7%	76.7%	83.6%
HLA	4	100.0%	97.3%	98.6%	98.3%	77.1%	84.2%
HLA	5				96.6%	77.8%	80.5%
HLA	6				89.2%	78.9%	82.8%
HLA	7				88.3%	72.1%	82.1%
HLA	8				79.9%	69.7%	80.2%
MA	3	98.2%	98.1%	96.3%	98.0%	76.2%	83.1%
MA	4	100.0%	97.3%	98.6%	98.3%	76.8%	83.9%
MA	5				95.9%	76.9%	80.9%
MA	6				88.8%	77.5%	82.8%
MA	7				88.3%	71.7%	83.2%
MA	8				79.9%	68.2%	81.6%
SC	5					77.5%	81.2%
SC	8				78.7%	69.7	81.2%

Note: Increases from the previous year are indicated in blue and decreases from the previous year are indicated in red.

Table 14.2: Participation rates without school 563

Grade	Year	All schools		Excluding 563		Participation change with 563 students removed
		Roster n	Participation	Roster n	Participation	
3	2019	352	98%	292	100%	2%
3	2021	361	76%	304	90%	14%
3	2022	372	83%	316	97%	14%
4	2019	231	98%	200	100%	2%
4	2021	328	77%	269	99%	22%
4	2022	335	84%	282	100%	16%
5	2019	290	96%	246	99%	3%
5	2021	324	77%	263	94%	17%
5	2022	303	81%	250	95%	14%
6	2019	268	89%	224	88%	-1%

Grade	Year	All schools		Excluding 563		Participation change with 563 students removed
		Roster n	Participation	Roster n	Participation	
6	2021	209	78%	181	89%	11%
6	2022	302	83%	247	96%	14%
7	2019	214	88%	163	89%	1%
7	2021	226	72%	184	87%	15%
7	2022	179	83%	152	94%	11%
8	2019	169	80%	127	79%	-1%
8	2021	198	68%	153	82%	14%
8	2022	207	82%	167	96%	14%
All Grades	2019	1524	93%	1252	94%	1%
All Grades	2021	1646	75%	1354	90%	15%
All Grades	2022	1698	83%	1414	96%	13%

14.2. Test Statistics

This section looks at test level statistics. The small sample size of the KĀʻEO assessment participants should be taken into consideration when evaluating the magnitude of changes in these statistics from year to year.

14.2.1. Cronbach's Alpha Trends

In general, the reliability of each assessment has been stable over time (Table 14.3). The lowest reliability (0.96) was for grade 7 mathematics in 2021, and the highest reliability (0.91) for HLA grade 3 in 2021 and 2021 and also HLA grade 8 in 2021. The reliability of grade 7 math has improved since the first operational administration in 2019.

Table 14.3: Historic Cronbach's Alpha

Subject	Grade	2016	2017	2018	2019	2021	2022
HLA	3		0.89	0.89	0.90	0.91	0.91
HLA	4		0.89	0.90	0.90	0.88	0.89
HLA	5				0.90	0.90	0.90
HLA	6				0.89	0.91	0.89
HLA	7				0.86	0.89	0.90
HLA	8				0.88	0.91	0.90
MA	3		0.85	0.83	0.86	0.85	0.86
MA	4		0.85	0.87	0.84	0.82	0.83
MA	5				0.83	0.82	0.84
MA	6				0.84	0.88	0.86
MA	7				0.71	0.69	0.78
MA	8				0.79	0.73	0.73
SC	5					0.82	0.85
SC	8				0.80	0.80	0.81

14.2.2. IRT Mean Logit Trends

There was a general dip in scores in 2021, which was the first year after the COVID-19 pandemic. In 2022 there was a slight rebound in scores from the 2021 scores in both HLA and math in grades 3, 4 and 6; math grades 5, and 8 and science grade 5. Grade 7 HLA scores were consistent, while the other four assessments saw a slight decrease in scores in 2022 from 2021 (Table 14.4).

Table 14.4: Historic Logit Scores

Subject	Grade	2019	2021	2022
HLA	3	-0.39	-0.86	-0.79
HLA	4	0.08	-0.38	-0.33
HLA	5	-0.53	-0.60	-0.66
HLA	6	-0.67	-1.03	-0.81
HLA	7	-1.03	-0.95	-0.95
HLA	8	-0.67	-0.69	-0.71
MA	3	-0.62	-0.86	-0.59
MA	4	-0.63	-0.82	-0.37
MA	5	-0.88	-0.86	-0.80
MA	6	-1.12	-1.31	-1.24
MA	7	-1.70	-1.58	-1.65
MA	8	-1.53	-1.49	-1.48□
SC	5		-1.04	-0.91□
SC	8	-0.67	-1.57	-1.63□

Chapter 15: Validity Summary Matrix

Validity theory is grounded "evidence based on test content that supports the intended interpretations of the test" (AERA/APA/NCME, 2014, p. 218). Each year, myriad data are collected to support KĀʻEO's validity argument. While the statement is simple, there is a complexity in the prioritization and collection of evidence supporting validity. This chapter summarizes the evidence collected in 2022 as it relates to that support and focuses on subsequent data collection. In addition, in this chapter, the program's adherence to the purpose statements embedded within the theory of action and the validity framework will be evaluated using a validity scorecard focusing on community validity. For our purposes, the validity scorecard is a means of tracking the validity evidence that has been collected in a concise format. It also allows the project team to highlight areas for which there is strong evidence as well as areas that need additional information.

The KĀʻEO validity framework prioritizes community validity as the foundation of the validity argument. Community validity is the degree to which the assessment generates results that align with the uses intended by the community; and the degree to which developers collaborate with community members to support accurate and meaningful interpretations. Community recommendations and priorities are just as important to the KĀʻEO program as the traditional technical analyses. This chapter revisits the theory of action and the validity argument. A rating scale was applied to the argument components to provide a validity scorecard for the KĀʻEO assessment program.

The focus on community validity is a reflection of work in the evaluation field, which has shifted from doing an evaluation on communities to doing an evaluation with communities. The assessment field can apply the lesson from the evaluation community by asking the question – what would our assessments look like if we started building assessments with and for communities instead of imposing a pre-established assessment on them?

Building a summary of how community validity integrates across our purpose statements and validity argument is a key idea that allows us to reflect and build evidence where weakness may persist. KĀʻEO uses a four-level rating scale to evaluate the strength of the evidence category (e.g. content validity) for each purpose statement. This is derived from the structure of a validity scorecard but expands the rating system by taking a broader look at validity (Table 15.1) (Cognia, 2021). Our intention in the validity summary matrix is to highlight the priorities of our stakeholders in our validity evidenc by centering community and cultural validity. These priorities are highlighted in our rating scale where a high validity rating can only be achieved through the inclusion of culture and language and engagement of community, in addition to traditional technical evidence.

Table 15.1: Validity Rating Definitions

Rating	Cognia Criteria	Adapted for KĀʻEO
Strong	All required pieces of relevant logical and statistical evidence are provided to support a validity argument.	Community input and cultural feedback present for all required evidence and technical evidence provides a persuasive logical and statistical argument in support of the validity argument.

Rating	Cognia Criteria	Adapted for KĀʻEO
Moderate	Several pieces of relevant evidence are provided, but not all; may include sufficient logical or statistical evidence.	Community input and cultural feedback limited and technical evidence provides strong logical and statistical argument in support of the validity argument.
Limited	Few pieces of logical or statistical evidence are provided; Evidence may be only marginally relevant when few pieces are required.	Community input and cultural feedback limited and technical evidence provides incomplete support of the validity argument.
None	No relevant logical or statistical evidence exists.	No community input and cultural feedback present and technical evidence provides incomplete support of the validity argument

15.1. Evaluation of Purpose Statements

The ratings were applied across the KĀʻEO purpose statements in the Theory of Action (Figure 15.1). These purpose statements focus the KĀʻEO assessment system as a measure of community, state, and federal accountability. The evidence to support the KĀʻEO purpose statements has been detailed throughout this technical report. This section links the purpose statements and that evidence.

Figure 15.1: KĀʻEO Theory of Action

15.1.1. Purpose statement 1

> *A measure of the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.*

Test development processes and procedures are described in detail in Chapter 5. Community involvement was critical during standards development, item writing, and standard setting. Standard development, item writing and standard setting were conducted using industry standards for technical quality. Alignment studies provide an indication of the strength to which the assessment measures the knowledge and skills required by the content standards.

Evidence for purpose statement 1: Strong

15.1.2. Purpose Statement 2

> *An appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and the broader community.*

The reporting process is explained in Chapter 11. The KĀʻEO provides reports developed in conjunction with the community to provide clear and actionable information to stakeholders. In addition, we are working with the community to identify what information they would like to see on the reports. Finally, we collect and report survey data based on opportunity to learn principles to contextualize the achievement data for stakeholders.

Evidence for purpose statement 2: Moderate

15.1.3. Purpose Statement 3

> *The reliability and validity of building the foundation of an assessment informed by Hawaiian knowledge, wisdom, and intelligence.*

KĀʻEO strives to complete all validity and reliability analyses and studies per the USDOE peer review guidance. Including internal and external validity evidence, classification consistency analyses, and differential item functioning. These analyses are explained in chapters 8 – 10. In addition, the scoring of all open-ended items is done by trained Kaiapuni teachers and administrators according to industry best practices. This process is detailed in chapter 7.

KĀʻEO seeks to go beyond traditional technical reliability and validity evidence by centering community and stakeholder priorities in our validity argument. For this evidence, we focused on qualitative data including focus groups, cognitive interviews and item reviews as reported in chapter 13 and the KĀʻEO Community Validity Studies Report (Englert, Kūkea Shultz, and Allen, 2023).

Evidence for purpose statement 3: Strong to Moderate

15.2. Evaluation of Validity Framework

The ratings were also applied across the validity framework outlined in Chapter 3. This framework situates the KĀʻEO assessment system as a measure of community, state, and federal accountability. The evidence to support the framework has been detailed throughout this technical report. Table 15.1 summarizes the evidence, provides a rating, and outlines next steps for each aspect of the validity framework.

Table 15.1: Evidence to Support the Validity Framework.

Framework Category	Evidence	Rating	Notes
Cultural and community validity	Ongoing improvements are in place to ensure that any issues or concerns raised by stakeholders, HIDOE, or the internal team are addressed. Ongoing community involvement. Language representation Cultural validity	Strong	Processes are in place to monitor system and item improvements (e.g., action logs, TAC meetings). Community validity study that shows how the program connects to the community in terms of supporting score use. Language use on cognitive interviews indicates that students can understand the Hawaiian language to assess the items.
Content Validity	Alignment studies, community-based content development, and review, test specifications	Moderate	Several assessments need additional items to improve alignment. These findings are being addressed.
Validity evidence based on Cognitive Processes	Yearly cognitive interviews to understand cognitive processes. These were suspended during the pandemic. Cognitive validity study that correlates ratings from teachers about their students' ability to think at a complex level and student scores on high DOK items.	Moderate	Cognitive labs will begin as soon as schools allow for in-person visits. Cognitive validity studies will be conducted in 2023 for grades 5-8 in a similar manner to those conducted in grades 3-4.
External Validity	Examining relationships between teacher perceptions of individual student achievement and the KĀʻEO results for that given student.	Moderate	Results show strong correlations between teachers' ratings of students and the students' performance on KĀʻEO for grades 3-4. These studies will be conducted in grades 5-8 in 2023.
Internal Validity	Dimensionality	Strong	Correlations between domains show strong to moderate correlations. The dimensionality results from the Rasch analyses show internal consistency.
Reliability and Fairness	Classification analyses, item fit, Cronbach alpha, and DIF. Ongoing item review meetings collect feedback from stakeholders on bias, fairness, and sensitivity of items and passages. Scoring analyses ensure the accuracy and reliability of the hand-scored items.	Moderate	Results show that KĀʻEO scores produce reliable information for stakeholders. Bias and accessibility reviews provided evidence of teacher input on the fairness of items. Subscore reliabilities are generally high, but some subscores have lower reliability. The KĀʻEO team is working to improve items in these areas.
Overall Rating: High Moderate			

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2022

Kaiapuni Assessment of Education Outcomes (KĀʻEO)

Operational Assessment Technical Report Appendices

Grades 3-8 Hawaiian Language Arts and Math

Grades 5 & 8 Science

Kerry Englert, PhD

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Appendix A: Theory of Action

Ka Manaʻo Hoʻoulu:

Mālama i ka ʻike a me ka ʻōlelo Hawaiʻi ➔Hui pū ke kaiāulu ➔ Hoʻoikaika i ka papahana kaiapuni (ana, hōʻike, haʻawina) ➔ ʻĀmana nā haumāna, kumu, poʻokula, mākua ➔ Haʻi i ko kākou moʻolelo ponoʻī: 1) no ka pono o nā hanauna i hala a me nā hanauna hou, 2) e hōʻike ai i ka ikaika o ke kaiapuni i ke aupuni, 3) e alakaʻi ai i ke ala kūpono no nā kaiāulu Hawaiʻi a me nā kaiāulu ʻōiwi ➔E kū ana ka papahana kaiapuni i ka naʻauao Hawaiʻi no nā hanauna i hala a me nā hanauna hou.

Theory of Action:

Appendix Figure A.1: Theory of Action (translated)

Appendix B: Purpose Statements

Ka mākia o ka hōʻike:

ʻO ka mākia ʻo KĀʻEO ka paepae ʻana i ka loiloi kaiapuni pono e hōʻike ai i:

- ka lei o ka lanakila o nā kula a me nā haumāna ʻōlelo Hawaiʻi i ke kaiāulu a me ke aupuni ma o ka mākau ʻōlelo Hawaiʻi, ka pili helu a me ke akeakamai.
- ke ala kūpono e hoʻomōhala ai i ka papahana kaiapuni ma ka hana ma ka papa, nā kula, nā ʻohana kaiapuni, a me ke kaiāulu.
- ka pono o ke kūkulu ʻana i ke kahua o ka loiloi ma o ka naʻauao Hawaiʻi.

Purpose Statement:

The purpose of the Kaiapuni Assessment of Education Outcomes (KĀʻEO) is to support a fair, valid, and reliable assessment that demonstrates:

- To measure the achievement of Hawaiian language (immersion) schools and students in Hawaiian language arts, mathematics, and science for the purpose of community accountability as well as for state and federal accountability.
- An appropriate pathway to grow and improve the Hawaiian language immersion program in classroom curriculum, at the school level, in Hawaiian immersion families, and in the broader community.
- The reliability and validity of building the foundation of an assessment that is informed by Hawaiian knowledge, wisdom, and intelligence.

Appendix C: Classical Test Theory Statistics

This appendix contains the details of the Classical Test Theory (CTT) item analysis.

Appendix Table C.1: 2022 HLA CTT Statistics

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	3	84	0.69	0.46	24.55	130.8	0.49	0.9	308
HLA	3	87	0.21	0.41	25.03	132.32	0.39	0.9	308
HLA	3	88	0.39	0.49	24.86	130.39	0.5	0.9	308
HLA	3	89	0.44	0.5	24.81	132.92	0.26	0.9	308
HLA	3	90	0.81	0.39	24.43	132.31	0.42	0.9	308
HLA	3	91	0.76	0.43	24.48	132.1	0.4	0.9	308
HLA	3	92	0.4	0.49	24.85	131.03	0.44	0.9	308
HLA	3	93	0.78	0.41	24.46	133.02	0.32	0.9	308
HLA	3	94	0.77	0.42	24.48	130.95	0.52	0.9	308
HLA	3	95	0.24	0.43	25	132.06	0.4	0.9	308
HLA	3	96	0.29	0.45	24.96	131.48	0.44	0.9	308
HLA	3	97	0.41	0.49	24.83	130.83	0.46	0.9	308
HLA	3	99	0.44	0.5	24.8	131.12	0.42	0.9	308
HLA	3	101	0.37	0.48	24.88	130.42	0.5	0.9	308
HLA	3	104	0.25	0.43	25	130.61	0.55	0.9	308
HLA	3	107	0.54	0.5	24.71	132.91	0.26	0.9	308
HLA	3	108	0.37	0.48	24.87	130.62	0.48	0.9	308
HLA	3	110	0.3	0.46	24.95	132.83	0.3	0.9	308
HLA	3	112	0.08	0.27	25.17	133.56	0.4	0.9	308
HLA	3	113	0.11	0.31	25.14	133.94	0.3	0.9	308
HLA	3	114	0.51	0.5	24.74	132.66	0.28	0.9	308
HLA	3	117	0.58	0.49	24.66	130.76	0.46	0.9	308
HLA	3	119	0.38	0.48	24.87	133.32	0.24	0.91	308
HLA	3	123	0.4	0.49	24.84	132.91	0.27	0.9	308
HLA	3	125	0.54	0.5	24.7	130.96	0.44	0.9	308
HLA	3	127	0.04	0.19	25.21	134.9	0.29	0.91	308
HLA	3	130	0.37	0.48	24.87	134.61	0.12	0.91	308
HLA	3	137	0.45	0.5	24.8	132.16	0.33	0.9	308
HLA	3	138	0.34	0.57	24.91	128.81	0.55	0.9	308
HLA	3	143	0.31	0.46	24.94	133.63	0.22	0.91	308
HLA	3	145	0.41	0.49	24.84	129.77	0.55	0.9	308
HLA	3	150	0.69	0.46	24.55	131.18	0.46	0.9	308
HLA	3	156	0.3	0.46	24.95	132.98	0.29	0.9	308
HLA	3	158	0.41	0.49	24.83	132.91	0.27	0.9	308
HLA	3	161	0.52	0.5	24.73	132.15	0.33	0.9	308
HLA	3	162	0.64	0.48	24.61	131.93	0.36	0.9	308
HLA	3	379	0.23	0.51	25.01	130.89	0.44	0.9	308
HLA	3	381	0.51	0.5	24.73	130.2	0.5	0.9	308
HLA	3	383	0.67	0.47	24.58	134.39	0.14	0.91	308
HLA	3	384	0.57	0.5	24.67	133.71	0.2	0.91	308
HLA	3	394	2.32	1.53	22.93	114.15	0.6	0.91	308
HLA	3	1020	0.32	0.55	24.93	129.17	0.54	0.9	308
HLA	3	1021	0.51	0.5	24.73	133.77	0.19	0.91	308
HLA	3	1022	0.34	0.48	24.91	135.34	0.06	0.91	308
HLA	3	1023	0.17	0.38	25.07	133.24	0.32	0.9	308
HLA	3	1024	0.63	0.9	24.62	122.14	0.67	0.9	308
HLA	3	1025	0.24	0.43	25.01	134.2	0.18	0.91	308
HLA	3	1026	0.28	0.45	24.97	131.22	0.47	0.9	308

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	3	1277	0.26	0.44	24.99	135.57	0.04	0.91	308
HLA	3	1281	0.38	0.48	24.87	133.27	0.24	0.91	308
HLA	3	1282	0.43	0.5	24.81	132.57	0.3	0.9	308
HLA	3	1283	0.56	0.5	24.69	131.99	0.35	0.9	308
HLA	3	1284	0.58	0.77	24.67	124.2	0.67	0.9	308
HLA	3	1285	0.1	0.3	25.15	132.94	0.46	0.9	308
HLA	3	1286	0.12	0.33	25.13	134.05	0.27	0.9	308
HLA	3	1478	0.49	0.5	24.76	130.91	0.44	0.9	308
HLA	4	7	0.82	0.39	26.65	117.36	0.44	0.89	281
HLA	4	8	0.65	0.48	26.82	116.38	0.45	0.89	281
HLA	4	9	0.4	0.49	27.08	116.73	0.4	0.89	281
HLA	4	11	0.18	0.38	27.3	117.78	0.4	0.89	281
HLA	4	12	0.64	0.48	26.83	116.51	0.43	0.89	281
HLA	4	13	0.78	0.42	26.69	118.17	0.32	0.89	281
HLA	4	14	0.75	0.44	26.73	117.44	0.38	0.89	281
HLA	4	15	0.57	0.5	26.9	115.4	0.52	0.89	281
HLA	4	16	0.59	0.49	26.89	116.86	0.39	0.89	281
HLA	4	17	0.54	0.5	26.94	116.8	0.39	0.89	281
HLA	4	18	0.67	0.47	26.8	118.04	0.29	0.89	281
HLA	4	20	0.75	0.43	26.72	116.34	0.5	0.89	281
HLA	4	21	0.43	0.5	27.05	116.84	0.39	0.89	281
HLA	4	22	0.39	0.49	27.08	117.84	0.3	0.89	281
HLA	4	23	0.36	0.48	27.11	121.14	-0.01	0.89	281
HLA	4	24	0.32	0.47	27.15	115.71	0.53	0.89	281
HLA	4	25	0.26	0.44	27.21	120.74	0.03	0.89	281
HLA	4	26	0.43	0.5	27.04	119.5	0.14	0.89	281
HLA	4	27	0.59	0.49	26.88	118.36	0.25	0.89	281
HLA	4	30	0.4	0.49	27.07	119.17	0.17	0.89	281
HLA	4	31	0.43	0.5	27.04	116.8	0.39	0.89	281
HLA	4	34	0.51	0.5	26.96	116.87	0.38	0.89	281
HLA	4	35	0.19	0.5	27.28	115.27	0.53	0.89	281
HLA	4	36	0.42	0.49	27.05	120.43	0.05	0.89	281
HLA	4	37	0.41	0.49	27.06	117.63	0.31	0.89	281
HLA	4	38	0.63	0.48	26.84	118.22	0.26	0.89	281
HLA	4	40	0.44	0.5	27.04	118.84	0.2	0.89	281
HLA	4	41	0.22	0.42	27.25	119.31	0.19	0.89	281
HLA	4	42	0.62	0.85	26.85	109.58	0.62	0.88	281
HLA	4	46	0.36	0.48	27.11	118.21	0.27	0.89	281
HLA	4	47	0.43	0.5	27.04	117.14	0.36	0.89	281
HLA	4	48	0.67	0.47	26.8	116.07	0.49	0.89	281
HLA	4	49	0.63	0.48	26.85	115.71	0.51	0.89	281
HLA	4	50	0.38	0.49	27.09	116.05	0.47	0.89	281
HLA	4	51	0.44	0.5	27.03	120.28	0.06	0.89	281
HLA	4	54	0.45	0.5	27.02	117.78	0.3	0.89	281
HLA	4	55	0.33	0.47	27.15	120.04	0.09	0.89	281
HLA	4	56	0.27	0.44	27.2	120.36	0.07	0.89	281
HLA	4	57	0.25	0.43	27.23	120.2	0.09	0.89	281
HLA	4	60	0.63	0.48	26.84	115.75	0.5	0.89	281
HLA	4	61	0.4	0.49	27.07	117.54	0.32	0.89	281
HLA	4	62	0.4	0.49	27.08	117.68	0.31	0.89	281
HLA	4	63	0.21	0.4	27.27	122	-0.1	0.89	281
HLA	4	64	0.73	0.44	26.74	116.68	0.45	0.89	281
HLA	4	65	0.73	0.44	26.74	117.4	0.38	0.89	281
HLA	4	387	0.47	0.5	27.01	117.98	0.28	0.89	281

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	4	389	0.76	0.43	26.71	116.83	0.46	0.89	281
HLA	4	395	1.66	1.31	25.81	104.01	0.58	0.89	281
HLA	4	1011	0.27	0.44	27.2	117.73	0.34	0.89	281
HLA	4	1012	0.22	0.42	27.25	116.16	0.54	0.89	281
HLA	4	1013	0.78	0.97	26.7	106.94	0.67	0.88	281
HLA	4	1014	0.23	0.42	27.25	116.58	0.49	0.89	281
HLA	4	1015	0.5	0.5	26.98	118.55	0.22	0.89	281
HLA	4	1016	0.23	0.42	27.24	119.12	0.21	0.89	281
HLA	4	1017	0.02	0.16	27.45	120.26	0.28	0.89	281
HLA	4	1019	0.38	0.49	27.1	116.22	0.46	0.89	281
HLA	4	1291	0.25	0.43	27.23	117.32	0.4	0.89	281
HLA	5	625	0.54	0.5	26.27	152.67	0.33	0.9	244
HLA	5	626	0.63	0.48	26.18	151.59	0.43	0.9	244
HLA	5	627	0.54	0.5	26.27	154.01	0.22	0.9	244
HLA	5	629	0.36	0.48	26.45	150.37	0.54	0.9	244
HLA	5	630	0.43	0.5	26.38	152.87	0.32	0.9	244
HLA	5	631	0.44	0.5	26.36	151.75	0.41	0.9	244
HLA	5	633	0.43	0.5	26.38	153.61	0.26	0.9	244
HLA	5	634	0.56	0.5	26.25	153.08	0.3	0.9	244
HLA	5	636	0.55	0.5	26.25	150.85	0.48	0.9	244
HLA	5	637	0.2	0.4	26.6	151.72	0.51	0.9	244
HLA	5	640	0.17	0.38	26.64	153.12	0.4	0.9	244
HLA	5	642	0.39	0.49	26.41	151.86	0.41	0.9	244
HLA	5	644	0.84	0.36	25.96	152.61	0.48	0.9	244
HLA	5	646	0.5	0.5	26.31	152.16	0.37	0.9	244
HLA	5	648	0.55	0.5	26.25	152.75	0.32	0.9	244
HLA	5	672	0.49	0.5	26.32	153.6	0.25	0.9	244
HLA	5	673	0.1	0.3	26.71	155.2	0.23	0.9	244
HLA	5	677	0.17	0.38	26.64	153.1	0.41	0.9	244
HLA	5	681	0.2	0.4	26.61	153.14	0.38	0.9	244
HLA	5	684	0.45	0.5	26.36	149.91	0.56	0.9	244
HLA	5	689	0.63	0.48	26.18	151.45	0.45	0.9	244
HLA	5	690	0.44	0.5	26.36	150.64	0.5	0.9	244
HLA	5	693	0.22	0.42	26.59	153.6	0.31	0.9	244
HLA	5	696	0.57	0.5	26.23	150.48	0.52	0.9	244
HLA	5	699	0.7	0.46	26.11	153.6	0.28	0.9	244
HLA	5	702	0.34	0.47	26.47	152.13	0.4	0.9	244
HLA	5	706	0.09	0.33	26.71	154.47	0.29	0.9	244
HLA	5	707	0.17	0.38	26.64	154.04	0.3	0.9	244
HLA	5	708	0.18	0.38	26.63	152.74	0.44	0.9	244
HLA	5	709	0.55	0.5	26.26	152.36	0.36	0.9	244
HLA	5	711	0.32	0.47	26.49	155.07	0.15	0.9	244
HLA	5	712	0.88	1.26	25.93	134.46	0.72	0.9	244
HLA	5	713	0.32	0.47	26.49	150.94	0.51	0.9	244
HLA	5	714	0.41	0.49	26.4	152.12	0.38	0.9	244
HLA	5	716	0.34	0.48	26.46	154.22	0.22	0.9	244
HLA	5	718	0.16	0.37	26.64	156.57	0.03	0.9	244
HLA	5	719	0.34	0.48	26.47	150.35	0.55	0.9	244
HLA	5	720	0.38	0.49	26.43	150.66	0.51	0.9	244
HLA	5	721	0.66	0.48	26.15	151.71	0.43	0.9	244
HLA	5	722	0.86	0.93	25.95	142.29	0.63	0.9	244
HLA	5	723	0.23	0.42	26.58	152.9	0.38	0.9	244
HLA	5	724	0.41	0.49	26.39	153.98	0.23	0.9	244
HLA	5	725	0.44	0.5	26.37	152.63	0.34	0.9	244

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	5	726	0.44	0.5	26.36	152.4	0.36	0.9	244
HLA	5	727	0.27	0.44	26.54	151.85	0.45	0.9	244
HLA	5	728	0.52	0.5	26.29	151.93	0.39	0.9	244
HLA	5	729	0.6	0.49	26.21	154.61	0.18	0.9	244
HLA	5	730	0.35	0.48	26.45	155.01	0.15	0.9	244
HLA	5	1030	2.98	1.97	23.82	122.76	0.7	0.9	244
HLA	5	1072	0.25	0.44	26.55	153.78	0.28	0.9	244
HLA	5	1074	0.82	0.39	25.99	154.48	0.25	0.9	244
HLA	5	1183	0.3	0.46	26.51	154.32	0.22	0.9	244
HLA	5	1186	0.49	0.5	26.32	152.16	0.37	0.9	244
HLA	5	1193	0.39	0.49	26.42	151.78	0.41	0.9	244
HLA	5	1208	0.2	0.4	26.6	155.71	0.11	0.9	244
HLA	5	1215	0.31	0.46	26.5	157.62	-0.07	0.9	244
HLA	5	1222	0.69	0.46	26.11	151.17	0.49	0.9	244
HLA	6	632	0.35	0.48	26.63	146.34	0.27	0.89	249
HLA	6	639	0.24	0.43	26.74	145.31	0.41	0.88	249
HLA	6	643	1.47	1.2	25.51	133.59	0.53	0.88	249
HLA	6	645	0.58	0.49	26.4	144.33	0.43	0.88	249
HLA	6	647	0.26	0.44	26.72	145.95	0.34	0.88	249
HLA	6	649	0.44	0.5	26.54	146.65	0.23	0.89	249
HLA	6	650	0.27	0.44	26.71	146.24	0.31	0.88	249
HLA	6	651	0.17	0.38	26.81	146.12	0.38	0.88	249
HLA	6	652	0.55	0.5	26.43	143.99	0.46	0.88	249
HLA	6	653	0.71	0.45	26.27	144.71	0.44	0.88	249
HLA	6	655	0.69	0.46	26.29	145.31	0.37	0.88	249
HLA	6	656	0.4	0.49	26.58	146.6	0.24	0.89	249
HLA	6	657	0.42	0.5	26.56	145.78	0.31	0.88	249
HLA	6	659	0.5	0.5	26.48	145.64	0.32	0.88	249
HLA	6	660	0.05	0.22	26.93	148.91	0.15	0.89	249
HLA	6	661	0.43	0.5	26.55	146.8	0.22	0.89	249
HLA	6	662	0.42	0.5	26.56	146.23	0.27	0.89	249
HLA	6	663	0.09	0.28	26.89	147.66	0.29	0.89	249
HLA	6	664	0.9	1.06	26.08	133.03	0.63	0.88	249
HLA	6	665	0.4	0.49	26.58	144.42	0.43	0.88	249
HLA	6	666	0.96	1.21	26.02	134	0.51	0.88	249
HLA	6	667	0.6	0.49	26.38	145.97	0.3	0.89	249
HLA	6	668	0.14	0.35	26.84	145.44	0.49	0.88	249
HLA	6	669	0.33	0.47	26.65	146.14	0.3	0.89	249
HLA	6	674	0.06	0.24	26.92	148.57	0.19	0.89	249
HLA	6	675	0.28	0.45	26.7	146.7	0.26	0.89	249
HLA	6	676	0.43	0.5	26.55	148.63	0.07	0.89	249
HLA	6	678	0.57	0.5	26.41	143.99	0.46	0.88	249
HLA	6	679	0.25	0.43	26.73	145.58	0.38	0.88	249
HLA	6	680	1.94	1.25	25.04	130.55	0.62	0.88	249
HLA	6	682	0.36	0.48	26.62	148.29	0.1	0.89	249
HLA	6	683	0.73	0.45	26.25	145.79	0.35	0.88	249
HLA	6	687	0.12	0.33	26.86	147.25	0.3	0.89	249
HLA	6	688	0.35	0.48	26.63	143.24	0.55	0.88	249
HLA	6	691	0.04	0.21	26.94	149.16	0.1	0.89	249
HLA	6	692	0.23	0.42	26.75	148.77	0.08	0.89	249
HLA	6	694	0.3	0.55	26.68	142.48	0.52	0.88	249
HLA	6	697	0.35	0.48	26.63	146.06	0.3	0.89	249
HLA	6	698	0.07	0.25	26.91	148.94	0.12	0.89	249
HLA	6	700	0.64	0.48	26.34	143.38	0.53	0.88	249

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	6	701	0.07	0.25	26.91	148.1	0.25	0.89	249
HLA	6	1031	3.33	1.74	23.65	124.16	0.58	0.88	249
HLA	6	1075	0.3	0.46	26.68	147.83	0.15	0.89	249
HLA	6	1083	0.38	0.49	26.6	145.66	0.32	0.88	249
HLA	6	1169	0.17	0.38	26.81	147.41	0.24	0.89	249
HLA	6	1170	0.06	0.23	26.92	148.66	0.18	0.89	249
HLA	6	1171	0.34	0.47	26.64	145.53	0.35	0.88	249
HLA	6	1172	0.79	0.41	26.19	145.95	0.36	0.88	249
HLA	6	1173	0.92	1	26.06	136.59	0.52	0.88	249
HLA	6	1309	0.24	0.43	26.74	146.27	0.32	0.88	249
HLA	6	1566	0.57	0.5	26.41	147.7	0.15	0.89	249
HLA	6	1661	1.31	1	25.67	134.73	0.6	0.88	249
HLA	6	1755	0.44	0.5	26.54	144.06	0.45	0.88	249
HLA	7	762	0.43	0.5	25.17	146.23	0.44	0.9	146
HLA	7	763	0.58	0.5	25.02	150.07	0.12	0.9	146
HLA	7	769	0.71	0.45	24.89	147.04	0.41	0.9	146
HLA	7	770	0.44	0.67	25.16	142.46	0.55	0.89	146
HLA	7	774	0.1	0.3	25.5	151.82	-0.03	0.9	146
HLA	7	777	0.38	0.49	25.23	148.74	0.23	0.9	146
HLA	7	784	0.55	0.5	25.05	147.41	0.34	0.9	146
HLA	7	790	0.73	0.45	24.88	146.18	0.49	0.9	146
HLA	7	803	0.32	0.47	25.29	145.72	0.51	0.89	146
HLA	7	806	0.32	0.47	25.28	149.76	0.15	0.9	146
HLA	7	808	1.23	1.21	24.37	135.75	0.52	0.9	146
HLA	7	811	0.26	0.44	25.34	147.95	0.33	0.9	146
HLA	7	822	0.07	0.25	25.53	149.91	0.28	0.9	146
HLA	7	829	0.56	0.5	25.04	147.93	0.29	0.9	146
HLA	7	834	0.35	0.48	25.25	145.68	0.5	0.89	146
HLA	7	839	0.19	0.4	25.41	146.53	0.53	0.9	146
HLA	7	843	0.08	0.26	25.53	149.78	0.29	0.9	146
HLA	7	869	0.11	0.31	25.49	147.34	0.56	0.9	146
HLA	7	870	0.05	0.21	25.55	149.71	0.37	0.9	146
HLA	7	871	0.76	0.43	24.84	148.55	0.29	0.9	146
HLA	7	872	0.32	0.72	25.28	142.46	0.5	0.89	146
HLA	7	874	0.06	0.24	25.54	150.83	0.14	0.9	146
HLA	7	875	0.43	0.5	25.17	147.44	0.33	0.9	146
HLA	7	876	0.14	0.34	25.47	151.52	0.01	0.9	146
HLA	7	877	0.45	0.5	25.16	148.91	0.21	0.9	146
HLA	7	878	0.53	0.86	25.07	138.35	0.63	0.89	146
HLA	7	879	0.29	0.45	25.32	150.96	0.05	0.9	146
HLA	7	880	0.18	0.39	25.42	148.59	0.31	0.9	146
HLA	7	882	0.71	0.46	24.9	148.55	0.26	0.9	146
HLA	7	883	0.21	0.4	25.4	148.66	0.29	0.9	146
HLA	7	884	0.1	0.3	25.51	149.66	0.27	0.9	146
HLA	7	885	0.73	0.45	24.88	147.06	0.41	0.9	146
HLA	7	886	0.12	0.32	25.49	151	0.08	0.9	146
HLA	7	887	0.62	0.49	24.99	146.25	0.44	0.9	146
HLA	7	888	0.77	0.42	24.83	149.27	0.22	0.9	146
HLA	7	889	0.53	0.87	25.08	139.28	0.57	0.89	146
HLA	7	891	0.32	0.47	25.29	146.65	0.43	0.9	146
HLA	7	892	0.28	0.45	25.32	147.78	0.34	0.9	146
HLA	7	897	0.42	0.5	25.18	146.39	0.42	0.9	146
HLA	7	899	0.38	0.49	25.22	144.64	0.58	0.89	146
HLA	7	902	0.25	0.44	25.35	145.8	0.54	0.89	146

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	7	903	0.07	0.25	25.53	149.38	0.37	0.9	146
HLA	7	930	0.42	0.5	25.18	147.76	0.31	0.9	146
HLA	7	1032	3.36	1.74	22.24	123.96	0.64	0.9	146
HLA	7	1088	0.22	0.42	25.38	148.64	0.29	0.9	146
HLA	7	1089	0.12	0.33	25.48	149.12	0.31	0.9	146
HLA	7	1096	0.98	1.02	24.62	137.81	0.54	0.89	146
HLA	7	1097	1.18	1.02	24.42	136.98	0.57	0.89	146
HLA	7	1098	0.31	0.46	25.29	148.72	0.25	0.9	146
HLA	7	1099	0.4	0.49	25.2	147.28	0.35	0.9	146
HLA	7	1104	0.39	0.49	25.21	149.38	0.18	0.9	146
HLA	7	1118	0.74	0.44	24.86	150.92	0.06	0.9	146
HLA	7	1175	0.4	0.49	25.21	144.74	0.57	0.89	146
HLA	7	1178	0.1	0.3	25.5	150.8	0.11	0.9	146
HLA	7	1179	0.11	0.31	25.49	149.27	0.31	0.9	146
HLA	7	1182	0.31	0.46	25.29	146.11	0.48	0.9	146
HLA	7	1185	0.44	0.5	25.16	146.88	0.38	0.9	146
HLA	8	761	0.3	0.46	26.14	141.95	0.49	0.89	166
HLA	8	764	0.17	0.38	26.27	145.59	0.19	0.9	166
HLA	8	766	0.06	0.24	26.38	146.01	0.25	0.9	166
HLA	8	767	0.78	0.88	25.66	134.48	0.6	0.89	166
HLA	8	771	0.2	0.4	26.23	142.33	0.52	0.89	166
HLA	8	772	0.17	0.38	26.27	144.03	0.36	0.9	166
HLA	8	778	0.38	0.49	26.06	143.28	0.34	0.9	166
HLA	8	780	1.1	1.09	25.34	130.07	0.65	0.89	166
HLA	8	785	0.45	0.5	25.99	143	0.36	0.9	166
HLA	8	793	0.03	0.17	26.41	146.78	0.17	0.9	166
HLA	8	796	0.37	0.48	26.07	144.89	0.2	0.9	166
HLA	8	802	0.05	0.22	26.39	146.2	0.24	0.9	166
HLA	8	805	0.46	0.5	25.98	143.97	0.27	0.9	166
HLA	8	810	0.07	0.26	26.37	146.04	0.22	0.9	166
HLA	8	820	0.75	1.05	25.69	133.79	0.52	0.89	166
HLA	8	826	0.36	0.48	26.08	144.78	0.22	0.9	166
HLA	8	833	0.48	0.5	25.96	142.02	0.44	0.89	166
HLA	8	848	0.78	0.41	25.66	143.44	0.39	0.89	166
HLA	8	855	0.55	0.5	25.89	141.54	0.48	0.89	166
HLA	8	867	0.33	0.47	26.11	144.72	0.22	0.9	166
HLA	8	893	0.22	0.41	26.22	146.71	0.06	0.9	166
HLA	8	894	0.38	0.49	26.06	143.24	0.34	0.9	166
HLA	8	901	0.2	0.4	26.24	141.83	0.58	0.89	166
HLA	8	904	0.73	0.45	25.71	143.96	0.31	0.9	166
HLA	8	905	0.27	0.44	26.17	145.02	0.21	0.9	166
HLA	8	906	0.34	0.48	26.1	144.55	0.24	0.9	166
HLA	8	909	0.83	0.38	25.61	144.82	0.28	0.9	166
HLA	8	910	0.6	0.49	25.84	142.16	0.44	0.89	166
HLA	8	911	0.75	0.69	25.69	137.32	0.6	0.89	166
HLA	8	912	0.37	0.48	26.07	142.99	0.37	0.89	166
HLA	8	913	0.16	0.37	26.28	145.73	0.18	0.9	166
HLA	8	914	0.34	0.47	26.1	147.16	0.01	0.9	166
HLA	8	916	0.33	0.47	26.11	142.77	0.4	0.89	166
HLA	8	917	0.92	0.27	25.52	145.27	0.33	0.9	166
HLA	8	920	0.35	0.48	26.09	142.8	0.39	0.89	166
HLA	8	921	0.51	0.5	25.93	140.66	0.55	0.89	166
HLA	8	922	0.4	0.49	26.04	140.44	0.58	0.89	166
HLA	8	924	0.23	0.42	26.2	144.39	0.29	0.9	166

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
HLA	8	925	0.45	0.5	25.99	142.43	0.4	0.89	166
HLA	8	926	0.34	0.47	26.1	145.73	0.14	0.9	166
HLA	8	927	0.69	0.46	25.75	142.81	0.4	0.89	166
HLA	8	929	0.78	0.41	25.66	143.34	0.4	0.89	166
HLA	8	1034	2.39	1.7	24.05	122.54	0.59	0.9	166
HLA	8	1078	0.31	0.46	26.13	145.17	0.19	0.9	166
HLA	8	1079	0.47	0.5	25.97	143.23	0.34	0.9	166
HLA	8	1092	0.14	0.35	26.3	146.2	0.14	0.9	166
HLA	8	1105	0.3	0.46	26.14	147.32	0	0.9	166
HLA	8	1126	0.87	0.33	25.57	144.94	0.3	0.9	166
HLA	8	1127	0.27	0.45	26.17	143.6	0.35	0.9	166
HLA	8	1190	0.48	0.5	25.96	142.66	0.38	0.89	166
HLA	8	1192	0.57	0.5	25.87	142.07	0.44	0.89	166
HLA	8	1199	0.49	0.5	25.95	142.89	0.36	0.89	166
HLA	8	1201	0.28	0.45	26.16	140.92	0.59	0.89	166
HLA	8	1210	0.33	0.47	26.11	144.32	0.26	0.9	166
HLA	8	1212	0.54	0.5	25.9	143	0.36	0.9	166
HLA	8	1214	0.96	1.22	25.48	128.62	0.63	0.89	166

Appendix Table C.2: 2022 MA: CTT Statistics

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	3	178	0.95	0.22	21.4	64.08	0.05	0.86	309
MA	3	182	0.48	0.5	21.87	60.83	0.41	0.85	309
MA	3	206	0.71	0.46	21.64	62.3	0.25	0.86	309
MA	3	1303	0.13	0.34	22.22	63.3	0.16	0.86	309
MA	3	225	0.31	0.46	22.05	63.84	0.03	0.86	309
MA	3	215	0.85	0.35	21.5	62.77	0.25	0.86	309
MA	3	169	0.55	0.5	21.8	60.45	0.46	0.85	309
MA	3	231	0.41	0.49	21.94	61.91	0.28	0.85	309
MA	3	219	0.13	0.34	22.22	63.04	0.21	0.86	309
MA	3	202	0.84	0.36	21.51	63.12	0.18	0.86	309
MA	3	221	0.32	0.47	22.03	61.65	0.33	0.85	309
MA	3	992	0.03	0.16	22.33	63.66	0.24	0.86	309
MA	3	371	0.27	0.44	22.09	61.61	0.36	0.85	309
MA	3	173	0.45	0.5	21.91	62.52	0.19	0.86	309
MA	3	226	0.19	0.39	22.16	63.42	0.12	0.86	309
MA	3	233	0.02	0.15	22.34	63.76	0.22	0.86	309
MA	3	174	0.61	0.49	21.75	60.32	0.49	0.85	309
MA	3	1036	0.08	0.28	22.27	62.86	0.31	0.85	309
MA	3	210	0.21	0.41	22.14	62.89	0.19	0.86	309
MA	3	207	0.61	0.49	21.75	61.5	0.33	0.85	309
MA	3	212	0.41	0.49	21.94	60.14	0.51	0.85	309
MA	3	172	0.38	0.49	21.97	59.84	0.56	0.85	309
MA	3	198	0.84	0.37	21.51	62.29	0.32	0.85	309
MA	3	368	0.25	0.43	22.11	60.72	0.5	0.85	309
MA	3	191	0.38	0.49	21.97	61.83	0.29	0.85	309
MA	3	193	0.61	0.49	21.74	61.61	0.32	0.85	309
MA	3	189	0.8	0.4	21.55	62.17	0.31	0.85	309
MA	3	995	0.28	0.45	22.08	63.24	0.12	0.86	309
MA	3	229	0.51	0.5	21.84	62.38	0.21	0.86	309
MA	3	374	0.26	0.44	22.1	63.04	0.15	0.86	309
MA	3	184	0.78	0.42	21.58	62.79	0.2	0.86	309
MA	3	186	0.4	0.49	21.95	61.04	0.39	0.85	309

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	3	1035	0.3	0.46	22.05	61.54	0.35	0.85	309
MA	3	201	0.69	0.46	21.67	62.71	0.19	0.86	309
MA	3	211	0.17	0.38	22.18	63.14	0.17	0.86	309
MA	3	234	0.11	0.39	22.25	61.63	0.41	0.85	309
MA	3	216	0.52	0.5	21.83	62.16	0.24	0.86	309
MA	3	235	0.16	0.43	22.2	60.92	0.48	0.85	309
MA	3	209	0.23	0.42	22.12	61.92	0.33	0.85	309
MA	3	213	0.32	0.47	22.03	60.92	0.43	0.85	309
MA	3	224	0.33	0.47	22.03	62.68	0.19	0.86	309
MA	3	204	0.55	0.5	21.81	61.2	0.36	0.85	309
MA	3	230	0.27	0.44	22.09	62.8	0.18	0.86	309
MA	3	190	0.75	0.43	21.6	62.26	0.27	0.85	309
MA	3	180	0.47	0.5	21.89	61.26	0.36	0.85	309
MA	3	188	0.66	0.47	21.69	61.43	0.35	0.85	309
MA	3	214	0.45	0.5	21.9	60.51	0.46	0.85	309
MA	3	223	0.34	0.47	22.02	62.92	0.15	0.86	309
MA	3	205	0.3	0.46	22.05	62.46	0.22	0.86	309
MA	3	217	0.18	0.38	22.17	62.61	0.25	0.86	309
MA	3	1305	0.08	0.27	22.27	62.88	0.31	0.85	309
MA	3	187	0.76	0.43	21.6	61.5	0.39	0.85	309
MA	3	208	0.38	0.48	21.98	60.49	0.47	0.85	309
MA	3	218	0.26	0.44	22.09	63.62	0.07	0.86	309
MA	3	185	0.07	0.26	22.28	63.38	0.21	0.86	309
MA	4	135	0.57	0.5	20.58	61.22	0.46	0.82	279
MA	4	140	0.69	0.46	20.46	62.24	0.36	0.83	279
MA	4	109	0.51	0.5	20.64	62.61	0.28	0.83	279
MA	4	257	0.25	0.43	20.9	63.16	0.25	0.83	279
MA	4	157	0.35	0.48	20.79	62.13	0.36	0.83	279
MA	4	236	0.37	0.48	20.78	62.07	0.36	0.82	279
MA	4	170	0.39	0.49	20.76	64.08	0.1	0.83	279
MA	4	1009	0.23	0.42	20.92	63.63	0.19	0.83	279
MA	4	262	1.19	0.84	19.96	59.66	0.36	0.83	279
MA	4	238	0.38	0.48	20.77	62.95	0.24	0.83	279
MA	4	268	0.64	0.48	20.51	63.55	0.17	0.83	279
MA	4	276	0.28	0.45	20.87	63.7	0.16	0.83	279
MA	4	244	0.01	0.12	21.13	64.91	0.08	0.83	279
MA	4	166	0.22	0.42	20.92	62.74	0.33	0.83	279
MA	4	247	0.31	0.46	20.84	63.02	0.25	0.83	279
MA	4	171	0.27	0.45	20.87	62.79	0.3	0.83	279
MA	4	1005	0.56	0.5	20.58	61.71	0.4	0.82	279
MA	4	254	0.25	0.44	20.89	64.99	-0.02	0.83	279
MA	4	239	0.04	0.2	21.1	64.01	0.32	0.83	279
MA	4	165	0.36	0.48	20.79	63.1	0.23	0.83	279
MA	4	265	0.53	0.5	20.61	65.4	-0.07	0.84	279
MA	4	259	0.23	0.42	20.92	63.52	0.21	0.83	279
MA	4	256	0.23	0.42	20.92	63.14	0.26	0.83	279
MA	4	250	0.38	0.49	20.77	61.41	0.45	0.82	279
MA	4	164	0.32	0.47	20.82	63.4	0.2	0.83	279
MA	4	1006	0.3	0.46	20.85	63.56	0.18	0.83	279
MA	4	263	0.44	0.5	20.7	62.99	0.23	0.83	279
MA	4	261	0.38	0.48	20.77	63.24	0.21	0.83	279
MA	4	168	0.3	0.46	20.84	62.41	0.34	0.83	279
MA	4	163	0.65	0.48	20.49	62.75	0.28	0.83	279
MA	4	103	0.38	0.49	20.76	62.56	0.3	0.83	279
MA	4	245	0.38	0.49	20.77	62.02	0.37	0.82	279

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	4	167	0.56	0.5	20.59	64.22	0.08	0.83	279
MA	4	1010	0.02	0.14	21.13	64.73	0.14	0.83	279
MA	4	277	0.35	0.48	20.8	62.16	0.36	0.83	279
MA	4	240	0.11	0.32	21.04	63.71	0.25	0.83	279
MA	4	264	0.29	0.46	20.86	64.06	0.11	0.83	279
MA	4	154	0.52	0.5	20.62	62.28	0.32	0.83	279
MA	4	1981	0.62	0.48	20.52	61.94	0.38	0.82	279
MA	4	271	0.49	0.5	20.65	61.94	0.37	0.82	279
MA	4	253	0.16	0.37	20.99	64.45	0.08	0.83	279
MA	4	375	0.55	0.63	20.6	60.89	0.39	0.82	279
MA	4	267	0.59	0.49	20.56	61.15	0.48	0.82	279
MA	4	242	0.78	0.42	20.37	62.55	0.36	0.83	279
MA	4	274	0.34	0.48	20.8	62.6	0.3	0.83	279
MA	4	246	0.15	0.36	21	63.1	0.32	0.83	279
MA	4	373	0.34	0.48	20.8	63.94	0.12	0.83	279
MA	4	278	0.21	0.41	20.94	62.74	0.34	0.83	279
MA	4	1007	0.28	0.45	20.87	63.91	0.13	0.83	279
MA	4	377	0.43	0.5	20.72	62.68	0.27	0.83	279
MA	4	243	0.27	0.44	20.88	64.47	0.06	0.83	279
MA	4	378	0.39	0.49	20.75	60.81	0.53	0.82	279
MA	4	241	0.31	0.46	20.84	63.99	0.12	0.83	279
MA	4	252	0.04	0.2	21.11	63.62	0.46	0.83	279
MA	4	258	0.42	0.49	20.73	63.57	0.16	0.83	279
MA	4	249	0.5	0.5	20.65	61.91	0.37	0.82	279
MA	5	422	0.49	0.5	20.46	77.08	0.26	0.84	245
MA	5	1128	0.62	0.49	20.33	76.83	0.3	0.84	245
MA	5	459	0.22	0.42	20.73	77.24	0.29	0.84	245
MA	5	455	0.42	0.5	20.53	77.04	0.26	0.84	245
MA	5	1217	0.11	0.31	20.84	79.16	0.06	0.84	245
MA	5	434	0.36	0.48	20.59	76.58	0.33	0.84	245
MA	5	432	0.26	0.44	20.69	77.9	0.19	0.84	245
MA	5	417	0.15	0.36	20.8	77.38	0.33	0.84	245
MA	5	424	0.53	0.5	20.42	76.48	0.32	0.84	245
MA	5	441	0.6	0.49	20.35	77.55	0.21	0.84	245
MA	5	1136	0.36	0.48	20.59	79.07	0.03	0.84	245
MA	5	431	0.39	0.49	20.56	76.94	0.28	0.84	245
MA	5	1223	0.19	0.4	20.76	77.43	0.29	0.84	245
MA	5	463	0.32	0.62	20.63	74.25	0.46	0.84	245
MA	5	413	0.58	0.5	20.37	75.94	0.39	0.84	245
MA	5	442	0.27	0.45	20.68	77.2	0.28	0.84	245
MA	5	450	0.27	0.45	20.68	78.9	0.06	0.84	245
MA	5	1202	0.26	0.44	20.69	76.8	0.34	0.84	245
MA	5	1130	0.49	0.5	20.47	75.16	0.48	0.84	245
MA	5	414	0.49	1.02	20.46	75.22	0.19	0.85	245
MA	5	444	0.48	0.5	20.47	76.84	0.28	0.84	245
MA	5	460	0.72	0.45	20.23	77.65	0.22	0.84	245
MA	5	1232	0.13	0.34	20.82	77.84	0.27	0.84	245
MA	5	420	0.05	0.22	20.9	78.38	0.3	0.84	245
MA	5	462	0.22	0.41	20.73	78.2	0.17	0.84	245
MA	5	436	0.31	0.46	20.64	76.5	0.36	0.84	245
MA	5	1229	0.15	0.36	20.8	76.93	0.4	0.84	245
MA	5	457	0.4	0.49	20.55	76.95	0.28	0.84	245
MA	5	439	0.36	0.48	20.59	77.31	0.24	0.84	245
MA	5	440	0.13	0.34	20.82	78.95	0.08	0.84	245
MA	5	415	0.38	0.49	20.57	77.05	0.27	0.84	245

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	5	429	0.23	0.42	20.72	77.73	0.22	0.84	245
MA	5	445	0.27	0.44	20.68	76.78	0.33	0.84	245
MA	5	412	0.25	0.43	20.7	76.01	0.45	0.84	245
MA	5	426	0.25	0.44	20.7	77.83	0.2	0.84	245
MA	5	448	0.49	0.5	20.47	76.65	0.3	0.84	245
MA	5	421	0.6	0.49	20.36	77.23	0.24	0.84	245
MA	5	446	0.42	0.5	20.53	76.94	0.28	0.84	245
MA	5	1093	0.09	0.35	20.86	77.87	0.26	0.84	245
MA	5	443	0.24	0.43	20.71	76.89	0.33	0.84	245
MA	5	454	0.48	0.5	20.47	76.31	0.35	0.84	245
MA	5	425	0.38	0.49	20.57	78.78	0.06	0.84	245
MA	5	419	0.25	0.44	20.7	77.91	0.19	0.84	245
MA	5	433	0.65	0.48	20.3	76.66	0.32	0.84	245
MA	5	458	0.71	0.46	20.24	77.67	0.21	0.84	245
MA	5	416	0.48	0.5	20.47	76.2	0.36	0.84	245
MA	5	456	0.44	0.5	20.51	77.2	0.24	0.84	245
MA	5	449	0.16	0.36	20.8	78.54	0.14	0.84	245
MA	5	435	0.59	0.96	20.36	71.15	0.46	0.83	245
MA	5	452	0.47	0.5	20.48	78.28	0.12	0.84	245
MA	5	1187	0.44	0.5	20.51	75.61	0.43	0.84	245
MA	5	451	0.44	0.5	20.51	75.95	0.39	0.84	245
MA	5	1058	0.27	0.44	20.69	77.29	0.27	0.84	245
MA	5	464	0.32	0.56	20.63	75.46	0.39	0.84	245
MA	5	437	0.33	0.47	20.62	77.74	0.2	0.84	245
MA	5	1121	0.42	0.5	20.53	77.85	0.17	0.84	245
MA	5	453	0.24	0.43	20.71	75.96	0.46	0.84	245
MA	5	428	0.33	0.47	20.62	78.95	0.05	0.84	245
MA	6	581	0.23	0.42	17.35	82.9	0.4	0.85	236
MA	6	568	0.45	0.5	17.13	84.45	0.16	0.86	236
MA	6	579	0.39	0.49	17.19	81.95	0.45	0.85	236
MA	6	470	0.17	0.37	17.42	85.68	0.05	0.86	236
MA	6	468	0.42	0.5	17.16	82.14	0.42	0.85	236
MA	6	1200	0.33	0.47	17.25	83.64	0.27	0.85	236
MA	6	551	0.32	0.47	17.26	84.03	0.22	0.86	236
MA	6	480	0.29	0.46	17.29	85.19	0.09	0.86	236
MA	6	469	0.92	1.12	16.66	73.28	0.6	0.85	236
MA	6	585	0.07	0.25	17.51	84.42	0.36	0.85	236
MA	6	578	0.26	0.44	17.32	83.94	0.25	0.85	236
MA	6	1251	0.03	0.17	17.55	85.01	0.36	0.86	236
MA	6	490	0.34	0.47	17.24	84.69	0.14	0.86	236
MA	6	1256	0.24	0.43	17.34	84.01	0.25	0.85	236
MA	6	502	0.32	0.53	17.26	82.66	0.34	0.85	236
MA	6	484	0.27	0.45	17.31	84.56	0.17	0.86	236
MA	6	1131	0.67	1.14	16.91	71.92	0.67	0.84	236
MA	6	1062	0.28	0.71	17.31	78.01	0.61	0.85	236
MA	6	537	0.38	0.49	17.2	83.35	0.29	0.85	236
MA	6	567	0.29	0.45	17.29	82.74	0.39	0.85	236
MA	6	577	0.17	0.37	17.42	86.7	-0.1	0.86	236
MA	6	1142	0.36	0.48	17.22	82.39	0.4	0.85	236
MA	6	487	0.23	0.42	17.35	86.31	-0.04	0.86	236
MA	6	580	0.21	0.41	17.37	85.41	0.08	0.86	236
MA	6	526	0.29	0.45	17.29	84.79	0.14	0.86	236
MA	6	1253	0.22	0.42	17.36	83.07	0.38	0.85	236
MA	6	534	0.19	0.4	17.39	85.15	0.12	0.86	236
MA	6	1225	0.06	0.24	17.52	85.42	0.15	0.86	236

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	6	520	0.23	0.42	17.35	84.35	0.21	0.86	236
MA	6	499	0.28	0.45	17.3	84.78	0.14	0.86	236
MA	6	535	0.44	0.5	17.14	82.9	0.33	0.85	236
MA	6	571	0.76	0.43	16.82	83.14	0.36	0.85	236
MA	6	553	0.29	0.46	17.29	83	0.36	0.85	236
MA	6	563	0.37	0.48	17.21	83.8	0.24	0.86	236
MA	6	550	0.51	0.5	17.07	82.43	0.38	0.85	236
MA	6	515	0.31	0.46	17.28	84.33	0.19	0.86	236
MA	6	509	0.39	0.49	17.19	83.9	0.23	0.86	236
MA	6	495	0.49	0.5	17.09	82.71	0.35	0.85	236
MA	6	574	0.32	0.47	17.26	82.31	0.43	0.85	236
MA	6	478	0.28	0.45	17.3	84.01	0.24	0.86	236
MA	6	575	0.09	0.28	17.49	83.62	0.47	0.85	236
MA	6	491	0.61	0.87	16.97	77.36	0.53	0.85	236
MA	6	512	0.19	0.39	17.39	84.12	0.26	0.85	236
MA	6	521	0.18	0.38	17.4	85.29	0.1	0.86	236
MA	6	1101	0.37	0.48	17.21	83.78	0.24	0.86	236
MA	6	572	0.27	0.45	17.31	83.55	0.3	0.85	236
MA	6	476	0.12	0.33	17.46	85.75	0.05	0.86	236
MA	6	1203	0.43	0.5	17.15	83.22	0.3	0.85	236
MA	6	524	0.09	0.29	17.49	84.92	0.22	0.86	236
MA	6	514	0.48	0.5	17.1	82.41	0.38	0.85	236
MA	6	1063	0.47	0.5	17.11	82.92	0.33	0.85	236
MA	6	570	0.1	0.3	17.48	84	0.38	0.85	236
MA	6	545	0.19	0.39	17.39	83.98	0.28	0.85	236
MA	6	517	0.35	0.48	17.23	84.18	0.2	0.86	236
MA	6	466	0.14	0.35	17.44	86.03	0	0.86	236
MA	6	482	0.06	0.23	17.53	85.26	0.2	0.86	236
MA	6	1254	0.36	0.48	17.22	82.62	0.38	0.85	236
MA	7	475	0.19	0.4	13.69	44.58	0.16	0.78	144
MA	7	564	0.2	0.4	13.68	44.05	0.26	0.78	144
MA	7	505	0.27	0.45	13.61	44.8	0.1	0.78	144
MA	7	516	0.12	0.32	13.76	44.36	0.26	0.78	144
MA	7	508	0.45	0.5	13.43	45.25	0.01	0.78	144
MA	7	525	0.3	0.46	13.58	43.67	0.28	0.78	144
MA	7	1134	0.38	0.49	13.51	44.11	0.19	0.78	144
MA	7	1066	0.01	0.08	13.88	45.66	-0.07	0.78	144
MA	7	488	0.26	0.44	13.62	45.75	-0.06	0.79	144
MA	7	477	0.15	0.36	13.73	46.34	-0.18	0.79	144
MA	7	494	0.31	0.46	13.58	43.6	0.29	0.78	144
MA	7	506	0.17	0.38	13.71	45.91	-0.09	0.79	144
MA	7	496	0.31	0.46	13.57	42.86	0.41	0.77	144
MA	7	479	0.17	0.37	13.72	44.12	0.27	0.78	144
MA	7	483	0.16	0.37	13.72	44.9	0.11	0.78	144
MA	7	559	0.21	0.41	13.67	44.74	0.12	0.78	144
MA	7	486	0.23	0.42	13.65	45.63	-0.04	0.78	144
MA	7	1234	0.24	0.43	13.64	45.13	0.05	0.78	144
MA	7	1247	0.06	0.24	13.82	45.59	-0.02	0.78	144
MA	7	481	0.48	0.74	13.4	40.44	0.49	0.76	144
MA	7	498	0.33	0.47	13.55	43.02	0.38	0.77	144
MA	7	485	0.29	0.46	13.59	45.14	0.04	0.78	144
MA	7	1237	0.23	0.42	13.65	45.44	-0.01	0.78	144
MA	7	555	0.01	0.12	13.87	45.23	0.22	0.78	144
MA	7	557	0.31	0.46	13.58	45.28	0.02	0.78	144
MA	7	552	0.07	0.26	13.81	44.76	0.22	0.78	144

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	7	536	0.43	0.5	13.45	42.8	0.39	0.77	144
MA	7	549	0.24	0.43	13.65	45.82	-0.07	0.79	144
MA	7	541	0.38	0.49	13.5	43.01	0.37	0.77	144
MA	7	501	0.1	0.3	13.78	45.74	-0.06	0.78	144
MA	7	547	0.45	0.88	13.43	38.4	0.58	0.76	144
MA	7	513	0.01	0.12	13.87	45.33	0.15	0.78	144
MA	7	503	0.26	0.44	13.62	44.7	0.12	0.78	144
MA	7	1252	0.04	0.2	13.84	44.93	0.23	0.78	144
MA	7	493	0.28	0.45	13.6	45.39	0	0.78	144
MA	7	561	0.22	0.42	13.66	43.75	0.3	0.78	144
MA	7	492	0.23	0.42	13.65	43.61	0.32	0.77	144
MA	7	511	0.17	0.37	13.72	44.43	0.2	0.78	144
MA	7	616	0.5	0.5	13.38	43.65	0.25	0.78	144
MA	7	562	0.61	0.71	13.27	40.52	0.5	0.76	144
MA	7	533	0.3	0.46	13.58	43.57	0.3	0.78	144
MA	7	467	0.18	0.5	13.7	42.31	0.47	0.77	144
MA	7	471	0.08	0.27	13.81	44.07	0.41	0.78	144
MA	7	543	0.12	0.32	13.76	45.09	0.09	0.78	144
MA	7	474	0.16	0.37	13.72	44.76	0.14	0.78	144
MA	7	565	0.38	0.49	13.5	42.56	0.44	0.77	144
MA	7	522	0.12	0.32	13.76	43.89	0.37	0.77	144
MA	7	489	0.26	0.44	13.63	43.87	0.26	0.78	144
MA	7	540	0.37	0.48	13.51	43.18	0.34	0.77	144
MA	7	523	0.51	0.5	13.37	43.35	0.3	0.78	144
MA	7	527	0.28	0.45	13.6	42.26	0.53	0.77	144
MA	7	1241	0.4	0.49	13.49	43.26	0.32	0.77	144
MA	7	1244	0.16	0.37	13.72	45.01	0.09	0.78	144
MA	7	1264	0.05	0.22	13.83	44.84	0.24	0.78	144
MA	7	1259	0.26	0.44	13.63	44.17	0.21	0.78	144
MA	7	1065	0.42	0.5	13.46	43.7	0.25	0.78	144
MA	8	602	0.19	0.4	13.49	33.14	0.17	0.73	166
MA	8	594	0.23	0.42	13.45	33.17	0.14	0.73	166
MA	8	593	0.25	0.44	13.43	33.52	0.07	0.74	166
MA	8	583	0.41	0.52	13.27	31.42	0.41	0.72	166
MA	8	544	0.23	0.42	13.45	34.01	-0.02	0.74	166
MA	8	604	0.28	0.45	13.4	32.93	0.18	0.73	166
MA	8	597	0.4	0.49	13.28	32.24	0.28	0.73	166
MA	8	1236	0.22	0.42	13.46	32.6	0.27	0.73	166
MA	8	569	0.28	0.45	13.4	32.96	0.18	0.73	166
MA	8	1230	0.34	0.48	13.34	33.69	0.03	0.74	166
MA	8	1135	0.06	0.3	13.62	32.25	0.5	0.72	166
MA	8	590	0.1	0.3	13.58	32.98	0.28	0.73	166
MA	8	573	0.2	0.4	13.48	33.39	0.11	0.73	166
MA	8	596	0.47	0.5	13.21	33.21	0.1	0.74	166
MA	8	615	0.22	0.41	13.46	33.78	0.02	0.74	166
MA	8	531	0.19	0.39	13.49	33.06	0.19	0.73	166
MA	8	601	0.15	0.36	13.53	33.52	0.1	0.73	166
MA	8	618	0.62	0.49	13.06	32.26	0.28	0.73	166
MA	8	1138	0.04	0.22	13.64	33.71	0.12	0.73	166
MA	8	620	0.03	0.17	13.65	34.3	-0.13	0.74	166
MA	8	607	0.34	0.48	13.34	33.09	0.14	0.73	166
MA	8	1270	0.16	0.37	13.52	32.86	0.25	0.73	166
MA	8	1273	0.16	0.37	13.52	33.72	0.05	0.74	166
MA	8	576	0.12	0.33	13.56	33.96	0	0.74	166
MA	8	1269	0.37	0.48	13.31	32.16	0.3	0.72	166

subject	grade	Item	Mean	Std Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
MA	8	582	0.13	0.34	13.55	32.64	0.34	0.73	166
MA	8	548	0.04	0.19	13.64	33.62	0.18	0.73	166
MA	8	598	0.33	0.47	13.35	33.43	0.08	0.74	166
MA	8	617	0.23	0.42	13.45	33.68	0.04	0.74	166
MA	8	591	0.06	0.24	13.62	32.56	0.53	0.72	166
MA	8	613	0.27	0.57	13.41	31.14	0.41	0.72	166
MA	8	592	0.31	0.46	13.37	33.28	0.11	0.74	166
MA	8	621	0.42	0.49	13.27	32.81	0.18	0.73	166
MA	8	1218	0.05	0.22	13.63	33.72	0.12	0.73	166
MA	8	529	0.23	0.42	13.45	32.03	0.38	0.72	166
MA	8	1141	0.34	0.48	13.34	31.92	0.36	0.72	166
MA	8	584	0.23	0.42	13.45	32.43	0.3	0.73	166
MA	8	566	0.24	0.43	13.44	32.71	0.24	0.73	166
MA	8	1268	0.01	0.11	13.67	34.06	-0.01	0.74	166
MA	8	1228	0.31	0.46	13.37	33.16	0.13	0.73	166
MA	8	588	0.03	0.17	13.65	34.19	-0.08	0.74	166
MA	8	612	0.18	0.39	13.5	31.5	0.56	0.72	166
MA	8	542	0.07	0.25	13.61	33.95	0.02	0.74	166
MA	8	1274	0.27	0.44	13.42	31.81	0.41	0.72	166
MA	8	600	0.49	0.5	13.19	32.71	0.19	0.73	166
MA	8	614	0.43	0.5	13.25	32.21	0.28	0.73	166
MA	8	586	0.29	0.46	13.39	34.17	-0.06	0.74	166
MA	8	608	0.5	0.5	13.18	33	0.14	0.73	166
MA	8	611	0.34	0.48	13.34	32.93	0.17	0.73	166
MA	8	556	0.22	0.41	13.46	33.68	0.04	0.74	166
MA	8	532	0.32	0.47	13.36	32.96	0.16	0.73	166
MA	8	530	0.36	0.48	13.33	33.66	0.03	0.74	166
MA	8	603	0.3	0.46	13.38	32.55	0.25	0.73	166
MA	8	599	0.14	0.35	13.54	32.21	0.43	0.72	166
MA	8	589	0.46	0.5	13.22	32.44	0.24	0.73	166
MA	8	1140	0.01	0.11	13.67	33.69	0.28	0.73	166

Appendix Table C.3: 2022 HLA CTT Statistics

subject	grade	Item	Mean	Std. Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
SC	5	1315	0.65	0.98	22.05	82.08	0.52	0.84	246
SC	5	1317	0.52	0.5	22.17	90.77	0.12	0.85	246
SC	5	1318	0.19	0.39	22.51	88.66	0.46	0.85	246
SC	5	1320	0.13	0.34	22.56	92.21	-0.02	0.85	246
SC	5	1321	0.64	0.48	22.06	88.88	0.34	0.85	246
SC	5	1322	0.72	0.45	21.98	87.87	0.48	0.84	246
SC	5	1323	0.57	0.5	22.13	89.01	0.31	0.85	246
SC	5	1324	0.23	0.42	22.47	90.17	0.23	0.85	246
SC	5	1325	0.49	0.5	22.21	89.14	0.29	0.85	246
SC	5	1326	0.3	0.46	22.39	90.76	0.14	0.85	246
SC	5	1327	0.35	0.48	22.35	89.53	0.27	0.85	246
SC	5	1328	0.55	0.5	22.14	88.76	0.34	0.85	246
SC	5	1329	0.32	0.47	22.38	89.25	0.31	0.85	246
SC	5	1330	0.36	0.48	22.33	89.83	0.23	0.85	246
SC	5	1331	0.89	0.96	21.8	81.49	0.56	0.84	246
SC	5	1332	0.41	0.49	22.29	89.21	0.29	0.85	246
SC	5	1333	0.38	0.49	22.32	89.9	0.22	0.85	246
SC	5	1336	0.43	0.5	22.27	88.19	0.4	0.85	246
SC	5	1337	0.29	0.45	22.41	91.21	0.09	0.85	246

subject	grade	Item	Mean	Std. Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
SC	5	1338	0.42	0.49	22.28	91.53	0.04	0.85	246
SC	5	1339	0.31	0.46	22.39	90.22	0.2	0.85	246
SC	5	1344	0.44	0.5	22.25	90.74	0.12	0.85	246
SC	5	1347	0.52	0.5	22.18	90.61	0.14	0.85	246
SC	5	1348	0.25	0.43	22.45	93.18	-0.14	0.86	246
SC	5	1349	0.2	0.4	22.49	89.72	0.3	0.85	246
SC	5	1351	0.3	0.46	22.4	88.65	0.38	0.85	246
SC	5	1356	1.14	0.77	21.55	84.3	0.52	0.84	246
SC	5	1358	0.33	0.47	22.37	90.77	0.13	0.85	246
SC	5	1359	0.29	0.46	22.4	89.34	0.3	0.85	246
SC	5	1361	0.34	0.47	22.36	90.22	0.19	0.85	246
SC	5	1362	0.57	0.5	22.13	88	0.42	0.85	246
SC	5	1364	0.36	0.48	22.33	89.04	0.32	0.85	246
SC	5	1365	0.31	0.46	22.38	90.5	0.16	0.85	246
SC	5	1366	0.22	0.42	22.48	90.92	0.14	0.85	246
SC	5	1367	0.48	0.5	22.22	89.91	0.21	0.85	246
SC	5	1368	0.14	0.35	22.55	90.38	0.25	0.85	246
SC	5	1369	0.17	0.37	22.53	90.98	0.15	0.85	246
SC	5	1370	0.39	0.49	22.3	88.75	0.34	0.85	246
SC	5	1372	0.58	0.91	22.11	82.21	0.55	0.84	246
SC	5	1373	0.43	0.5	22.26	90.65	0.14	0.85	246
SC	5	1536	0.33	0.65	22.36	86.91	0.4	0.84	246
SC	5	1980	0.84	1.32	21.86	78.15	0.52	0.84	246
SC	5	1991	0.53	0.5	22.16	88.46	0.37	0.85	246
SC	5	1992	0.73	0.45	21.97	89.08	0.34	0.85	246
SC	5	1993	0.66	0.47	22.03	87.49	0.5	0.84	246
SC	5	1994	0.64	0.48	22.06	90.01	0.21	0.85	246
SC	5	1995	0.33	0.47	22.37	90.37	0.18	0.85	246
SC	5	1996	0.58	0.5	22.12	88.37	0.38	0.85	246
SC	5	1997	0.57	0.5	22.13	87.77	0.45	0.84	246
SC	5	1998	0.5	0.5	22.2	86.87	0.54	0.84	246
SC	5	1999	0.41	0.49	22.28	90.7	0.13	0.85	246
SC	8	932	0.25	0.44	14.68	55.49	0.4	0.81	165
SC	8	936	0.3	0.46	14.64	55.79	0.33	0.81	165
SC	8	937	1.11	1.29	13.82	45.95	0.61	0.8	165
SC	8	938	0.23	0.42	14.7	55.71	0.38	0.81	165
SC	8	939	0.29	0.46	14.64	54.27	0.56	0.8	165
SC	8	942	0.49	0.5	14.44	56.69	0.18	0.81	165
SC	8	944	0.1	0.3	14.83	56.52	0.36	0.81	165
SC	8	945	0.42	0.79	14.51	51.63	0.53	0.8	165
SC	8	946	0.49	0.5	14.44	54.47	0.48	0.8	165
SC	8	947	0.17	0.38	14.76	57.89	0.04	0.82	165
SC	8	948	0.25	0.44	14.68	56.82	0.19	0.81	165
SC	8	949	0.36	0.48	14.58	57.82	0.03	0.82	165
SC	8	950	0.33	0.47	14.6	56.12	0.27	0.81	165
SC	8	951	0.07	0.25	14.87	57.52	0.18	0.81	165
SC	8	952	0.46	0.5	14.47	57.15	0.11	0.81	165
SC	8	953	0.24	0.43	14.69	57.29	0.12	0.81	165
SC	8	954	0.33	0.47	14.61	55.94	0.3	0.81	165
SC	8	955	0.07	0.25	14.87	57.8	0.1	0.81	165
SC	8	956	0.49	0.5	14.44	56.13	0.25	0.81	165
SC	8	958	0.05	0.23	14.88	57.46	0.22	0.81	165
SC	8	959	0.01	0.11	14.92	58.11	0.08	0.81	165
SC	8	960	0.21	0.41	14.72	56.23	0.3	0.81	165
SC	8	961	0.02	0.15	14.91	58.08	0.06	0.81	165

subject	grade	Item	Mean	Std. Deviation	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total	Cronbach's Alpha if Deleted	n
SC	8	962	0.6	0.49	14.33	55.08	0.4	0.81	165
SC	8	964	0.1	0.3	14.84	57.26	0.2	0.81	165
SC	8	965	0.33	0.47	14.61	54.91	0.45	0.81	165
SC	8	967	0.15	0.36	14.78	57.02	0.2	0.81	165
SC	8	969	0.36	0.48	14.58	55.99	0.28	0.81	165
SC	8	970	0.28	0.45	14.65	58.81	-0.11	0.82	165
SC	8	971	0.04	0.19	14.9	58.26	-0.01	0.82	165
SC	8	972	0.44	0.5	14.5	57.67	0.05	0.82	165
SC	8	974	0.06	0.24	14.87	57.5	0.19	0.81	165
SC	8	975	0.08	0.27	14.85	57.66	0.13	0.81	165
SC	8	977	0.34	0.48	14.59	55.84	0.31	0.81	165
SC	8	978	0.04	0.2	14.89	57.23	0.32	0.81	165
SC	8	979	0.07	0.26	14.86	57.04	0.29	0.81	165
SC	8	980	0.05	0.22	14.88	57.7	0.16	0.81	165
SC	8	981	0.26	0.44	14.67	56.75	0.2	0.81	165
SC	8	983	0.02	0.15	14.91	57.83	0.17	0.81	165
SC	8	984	0.07	0.25	14.87	57.76	0.11	0.81	165
SC	8	985	0.53	0.5	14.4	56.08	0.26	0.81	165
SC	8	986	0.13	0.34	14.8	56.93	0.24	0.81	165
SC	8	987	0.12	0.32	14.82	56.08	0.43	0.81	165
SC	8	1054	0.37	0.48	14.56	56.12	0.26	0.81	165
SC	8	1056	0.04	0.2	14.89	58.12	0.03	0.81	165
SC	8	1109	0.44	0.5	14.49	56.63	0.18	0.81	165
SC	8	1110	0.05	0.23	14.88	57.19	0.29	0.81	165
SC	8	1111	0.07	0.26	14.86	56.93	0.32	0.81	165
SC	8	1114	0.76	0.98	14.17	50.97	0.45	0.8	165
SC	8	1205	0.28	0.45	14.65	58.12	-0.01	0.82	165
SC	8	1238	0.17	0.38	14.76	58	0.02	0.82	165
SC	8	1257	0.42	0.5	14.51	56.28	0.23	0.81	165
SC	8	1258	0.09	0.29	14.84	56.04	0.5	0.81	165
SC	8	1260	0.15	0.36	14.78	56.42	0.32	0.81	165
SC	8	1263	0.22	0.42	14.71	56.88	0.19	0.81	165
SC	8	1265	0.3	0.46	14.64	57.24	0.12	0.81	165
SC	8	1266	0.37	0.48	14.56	56.6	0.2	0.81	165
SC	8	1267	0.35	0.48	14.58	56.31	0.24	0.81	165

Appendix D: Item Response Theory Summary Statistics

This appendix contains the details of the Item Response Theory Summary Statistics outputs from Winsteps.

Appendix Table D.1: Grade 3 HLA IRT Summary Output

```
TABLE 3.1 20220602_Language Arts_2022_GR3HLA_OT. ZOU910WS.TXT  Jun  9 2022 13:35
INPUT: 311 PERSON  56 ITEM  REPORTED: 311 PERSON  56 ITEM  122 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 311 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      25.1      55.7    -.785518 .302860      1.01    .05    .99   -.02 |
|  SEM        .7        .2     .055978 .002463       .01    .05    .01    .04 |
| P.SD      11.7       3.5     .985588 .043363       .18    .86    .21    .76 |
| S.SD      11.8       3.5     .987176 .043433       .18    .86    .21    .76 |
| MAX. 57.0      56.0    2.028284 .634441      1.72   3.00   2.00   3.23 |
| MIN. 3.0      10.0   -2.774725 .270657       .67  -1.97    .49  -2.01 |
|-----------------------------------------------------------------------------|
| REAL RMSE.317876 TRUE SD .932919  SEPARATION  2.93  PERSON RELIABILITY  .90 |
|MODEL RMSE.305948 TRUE SD .936899  SEPARATION  3.06  PERSON RELIABILITY  .90 |
| S.E. OF PERSON MEAN = .055978                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .91  SEM = 3.57
STANDARDIZED (50 ITEM) RELIABILITY = .89

     SUMMARY OF 56 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     139.2     309.2    -.183640 .136685      1.00    .17    .99    .05 |
|  SEM      13.0        .1     .147663 .004626       .02    .35    .04    .36 |
| P.SD      96.7       1.1    1.095099 .034308       .16   2.59    .26   2.65 |
| S.SD      97.6       1.1    1.105010 .034618       .16   2.61    .26   2.67 |
| MAX. 717.0     311.0    2.976156 .314477      1.38   5.92   1.58   5.52 |
| MIN. 11.0     308.0   -2.526354 .053944       .66  -7.02    .51  -5.48 |
|-----------------------------------------------------------------------------|
| REAL RMSE.144822 TRUE SD1.085481  SEPARATION  7.50  ITEM   RELIABILITY  .98 |
|MODEL RMSE.140925 TRUE SD1.085994  SEPARATION  7.71  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .147663                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.56
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.2: Grade 4 HLA IRT Summary Output

```
TABLE 3.1 20220603_Language Arts_2022_GR4HLA_OT. ZOU238WS.TXT  Jun  9 2022 12:44
INPUT: 282 PERSON  57 ITEM  REPORTED: 282 PERSON  57 ITEM  123 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 282 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      27.5      56.9    -.328905 .293681      1.01    .03   1.01   -.04 |
|  SEM        .7        .1     .054218 .002054       .01    .05    .01    .05 |
| P.SD      11.0       1.5     .908857 .034429       .18    .91    .23    .82 |
| S.SD      11.0       1.5     .910473 .034490       .18    .91    .23    .82 |
| MAX. 58.0      57.0    2.317124 .487488      1.64   2.97   2.21   2.59 |
| MIN. 5.0      32.0   -2.818830 .266849       .66  -2.11    .63  -2.14 |
|-----------------------------------------------------------------------------|
| REAL RMSE.307615 TRUE SD .855216  SEPARATION  2.78  PERSON RELIABILITY  .89 |
|MODEL RMSE.295692 TRUE SD .859412  SEPARATION  2.91  PERSON RELIABILITY  .89 |
| S.E. OF PERSON MEAN = .054218                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .89  SEM = 3.62
STANDARDIZED (50 ITEM) RELIABILITY = .88

     SUMMARY OF 57 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     136.0     281.6    -.010069 .139699      1.01    .25   1.01    .23 |
|  SEM       9.2        .1     .140512 .005001       .02    .32    .03    .33 |
| P.SD      69.1        .5    1.051494 .037423       .15   2.39    .26   2.50 |
| S.SD      69.7        .5    1.060841 .037755       .15   2.41    .26   2.53 |
| MAX. 471.0     282.0    3.714510 .387032      1.30   5.31   1.49   5.35 |
| MIN. 7.0     281.0   -2.220000 .061464       .63  -4.42    .36  -4.64 |
|-----------------------------------------------------------------------------|
| REAL RMSE.149061 TRUE SD1.040875  SEPARATION  6.98  ITEM   RELIABILITY  .98 |
|MODEL RMSE.144624 TRUE SD1.041501  SEPARATION  7.20  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .140512                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.64
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.3: Grade 5 HLA IRT Summary Output

```
TABLE 3.1 20200531_HL5_analysisfile_OT.sav       ZOU434WS.TXT  Jun  9 2022  7:43
INPUT: 245 PERSON  57 ITEM  REPORTED: 245 PERSON  57 ITEM  125 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 245 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      26.8      56.9    -.655574 .292326      1.03    .09   1.10    .32 |
|  SEM        .8        .1     .062651 .002567       .01    .06    .02    .07 |
| P.SD      12.5       1.3     .978635 .040098       .22    .91    .39   1.11 |
| S.SD      12.5       1.3     .980638 .040180       .22    .91    .39   1.11 |
| MAX. 57.0      57.0    1.789755 .451316      1.99   3.36   5.01   4.54 |
| MIN. 6.0      36.0   -2.745109 .256463       .62  -2.06    .62  -2.13 |
|-----------------------------------------------------------------------------|
| REAL RMSE.310219 TRUE SD .928165  SEPARATION  2.99  PERSON RELIABILITY  .90 |
|MODEL RMSE.295063 TRUE SD .933094  SEPARATION  3.16  PERSON RELIABILITY  .91 |
| S.E. OF PERSON MEAN = .062651                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .90  SEM = 3.90 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .90

     SUMMARY OF 57 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     115.1     244.6    -.125002 .152304      1.08    .31   1.10    .34 |
|  SEM      12.6        .1     .139224 .004957       .07    .31    .07    .30 |
| P.SD      94.4        .5    1.041861 .037097       .52   2.30    .55   2.23 |
| S.SD      95.2        .5    1.051122 .037427       .53   2.32    .56   2.25 |
| MAX. 728.0     245.0    3.170000 .365097      4.81   6.59   4.63   5.57 |
| MIN. 23.0     244.0   -2.980000 .054346       .66  -4.28    .44  -3.71 |
|-----------------------------------------------------------------------------|
| REAL RMSE.187661 TRUE SD1.024821  SEPARATION  5.46  ITEM   RELIABILITY  .97 |
|MODEL RMSE.156757 TRUE SD1.030001  SEPARATION  6.57  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .139224                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.45 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.4: Grade 6 HLA IRT Summary Output

```
TABLE 3.1 20200531_HL6_analysisfile_OT.sav       ZOU409WS.TXT  Jun  9 2022 13:33
INPUT: 251 PERSON  53 ITEM  REPORTED: 251 PERSON  53 ITEM  126 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 251 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      26.9      52.8    -.808535 .278584      1.04    .13   1.02    .11 |
|  SEM        .8        .2     .055733 .003144       .02    .07    .02    .06 |
| P.SD      12.3       2.6     .881223 .049718       .30   1.06    .35    .95 |
| S.SD      12.3       2.6     .882984 .049818       .30   1.06    .35    .95 |
| MAX. 57.0      53.0    1.356583 .598337      2.68   3.34   3.21   3.58 |
| MIN. 3.0      14.0   -3.467780 .245818       .54  -2.21    .55  -2.59 |
|-----------------------------------------------------------------------------|
| REAL RMSE.301180 TRUE SD .828158  SEPARATION  2.75  PERSON RELIABILITY  .88 |
|MODEL RMSE.282986 TRUE SD .834550  SEPARATION  2.95  PERSON RELIABILITY  .90 |
| S.E. OF PERSON MEAN = .055733                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .89  SEM = 4.10 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .89

     SUMMARY OF 53 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     127.2     250.0     .054984 .156996      1.03    .19   1.02    .14 |
|  SEM      18.5        .1     .166789 .008993       .02    .27    .03    .28 |
| P.SD     133.4        .7    1.202734 .064849       .17   1.96    .24   2.00 |
| S.SD     134.7        .7    1.214244 .065470       .17   1.97    .24   2.01 |
| MAX. 834.0     251.0    3.200000 .408235      1.74   4.54   1.99   4.61 |
| MIN. 11.0     249.0   -2.040000 .052000       .71  -4.26    .57  -4.14 |
|-----------------------------------------------------------------------------|
| REAL RMSE.182498 TRUE SD1.188808  SEPARATION  6.51  ITEM   RELIABILITY  .98 |
|MODEL RMSE.169862 TRUE SD1.190679  SEPARATION  7.01  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .166789                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.47 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.5: Grade 7 HLA IRT Summary Output

```
TABLE 3.1 20200531_HL7_analysisfile_OT.sav       ZOU613WS.TXT  Jun  9 2022  8:43
INPUT: 147 PERSON  57 ITEM  REPORTED: 147 PERSON  57 ITEM  134 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 147 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      25.5      56.8    -.951341 .287787      1.01    .08   1.05    .24 |
|  SEM       1.0        .2     .076634 .004023       .02    .08    .03    .08 |
| P.SD      12.3       2.8     .925976 .048609       .25    .93    .31    .97 |
| S.SD      12.3       2.8     .929142 .048775       .25    .93    .32    .97 |
| MAX. 60.0      57.0    1.380544 .530573      1.63   2.28   2.09   3.41 |
| MIN. 4.0      23.0   -3.337859 .246516       .53  -2.03    .49  -1.73 |
|-----------------------------------------------------------------------------|
| REAL RMSE.306823 TRUE SD .873665  SEPARATION  2.85  PERSON RELIABILITY  .89 |
|MODEL RMSE.291863 TRUE SD .878776  SEPARATION  3.01  PERSON RELIABILITY  .90 |
| S.E. OF PERSON MEAN = .076634                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .90  SEM = 3.93 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .89

     SUMMARY OF 57 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      65.8     146.4    -.000351 .209106      1.08    .20   1.05    .18 |
|  SEM       9.2        .1     .167070 .009760       .06    .25    .05    .22 |
| P.SD      69.2        .5    1.250239 .073040       .45   1.89    .36   1.67 |
| S.SD      69.8        .5    1.261353 .073689       .46   1.91    .36   1.69 |
| MAX. 492.0     147.0    3.120000 .537773      4.01   6.36   2.39   4.70 |
| MIN. 7.0     146.0   -2.750000 .071002       .65  -4.08    .30  -3.36 |
|-----------------------------------------------------------------------------|
| REAL RMSE.262297 TRUE SD1.222415  SEPARATION  4.66  ITEM   RELIABILITY  .96 |
|MODEL RMSE.221495 TRUE SD1.230462  SEPARATION  5.56  ITEM   RELIABILITY  .97 |
| S.E. OF ITEM MEAN = .167070                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.52 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.6: Grade 8 HLA IRT Summary Output

```
TABLE 3.1 20200531_HL8_analysisfile_OT.sav       ZOU239WS.TXT  Jun  9 2022  9: 4
INPUT: 166 PERSON  56 ITEM  REPORTED: 166 PERSON  56 ITEM  129 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 166 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      26.4      56.0    -.706766 .290873      1.07    .25   1.15    .33 |
|  SEM        .9        .0     .073395 .004100       .02    .07    .04    .07 |
| P.SD      12.1        .0     .942772 .052660       .26    .88    .56    .88 |
| S.SD      12.1        .0     .945625 .052820       .26    .88    .56    .88 |
| MAX. 57.0      56.0    1.520020 .574126      2.27   3.24   5.87   4.72 |
| MIN. 4.0      56.0   -3.428410 .246112       .64  -1.56    .61  -1.01 |
|-----------------------------------------------------------------------------|
| REAL RMSE.318235 TRUE SD .887438  SEPARATION  2.79  PERSON RELIABILITY  .89 |
|MODEL RMSE.295601 TRUE SD .895231  SEPARATION  3.03  PERSON RELIABILITY  .90 |
| S.E. OF PERSON MEAN = .073395                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .90  SEM = 3.90 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .89

     SUMMARY OF 56 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      78.4     166.0    -.012431 .203948      1.13    .47   1.15    .49 |
|  SEM       8.0        .0     .194163 .013334       .05    .25    .06    .24 |
| P.SD      59.2        .0    1.439953 .098884       .40   1.84    .43   1.79 |
| S.SD      59.7        .0    1.452985 .099779       .40   1.86    .43   1.80 |
| MAX. 396.0     166.0    3.940000 .660576      3.27   4.28   3.27   5.54 |
| MIN. 5.0     166.0   -4.180000 .065632       .70  -3.88    .57  -3.56 |
|-----------------------------------------------------------------------------|
| REAL RMSE.286883 TRUE SD1.411086  SEPARATION  4.92  ITEM   RELIABILITY  .96 |
|MODEL RMSE.226656 TRUE SD1.422003  SEPARATION  6.27  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .194163                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.51 (approximate due to multiple item groupings)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.7: Grade 3 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR3MA_OT.sav        ZOU467WS.TXT  Jun  9 2022  9:46
INPUT: 309 PERSON  55 ITEM  REPORTED: 309 PERSON  55 ITEM  113 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 309 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      22.4      55.0    -.373404 .340702      1.03    .14   1.05    .14 |
|  SEM        .5        .0     .050648 .001363       .01    .06    .02    .04 |
| P.SD       8.0        .0     .888862 .023920       .18   1.00    .43    .76 |
| S.SD       8.0        .0     .890304 .023959       .18   1.00    .43    .76 |
| MAX. 50.0      55.0    2.829592 .461228      1.79   3.65   4.68   4.10 |
| MIN. 7.0      55.0   -2.463100 .318355       .61  -2.96    .50  -1.73 |
|-----------------------------------------------------------------------------|
| REAL RMSE.357181 TRUE SD .813940  SEPARATION  2.28  PERSON RELIABILITY  .84 |
|MODEL RMSE.341541 TRUE SD .820625  SEPARATION  2.40  PERSON RELIABILITY  .85 |
| S.E. OF PERSON MEAN = .050648                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = 1.00 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .86  SEM = 3.03 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .84

     SUMMARY OF 55 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     125.6     309.0     .183422 .154946      1.03    .22   1.05    .41 |
|  SEM      10.1        .0     .205955 .007104       .02    .29    .04    .29 |
| P.SD      74.3        .0    1.513454 .052200       .14   2.11    .27   2.13 |
| S.SD      75.0        .0    1.527403 .052681       .15   2.13    .27   2.15 |
| MAX. 293.0     309.0    3.668197 .391676      1.46   4.91   1.74   5.24 |
| MIN. 5.0     309.0   -3.588143 .122825       .78  -5.13    .26  -4.88 |
|-----------------------------------------------------------------------------|
| REAL RMSE.168305 TRUE SD1.504066  SEPARATION  8.94  ITEM   RELIABILITY  .99 |
|MODEL RMSE.163502 TRUE SD1.504596  SEPARATION  9.20  ITEM   RELIABILITY  .99 |
| S.E. OF ITEM MEAN = .205955                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.97 (approximate due to multiple item groupings)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.8: Grade 4 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR4MA_OT.sav        ZOU838WS.TXT  Jun  9 2022 10:32
INPUT: 281 PERSON  56 ITEM  REPORTED: 281 PERSON  56 ITEM  114 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 281 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      21.1      55.8    -.838708 .307722      1.00   -.07    .99   -.02 |
|  SEM        .5        .1     .043599 .001691       .01    .05    .02    .05 |
| P.SD       8.0       2.2     .729552 .028293       .11    .86    .33    .77 |
| S.SD       8.1       2.2     .730854 .028343       .11    .86    .33    .77 |
| MAX. 47.0      56.0    1.635641 .564712      1.39   2.08   4.76   4.82 |
| MIN. 8.0      19.0   -2.220941 .285211       .71  -2.77    .65  -1.88 |
|-----------------------------------------------------------------------------|
| REAL RMSE.316303 TRUE SD .657418  SEPARATION  2.08  PERSON RELIABILITY  .81 |
|MODEL RMSE.309020 TRUE SD .660873  SEPARATION  2.14  PERSON RELIABILITY  .82 |
| S.E. OF PERSON MEAN = .043599                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .98
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .83  SEM = 3.32
STANDARDIZED (50 ITEM) RELIABILITY = .80

     SUMMARY OF 56 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     106.0     280.2    -.073343 .153181      1.00   -.18    .99   -.10 |
|  SEM       7.6        .1     .151788 .009457       .02    .28    .03    .27 |
| P.SD      56.7        .6    1.125693 .070138       .12   2.04    .19   2.00 |
| S.SD      57.2        .7    1.135881 .070773       .12   2.06    .19   2.02 |
| MAX. 335.0     281.0    3.708870 .508436      1.47   5.97   1.64   5.64 |
| MIN. 4.0     279.0   -2.236372 .074534       .79  -4.67    .30  -3.97 |
|-----------------------------------------------------------------------------|
| REAL RMSE.171001 TRUE SD1.112629  SEPARATION  6.51  ITEM   RELIABILITY  .98 |
|MODEL RMSE.168475 TRUE SD1.113015  SEPARATION  6.61  ITEM   RELIABILITY  .98 |
| S.E. OF ITEM MEAN = .151788                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.82
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.9: Grade 5 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR5MA_OT.sav        ZOU022WS.TXT  Jun  8 2022 13:31
INPUT: 246 PERSON  58 ITEM  REPORTED: 246 PERSON  58 ITEM  124 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 246 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      21.0      58.0    -.803595 .292297      1.04    .25   1.03    .19 |
|  SEM        .6        .0     .043774 .002310       .01    .05    .01    .05 |
| P.SD       8.9        .3     .685176 .036157       .18    .84    .18    .80 |
| S.SD       9.0        .3     .686573 .036231       .18    .85    .18    .80 |
| MAX. 50.0      58.0    1.302089 .395425      1.84   2.86   1.84   2.90 |
| MIN. 8.0      53.0   -2.066390 .252158       .73  -1.44    .63  -1.98 |
|-----------------------------------------------------------------------------|
| REAL RMSE.306281 TRUE SD .612910  SEPARATION  2.00  PERSON RELIABILITY  .80 |
|MODEL RMSE.294525 TRUE SD .618645  SEPARATION  2.10  PERSON RELIABILITY  .82 |
| S.E. OF PERSON MEAN = .043774                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .84  SEM = 3.55
STANDARDIZED (50 ITEM) RELIABILITY = .79

     SUMMARY OF 58 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      89.1     245.9    -.006852 .148131      1.04    .19   1.03    .08 |
|  SEM       5.2        .0     .110939 .003670       .03    .26    .03    .24 |
| P.SD      39.4        .3     .837574 .027709       .22   1.98    .24   1.83 |
| S.SD      39.7        .3     .844889 .027951       .22   1.99    .24   1.85 |
| MAX. 177.0     246.0    2.200000 .277504      2.24   6.48   2.04   5.46 |
| MIN. 13.0     245.0   -2.250000 .065336       .72  -3.76    .54  -3.66 |
|-----------------------------------------------------------------------------|
| REAL RMSE.156976 TRUE SD .822732  SEPARATION  5.24  ITEM   RELIABILITY  .96 |
|MODEL RMSE.150700 TRUE SD .823905  SEPARATION  5.47  ITEM   RELIABILITY  .97 |
| S.E. OF ITEM MEAN = .110939                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.86
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.10: Grade 6 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR6MA_OT.sav        ZOU992WS.TXT  Jun  8 2022 14:58
INPUT: 251 PERSON  57 ITEM  REPORTED: 251 PERSON  57 ITEM  127 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------------

     SUMMARY OF 251 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      17.0      55.3   -1.241549 .313117       .98   -.01   1.04    .14 |
|  SEM        .6        .5     .045298 .003849       .01    .03    .02    .05 |
| P.SD       9.2       7.3     .716230 .060858       .14    .55    .24    .83 |
| S.SD       9.3       7.3     .717661 .060980       .14    .55    .24    .83 |
| MAX. 56.0      57.0    1.398990 .603194      1.46   1.68   1.87   3.03 |
| MIN. 3.0       9.0   -2.940855 .241148       .40  -1.92    .63  -1.74 |
|-----------------------------------------------------------------------------|
| REAL RMSE.326383 TRUE SD .637541  SEPARATION  1.95  PERSON RELIABILITY  .79 |
|MODEL RMSE.318977 TRUE SD .641279  SEPARATION  2.01  PERSON RELIABILITY  .80 |
| S.E. OF PERSON MEAN = .045298                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .93 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .86  SEM = 3.50 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .78

     SUMMARY OF 57 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      75.1     243.4    -.026661 .162447      1.04    .25   1.05    .17 |
|  SEM       5.6        .6     .116655 .006328       .03    .24    .05    .26 |
| P.SD      41.8       4.3     .872970 .047351       .22   1.80    .35   1.98 |
| S.SD      42.1       4.3     .880729 .047772       .23   1.82    .35   2.00 |
| MAX. 234.0     251.0    2.030000 .314041      2.01   4.45   2.67   4.89 |
| MIN. 7.0     238.0   -2.350000 .063198       .49  -3.33    .24  -3.94 |
|-----------------------------------------------------------------------------|
| REAL RMSE.179936 TRUE SD .854224  SEPARATION  4.75  ITEM   RELIABILITY  .96 |
|MODEL RMSE.169208 TRUE SD .856414  SEPARATION  5.06  ITEM   RELIABILITY  .96 |
| S.E. OF ITEM MEAN = .116655                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.75 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.11: Grade 7 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR7MA_OT.sav        ZOU029WS.TXT  Jun  8 2022 16:18
INPUT: 149 PERSON  56 ITEM  REPORTED: 149 PERSON  56 ITEM  119 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 149 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      13.7      55.4   -1.653320 .345093      1.05    .29   1.16    .43 |
|  SEM        .6        .3     .054735 .004667       .01    .06    .04    .07 |
| P.SD       6.7       3.6     .665882 .056777       .15    .68    .47    .84 |
| S.SD       6.7       3.6     .668128 .056969       .15    .69    .47    .85 |
| MAX. 41.0      56.0     .589249 .601241      1.87   4.11   3.33   4.12 |
| MIN. 3.0      22.0   -3.407051 .268486       .75  -1.36    .50   -.90 |
|-----------------------------------------------------------------------------|
| REAL RMSE.360963 TRUE SD .559557  SEPARATION  1.55  PERSON RELIABILITY  .71 |
|MODEL RMSE.349733 TRUE SD .566644  SEPARATION  1.62  PERSON RELIABILITY  .72 |
| S.E. OF PERSON MEAN = .054735                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .98
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .78  SEM = 3.15
STANDARDIZED (50 ITEM) RELIABILITY = .70

     SUMMARY OF 56 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      36.5     147.5    -.090905 .252430      1.17    .30   1.16    .25 |
|  SEM       2.8        .2     .158760 .020526       .08    .24    .08    .22 |
| P.SD      20.5       1.3    1.177398 .152228       .56   1.77    .62   1.61 |
| S.SD      20.7       1.3    1.188053 .153605       .57   1.79    .63   1.62 |
| MAX. 90.0     149.0    3.720000 1.07670      3.47   6.16   4.46   4.83 |
| MIN. 1.0     146.0   -1.860000 .113882       .29  -4.10    .10  -3.69 |
|-----------------------------------------------------------------------------|
| REAL RMSE.385159 TRUE SD1.112618  SEPARATION  2.89  ITEM   RELIABILITY  .89 |
|MODEL RMSE.294778 TRUE SD1.139900  SEPARATION  3.87  ITEM   RELIABILITY  .94 |
| S.E. OF ITEM MEAN = .158760                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.81
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.12: Grade 8 MA IRT Summary Output

```
TABLE 3.1 20220602_Math_2022_GR8MA_OT.sav        ZOU247WS.TXT  Jun 14 2022 12:31
INPUT: 169 PERSON  56 ITEM  REPORTED: 169 PERSON  56 ITEM  118 CATS WINSTEPS 5.2.3.0
-------------------------------------------------------------------------------------

     SUMMARY OF 169 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      13.5      55.5   -1.484231 .345189      1.01    .10   1.07    .23 |
|  SEM        .5        .3     .044708 .003832       .01    .04    .03    .05 |
| P.SD       5.9       3.7     .579482 .049671       .09    .48    .36    .71 |
| S.SD       5.9       3.8     .581204 .049819       .09    .48    .36    .71 |
| MAX. 47.0      56.0    1.305804 .555723      1.41   2.17   3.44   4.07 |
| MIN. 4.0      22.0   -2.962298 .267926       .78  -1.27    .64  -1.10 |
|-----------------------------------------------------------------------------|
| REAL RMSE.356862 TRUE SD .456562  SEPARATION  1.28  PERSON RELIABILITY  .62 |
|MODEL RMSE.348744 TRUE SD .462792  SEPARATION  1.33  PERSON RELIABILITY  .64 |
| S.E. OF PERSON MEAN = .044708                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .97 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .74  SEM = 2.99 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .61

     SUMMARY OF 56 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      40.8     167.5    -.000179 .224870      1.07    .10   1.08    .07 |
|  SEM       3.2        .2     .143366 .015799       .07    .29    .08    .28 |
| P.SD      23.4       1.4    1.063229 .117172       .48   2.15    .57   2.05 |
| S.SD      23.6       1.4    1.072851 .118233       .49   2.17    .58   2.07 |
| MAX. 104.0     169.0    3.630000 .907348      3.44   6.93   3.70   6.19 |
| MIN. 2.0     166.0   -2.200000 .135103       .29  -4.05    .19  -3.65 |
|-----------------------------------------------------------------------------|
| REAL RMSE.292547 TRUE SD1.022190  SEPARATION  3.49  ITEM   RELIABILITY  .92 |
|MODEL RMSE.253566 TRUE SD1.032550  SEPARATION  4.07  ITEM   RELIABILITY  .94 |
| S.E. OF ITEM MEAN = .143366                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.82 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.13: Grade 5 SC IRT Summary Output

```
TABLE 3.1 20220602_Science_2022_GR5SC_OT_rev.sav ZOU363WS.TXT  Jun 10 2022 10:42
INPUT: 246 PERSON  51 ITEM  REPORTED: 246 PERSON  51 ITEM  115 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

     SUMMARY OF 246 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      22.7      51.0    -.908639 .293186      1.02    .12   1.09    .28 |
|  SEM        .6        .0     .049217 .002804       .01    .05    .02    .06 |
| P.SD       9.6        .0     .770367 .043888       .21    .85    .26    .95 |
| S.SD       9.6        .0     .771938 .043977       .21    .85    .26    .95 |
| MAX. 47.0      51.0     .795349 .482590      2.08   3.57   2.82   2.99 |
| MIN. 5.0      51.0   -2.911271 .246908       .63  -1.97    .61  -2.32 |
|-----------------------------------------------------------------------------|
| REAL RMSE.309823 TRUE SD .705319  SEPARATION  2.28  PERSON RELIABILITY  .84 |
|MODEL RMSE.296453 TRUE SD .711043  SEPARATION  2.40  PERSON RELIABILITY  .85 |
| S.E. OF PERSON MEAN = .049217                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .85  SEM = 3.70 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .85

     SUMMARY OF 51 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     109.5     246.0    -.370033 .140718      1.05    .43   1.09    .50 |
|  SEM       6.9        .0     .120051 .003726       .03    .32    .05    .34 |
| P.SD      49.1        .0     .848887 .026348       .18   2.29    .36   2.40 |
| S.SD      49.6        .0     .857334 .026610       .19   2.31    .36   2.43 |
| MAX. 281.0     246.0    1.408726 .210088      1.70   5.85   2.89   7.67 |
| MIN. 33.0     246.0   -2.019224 .062922       .79  -4.52    .66  -4.48 |
|-----------------------------------------------------------------------------|
| REAL RMSE.150972 TRUE SD .835354  SEPARATION  5.53  ITEM   RELIABILITY  .97 |
|MODEL RMSE.143163 TRUE SD .836728  SEPARATION  5.84  ITEM   RELIABILITY  .97 |
| S.E. OF ITEM MEAN = .120051                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.64 (approximate due to multiple item groupings)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix Table D.14: Grade 8 SC IRT Summary Output

```
TABLE 3.1 20220602_Science_2022_GR8SC_OT.sav     ZOU796WS.TXT  Aug  2 2022 11:54
INPUT: 168 PERSON  58 ITEM  REPORTED: 168 PERSON  58 ITEM  124 CATS WINSTEPS 5.2.5.0
--------------------------------------------------------------------------------

     SUMMARY OF 168 MEASURED PERSON
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      14.8      57.4   -1.632305 .337510      1.00    .06   1.07    .20 |
|  SEM        .6        .3     .057440 .005899       .01    .05    .05    .08 |
| P.SD       7.6       4.3     .742287 .076233       .17    .66    .65    .97 |
| S.SD       7.7       4.3     .744506 .076461       .17    .66    .65    .98 |
| MAX. 40.0      58.0     .336430 .747063      1.86   2.48   5.55   4.55 |
| MIN. 2.0      22.0   -3.866922 .260783       .70  -1.56    .45  -1.11 |
|-----------------------------------------------------------------------------|
| REAL RMSE.355848 TRUE SD .651431  SEPARATION  1.83  PERSON RELIABILITY  .77 |
|MODEL RMSE.346012 TRUE SD .656708  SEPARATION  1.90  PERSON RELIABILITY  .78 |
| S.E. OF PERSON MEAN = .057440                                               |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .97 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .81  SEM = 3.29 (approximate
due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .76

     SUMMARY OF 58 MEASURED ITEM
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE    S.E. MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      42.9     166.3    -.018963 .240894      1.07    .11   1.07    .04 |
|  SEM       4.5        .2     .159902 .018052       .07    .26    .09    .25 |
| P.SD      34.0       1.4    1.207234 .136286       .56   2.00    .71   1.92 |
| S.SD      34.3       1.4    1.217778 .137476       .56   2.01    .72   1.94 |
| MAX. 184.0     168.0    3.490000 .883397      4.63   4.69   5.74   4.10 |
| MIN. 2.0     165.0   -1.950000 .077256       .53  -4.55    .40  -4.00 |
|-----------------------------------------------------------------------------|
| REAL RMSE.367044 TRUE SD1.150084  SEPARATION  3.13  ITEM   RELIABILITY  .91 |
|MODEL RMSE.276774 TRUE SD1.175079  SEPARATION  4.25  ITEM   RELIABILITY  .95 |
| S.E. OF ITEM MEAN = .159902                                                 |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.71 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

Appendix E: : Person By Item Histograms and Item Maps

This appendix contains the details of the Item Response Theory Summary Statistics outputs from Winsteps.

Appendix Figure E.1:Grade 3 HLA Item Histogram

Appendix Figure E.2: Grade 4 HLA Item Histogram

Appendix Figure E.3: Grade 5 HLA Item Histogram

Appendix Figure E.4: Grade 6 HLA Item Histogram

Appendix Figure E.5: Grade 7 HLA Item Histogram

Appendix Figure E.6: Grade 8 HLA Item Histogram:

Appendix Figure E.7: Grade 3 MA Item Histogram

Appendix Figure E.8: Grade 4 MA Item Histogram

Appendix Figure E.9: Grade 5 MA Item Histogram

Appendix Figure E.10: Grade 6 MA Item Histogram

Appendix Figure E.11: Grade 7 MA Item Histogram

Appendix Figure E.12: Grade 8 MA Item Histogram

Appendix Figure E.13: Grade 5 SC Item Histogram

Appendix Figure E.14: Grade 8 SC Item Histogram

Appendix F: Item Maps

Appendix Figure F.1: Grade 3 HLA Item Map

```
TABLE 12.6 20220602_Language Arts_2022_GR3HLA_EF ZOU567WS.TXT  Jul  6 2022 13:35
INPUT: 311 PERSON  63 ITEM  REPORTED: 311 PERSON  63 ITEM  136 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4        5
                     |   @127.1
    3                +
                     |
                     |
                     |
                     |
                     |
                  . |
                  . |   @112.1  @1020.2
                     |T           @379.2
                                  @138.2
    2                +  @1285.1
                  #  |   @113.1
                  . |  @1286.1
                     |
                  #  |
                 .#  |
                 ## T|                    @1024.3            @394.5
                  . |  @1023.1
                  . |S
    1            .##  +    @87.1
                     |   @379.1  @1024.2
                 .#  |  @1025.1  @1284.2
                           @95.1
                          @104.1
           .######  |  @1277.1
               .##  |  @1469.1
                       @1026.1
              .###  |    @96.1
                       @1020.1
                        @156.1
                        @110.1
                        @138.1
                       @1479.1
                        @143.1
                ### S|
                .##  |  @1022.1                     @394.4
              .####  |  @1686.1
    0    ##########  +M  @108.1
                        @130.1
                        @101.1
                        @119.1
                       @1281.1
                         @88.1
                       @1470.1
```

```
            ###  |    @92.1
                    @123.1
                    @145.1
                    @158.1
                     @97.1
                   @1024.1
       ########  |  @1284.1
                   @1471.1
                   @1282.1
                     @89.1
     .#########  |   @137.1
                     @99.1
           .###  |                    @394.3
       ######## M|  @1478.1
                    @114.1
     .#########  |  @1021.1
                    @381.1
                   @1477.1
                    @161.1
          #####  |   @107.1
                    @125.1
   ############  |  @1283.1
                    @384.1
-1       ######  +   @117.1
                   @1664.1
           .###  |S
      .########  |   @162.1
           ####  |   @383.1   @394.2
             ## S|
           ####  |    @84.1
                    @150.1
          #####  |   @394.1
         .#####  |
          .####  |    @91.1
                    @94.1
-2         .###  +
             .#  |T   @93.1
            ###  |    @90.1
             .#  |
                T|
                 |
                 |
                 |
                 |
-3               +
           <less>|<freq> 0        1        2        3        4
   EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.2: Grade 4 HLA Item Map

```
TABLE 12.6 20220603_Language Arts_2022_GR4HLA.sa ZOU311WS.TXT  Jul  6 2022 13:32
INPUT: 282 PERSON  63 ITEM  REPORTED: 282 PERSON  63 ITEM  137 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4        5
                     |  @1017.1
                     |
                     |
                     |
                     |
                     |
                     |
    3                +
                     |
                     |
                     |
                     |
                  . |
                     |
                     |
                     |                                        @395.5
    2             #  +T            @35.2
                  . |                      @42.3
                     |                   @1013.3
                  . |
                  . T|
               ####  |    @11.1           @1705.3
                  #  |    @35.1
                .##  |    @63.1                     @395.4
                  . |    @41.1    @42.2
                        @1012.1
                        @1014.1
                        @1016.1
    1            .#  +S @1291.1
                        @57.1
                ###  |    @25.1
                 .#  |    @56.1
                        @1011.1
            .#####  |  @1487.1
                        @1485.1
               #### S|  @1482.1  @1013.2   @395.3
                        @24.1
              .###  |    @55.1  @1705.2
                        @1484.1
                .##  |    @46.1
                        @23.1
              #####  |  @1019.1
                        @50.1
                        @22.1
          ########  |    @62.1
                         @9.1
                        @61.1
                        @30.1
                        @37.1
```

```
 0       #######  +M   @36.1
                      @21.1
                      @42.1
                      @47.1
                      @31.1
                      @26.1
            ###  |    @40.1
                      @51.1
                      @54.1
         .######  |  @1013.1
                     @387.1
         ####### M|  @1015.1   @395.2
           .####  |    @34.1
    ############  |    @17.1
           #####  |  @1705.1
                      @15.1
    ############  |    @16.1
                      @27.1
            ####  |
-1      ########  +S   @49.1
                      @60.1
                      @38.1
                      @12.1
            .##  |     @8.1
                      @18.1
            ### S|    @48.1
             ##  |  @1486.1
          #####  |
             .#  |    @64.1
                      @65.1
                     @395.1
            .##  |    @14.1
                      @20.1
                     @389.1
          #####  |    @13.1
             .#  |
-2           .#  +T
                 |     @7.1
              # T|
                 |
                 |
              . |
                 |
                 |
              . |
-3               +
           <less>|<freq> 0        1        2        3        4
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.3: Grade 5 HLA Item Map

```
TABLE 12.6 20220603_GR5HLA_clean.csv            ZOU536WS.TXT  Jul  6 2022 13:40
INPUT: 245 PERSON  64 ITEM  REPORTED: 245 PERSON  64 ITEM  141 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4        5        6
                     |            X706.2
                     |
                     |
                     |
                     |
                     |
                     |
                     |
                     |   X673.1
    2                +
                     |T  X706.1            X722.3
                  . |
                     |                              X712.4
                  #  |
                 .#  |
                  # T|   X718.1
                        X677.1
                        X707.1
                  . |   X640.1
                        X708.1
                  #  |
               ####  |   X681.1
                        X637.1
                       X1208.1
    1             . +S  X693.1           X1646.3                    X1030.6
                        X723.1
             .####  |
                  . |  X1494.1            X712.3
                       X1072.1
                 ##  |   X727.1
                  . |
                 .# S|  X1183.1
                       X1493.1
              .###  |   X713.1   X722.2
                       X1215.1
                        X711.1
              .###  |   X702.1   X712.2
                        X719.1
                        X716.1
              .###  |   X730.1                             X1030.5
                       X1565.1
                        X629.1
             .####  |  X1552.1
                        X720.1
    0       #######  +M X1193.1  X1646.2
                        X642.1
                        X714.1
                 .#  |   X724.1
                        X712.1
```

```
                     X633.1
          .#####  |   X630.1                    X1030.4
                     X726.1
                     X725.1
                     X690.1
                     X631.1
         #######  |   X684.1
           .####  |
          ###### M|   X672.1
                    X1186.1
                     X646.1
           #####  |   X728.1
              .#  |   X722.1
                     X627.1
                    X1492.1
                     X625.1
                     X709.1
          .#####  |   X636.1           X1030.3
                     X648.1
                    X1646.1
                     X634.1
            .###  |   X696.1
-1           ###  +S  X729.1
           .####  |   X689.1
                     X626.1
            ####  |
             ###  |   X721.1  X1030.2
         .######  |
            #### S|  X1222.1
                     X699.1
             .##  |
               . |  X1030.1
              ##  |
           .####  |T X1495.1
-2                +
              .#  |
              ##  |
              ##  |  X1074.1
                 T|
               #  |   X644.1
                  |
               . |
                  |
                  |
-3                +
            <less>|<freq> 0        1        2        3        4        5
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.4: Grade 6 HLA Item Map

```
TABLE 12.6 20200531_HLA6_analysisfile_prelimrost ZOU387WS.TXT  Jul  6 2022 13:48
INPUT: 251 PERSON  60 ITEM  REPORTED: 251 PERSON  60 ITEM  140 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4        5        6
                     |   @691.1
                     |   @660.1
                     |T @1170.1
                     |   @674.1
                     |   @698.1
                         @701.1
    2                +
                     |
                     |   @663.1
                     |            @694.2
                     |
                     |  @1496.1
                         @687.1
                   #  |
                     |   @668.1           @1173.3   @666.4
                     |S                             @680.4
    1             . +   @651.1
                         @1169.1
                       T|                    @664.3                    @1031.6
                 .##  |
                 .##  |                    @1661.3
                  .#  |  @1497.1
                          @692.1
                          @639.1
                         @1309.1
                  ##  |   @679.1            @666.3
                 .##  |   @647.1
                          @650.1
                          @694.1
                .###  |   @675.1
                ####  |  @1985.1
                         @1075.1
    0            .## S+M  @669.1
                         @1171.1
                 ###  |  @1567.1   @666.2   @643.3
                          @697.1
                          @688.1
                          @632.1
           .#######  |   @682.1  @1173.2                    @1031.5
                         @1083.1   @664.2
           ########  |   @665.1            @680.3
                         @1983.1
                         @1766.1
                          @656.1
              #####  |   @662.1
                          @657.1
                .###  |   @661.1  @1661.2
                          @676.1
                          @649.1
```

```
                    @1755.1
           .####  |   @664.1
          .#####  |   @666.1
        .####### M|   @659.1   @643.2           @1031.4
                    @1173.1
-1      .#######  +   @652.1
          ######  |S @1566.1
                     @678.1
            ####  |   @645.1
       .########  |   @667.1
           .###  |   @643.1   @680.2  @1031.3
          ######  |   @700.1
             .## S|  @1986.1
              .#  |   @655.1
                    @1661.1
          ######  |   @680.1  @1031.2
                     @653.1
-2          .###  +   @683.1
            .###  |
               #  |
              .#  |T @1172.1
                  |  @1031.1
              .# T|
               #  |
                  |
                  |
-3                +
                  |
               #  |
                  |
                  |
                  |
                  |
                  |
-4                +
            <less>|<freq> 0        1        2        3        4        5
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.5: Grade 7 HLA Item Map

```
TABLE 12.6 20220602_GR7HLA_clean.csv            ZOU971WS.TXT  Jul  6 2022 13:52
INPUT: 147 PERSON  63 ITEM  REPORTED: 147 PERSON  63 ITEM  147 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE  PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
          <more>|<rare>  1         2         3         4         5         6
                |T   X870.1
                |
                |    X874.1
                |    X903.1
                     X822.1
    2           +    X843.1
                |
                |                       X1501.3
                |    X884.1
                |    X774.1
                    X1178.1
                     X869.1
                    X1179.1
             X  |                        X872.3
                                        X889.3
                |    X886.1              X878.3
                    X1089.1
           XXX  |S   X876.1
            XX  |
    1          T+              X770.2              X808.4            X1032t.6
                |              X872.2
             X  |    X880.1             X1096.3
                     X839.1
             X  |    X883.1              X808.3
                    X1773.1
             X  |   X1088.1    X878.2   X1097.3
           XXX  |              X889.2
         XXXXX  |    X872.1   X1501.2
                     X902.1
                     X811.1
          XXXX  |    X892.1
          XXXX  |   X1502.1
                     X879.1
    0        XX S+M  X1182.1
                    X1098.1
                     X803.1
                     X891.1
                     X806.1
       XXXXXXXX  |             X1096.2                      X1032t.5
          XXXX  |    X889.1
                     X834.1
                     X770.1
                     X878.1
            XX  |    X777.1   X1097.2
                     X899.1
        XXXXXX  |   X1104.1
                    X1175.1
                    X1099.1
        XXXXXX  |    X897.1
```

```
                  X930.1
                  X875.1
   XXXXXXXXX  |    X762.1    X808.2
                 X1185.1
                  X877.1
                 X1499.1
                 X1501.1
    XXXXXXXX  |
      XXXXXX M|   X1500.1
-1     XXXXX  +   X1548.1
        XXXX  |                              X1032t.4
    XXXXXXXX  |S   X784.1
                 X1096.1
                  X829.1
         XXX  |    X808.1
                  X763.1
     XXXXXXX  |    X887.1
      XXXXXX  |
        XXXX  |                     X1032t.3
     XXXXXXX  |   X1097.1
        XXXX S|
-2     XXXXX  +    X882.1  X1032t.2
                  X769.1
        XXXX  |    X885.1
                  X790.1
         XXX  |   X1118.1
                  X871.1
         XXX  |
          XX  |T   X888.1
         XXX  |  X1032t.1
              |
              |
          XX T|
-3            +
           X  |
              |
              |
              |
              |
              |
              |
              |
-4            +
        <less>|<freq>  0         1         2         3         4         5
```

Appendix Figure F.6: Grade 8 HLA Item Map

```
TABLE 12.6 20200531_HLA8_analysisfile_prelimrost ZOU615WS.TXT  Jul  6 2022 13:59
INPUT: 166 PERSON  62 ITEM  REPORTED: 166 PERSON  62 ITEM  143 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4        5        6
                     |  @1546.1
                     |
                     |   @793.1
                        @1547.1
    3                +
                     |
                     |
                     |T  @802.1
                     |
                     |   @766.1
                     |
                     |   @810.1                     @820.4
    2                +                    @911.3   @780.4
                                         @1676.3
                     |
                     |
                     |                             @1214.4           @1034.6
                  X  |
                     |S
                 XX  |  @1092.1   @911.2
                 XX T|   @913.1
                         @764.1
    1            XX  +   @772.1            @780.3
                     |   @901.1            @820.3
                         @771.1
                 XX  |   @893.1                             @1034.5
                 XX  |   @924.1
                XXX  |   @905.1           @1214.3
              XXXXX  |  @1127.1
                        @1543.1
                        @1201.1
              XXXXX  |   @761.1   @820.2
                        @1105.1
         XXXXXXXXX S|  @1078.1
                         @916.1
                         @867.1
                        @1210.1
    0    XXXXXXXXXX  +M  @914.1   @767.2
                         @926.1
                         @906.1
                         @920.1
           XXXXXXX  |   @826.1  @1214.2           @1034.4
                         @912.1  @1676.2
                         @796.1
                         @894.1
                         @778.1
         XXXXXXXXX  |   @922.1
             XXXXX  |  @1544.1   @780.2
                         @820.1
```

```
        XXXXXXXX  |   @785.1           @1034.3
                     @925.1
                    @1545.1
                     @805.1
          XXXXXX  |  @1214.1
                    @1079.1
                    @1190.1
                     @767.1
                     @833.1
             XXX M|  @1199.1
                     @921.1
      XXXXXXXXXX  |  @1212.1
-1    XXXXXXXXXX  +   @855.1
                     @780.1
          XXXXXX  |  @1192.1
       XXXXXXXXX  |   @910.1  @1034.2
                    @1676.1
   XXXXXXXXXXXXX  |S  @911.1
            XXXX  |
           XXXXX S|
        XXXXXXXX  |   @927.1
            XXXX  |   @904.1
-2         XXXXX  +  @1034.1
             XXX  |
            XXXX  |   @929.1
                     @848.1
               X  |
                  |
               X T|T  @909.1
                  |
                  |
-3                +  @1126.1
                  |
                  |
                  |
              XX  |
                  |   @917.1
                  |
                  |
-4                +
            <less>|<freq> 0        1        2        3        4        5
```

Appendix Figure F.7: Grade 3 MA Item Map

```
TABLE 12.6 20220602_Math_2022_GR3MA_OTEFT.sav    ZOU607WS.TXT  Jul  6 2022 13:37
INPUT: 309 PERSON  62 ITEM  REPORTED: 309 PERSON  62 ITEM  129 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3
                     |   @992.1
                     |            @233.2
                     |
    3                +T  @233.1
                     |
                     |
                     |
                     |
                     |  @1437.1   @235.2
                        @185.1
                     |
                  . |  @1305.1   @234.2
                        @1036.1
    2                +
                     |
                  . |
                 .##  |  @1434.1           @1516.3
                         @234.1
                        @1303.1
                         @219.1
                  . |S
                  . |   @235.1
                  . |   @211.1
                  # T|   @217.1  @1516.2
    1            .#  +   @226.1
                  #  |   @210.1
                  #  |   @209.1
                        @1516.1
                 ##  |   @374.1
                         @218.1
                         @371.1
                         @230.1
                  . |   @995.1
                ###  |  @1035.1
                         @205.1
                         @225.1
                .## S|  @1433.1
                         @221.1
                         @213.1
                         @224.1
            .#####  |   @223.1
    0           ##  +M  @208.1
                         @172.1
                         @191.1
            ######  |   @186.1
             .####  |   @231.1
                         @212.1
                ###  |   @173.1
```

```
                    @1438.1
                     @214.1
      ##########  |   @180.1
                     @182.1
            .### M|   @229.1
             .##  |   @216.1
      ##########  |   @204.1
                     @169.1
-1          ####  +
           .####  |   @174.1
                     @207.1
                     @193.1
         #######  |
          .#####  |   @188.1
                    @1439.1
        .###### S|S  @201.1
          .####  |   @206.1
                    @1435.1
              .#  |
              ##  |   @190.1
                     @187.1
-2            .#  +   @184.1
               . |   @189.1
               #  |
                 T|
                  |   @198.1
                     @202.1
               . |   @215.1
                  |
                  |
-3                +T
                  |
                  |
                  |
                  |
                  |
                  |   @178.1
                  |
-4                +
            <less>|<freq> 0        1        2
     EACH "#" IS 3: EACH "." IS 1 TO 2
```

Appendix Figure F.8: Grade 4 MA Item Map

```
TABLE 12.6 20220602_Math_2022_GR4MA_EFTOT.sav    ZOU023WS.TXT  Jul  6 2022 13:39
INPUT: 281 PERSON  63 ITEM  REPORTED: 281 PERSON  63 ITEM  128 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2
                     |   @244.1
                     |
                     |
                     |
                     |  @1010.1
                     |
                     |
    3                +
                     |
                     |
                     |   @252.1
                         @239.1
                     |
                     |
                     |
                     |T
                     |
    2                +
                     |  @1451.1
                     |
                  . |
                  . |   @240.1   @375.2
                     |
                  . |
                  #  |
                  . |S  @246.1
                         @253.1
    1             . +
                  . |
                  . |
                  . T|   @278.1
                         @166.1
                  . |  @1009.1
                         @259.1
                         @256.1
                 .#  |   @257.1
                         @254.1
                 .#  |  @1444.1
                         @243.1
                         @171.1
                        @1007.1
                         @276.1
                .##  |   @264.1
                        @1006.1
                 .#  |   @168.1
                         @241.1
                         @247.1
                         @164.1
    0           .## S+M @1443.1
```

```
                      @373.1
                     @1441.1
               . |   @274.1
                      @277.1
                      @157.1
                      @165.1
         .######  |   @236.1
                      @261.1
                      @238.1
                      @245.1
                      @250.1
                      @103.1
                      @170.1
             .##  |   @378.1
          .#####  |   @258.1
                      @377.1
          .#####  |  @1440.1
                      @263.1
              ##  |   @375.1   @262.2
      ######### M|   @271.1
                      @249.1
                      @109.1
             ###  |   @154.1
                      @265.1
-1   ###########  +  @1982.1
                      @167.1
           .####  |S @1005.1
                      @135.1
           .####  |   @267.1
           #####  |  @1981.1
        .####### S|   @268.1
                      @163.1
            ####  |   @262.1
             .##  |   @140.1
             .##  |
              .#  |
-2             . +  @1447.1
                 |   @242.1
               . T|T
                 |
                 |
                 |
                 |
                 |
                 |
-3               +
            <less>|<freq> 0        1
     EACH "#" IS 3: EACH "." IS 1 TO 2
```

Appendix Figure F.9: Grade 5 MA Item Map

```
TABLE 12.6 20220531_Math_2022_GR5MA.sav          ZOU917WS.TXT  Jul  6 2022 13:42
INPUT: 246 PERSON  64 ITEM  REPORTED: 246 PERSON  64 ITEM  135 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3
                     |   @420.1
                     |
                     |
    2                +
                     |
                     |           @1093.2
                     |T
                     |  @1452.1   @464.2
                     |  @1217.1
                   . |  @1093.1
                   . |
                     |  @1232.1
                        @440.1
                     |   @417.1
                       @1229.1
                        @449.1
    1                +
                   . |S           @463.2   @435.3
                     |  @1223.1
                  ##  |
                 .## T|   @462.1
                  ##  |   @459.1
                        @429.1
                       @1456.1
                        @443.1
                        @453.1
                 .##  |   @412.1            @414.3
                        @419.1
                        @432.1
                        @426.1
                       @1202.1
                  .#  |  @1058.1
                        @442.1
                        @445.1
                        @450.1
                 .##  |   @463.1   @414.2
                       @1563.1
                        @464.1
                 .##  |   @436.1   @435.2
    0            ###  +M  @414.1
                        @437.1
                        @428.1
                .### S|  @1457.1
                ####  |   @439.1
                        @434.1
                       @1136.1
                       @1454.1
                        @435.1
                  .#  |   @425.1
```

```
                      @431.1
                      @415.1
          .#####  |   @457.1
             ###  |   @455.1
                      @446.1
                     @1121.1
                      @451.1
      .#########  |  @1187.1
                      @456.1
                     @1455.1
           #####  |   @452.1
                      @444.1
                      @454.1
                      @416.1
           ##### M|  @1130.1
                      @448.1
                      @422.1
     ###########  |S
-1         .####  +   @424.1
        ########  |
          .#####  |   @413.1
                      @421.1
          .#####  |   @441.1
           #####  |  @1128.1
         .###### S|   @433.1
         #######  |
          .#####  |T
             ###  |   @458.1
                      @460.1
              .#  |
-2           .##  +
                  |
               . T|
                  |
                  |
                  |
                  |
                  |
                  |
-3                +
            <less>|<freq> 0        1        2
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.10: Grade 6 MA Item Map

```
TABLE 12.6 20220602_Math_2022_GR6MA_EFTOT.sav    ZOU041WS.TXT  Jul  6 2022 13:50
INPUT: 251 PERSON  63 ITEM  REPORTED: 251 PERSON  63 ITEM  139 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4
                     |  @1251.1
                     |
                     |                     @502.3
                     |
                     |
                     |
    2                +   @482.1
                     |                            @1062.4
                     |T @1225.1
                  . |   @585.1   @502.2
                     |                             @469.4
                     |   @575.1
                     |   @524.1
                         @570.1
                  . |                    @491.3
                     |
    1             . +   @476.1                   @1131.4
                     |S
                  . |   @466.1           @1062.3
                  . |   @470.1  @1062.2
                         @577.1
                  . |   @521.1
                  . |   @512.1
                         @545.1
                         @534.1
                  . T|   @580.1
                  . |  @1253.1
                        @1062.1
                         @487.1
                 .#  |   @520.1           @1131.3
                         @581.1            @469.3
                        @1256.1
                        @1458.1
    0             #  +M  @578.1   @491.2
                  #  |  @1580.1
                         @572.1
                         @484.1
                         @478.1
                         @499.1
                         @526.1
                 .#  |   @480.1
                         @567.1
                         @553.1
                         @515.1
               .###  |   @502.1  @1131.2
                         @551.1
                         @574.1
                        @1518.1
                        @1582.1
```

```
                    @1200.1
              .# S|   @490.1   @469.2
                     @517.1
           .###  |  @1581.1
                    @1254.1
                    @1142.1
                    @1131.1
                    @1101.1
                     @563.1
           ####  |   @537.1
                     @509.1
           ####  |   @579.1
                     @491.1
              .#  |S  @468.1
                    @1203.1
                     @535.1
-1        .#####  +   @568.1
             ### M|  @1063.1
                     @514.1
                     @495.1
         .######  |   @469.1
                     @550.1
          #####  |
          .####  |  @1770.1
       .#######  |
    ###########  |
           .###  |T
                S|
-2          .##  +
            .##  |
             ##  |
              #  |
                 |   @571.1
                T|
                 |
              #  |
                 |
-3            . +
           <less>|<freq> 0        1        2        3
    EACH "#" IS 3: EACH "." IS 1 TO 2
```

Appendix Figure F.11: Grade 7 MA Item Map

```
TABLE 12.6 20220602_Math_2022_GR7MA_EFTOT.sav    ZOU504WS.TXT  Jul  6 2022 13:55
INPUT: 149 PERSON  63 ITEM  REPORTED: 149 PERSON  63 ITEM  133 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3
                     |  @1066.1
                        @1460.1
                     |
                     |
                     |
                     |
    3                +   @555.1
                         @513.1
                     |
                     |
                     |
                     |
                     |
                     |T          @1560.2
                     |
    2                +
                     |
                     |  @1252.1
                     |  @1264.1
                     |
                     |  @1247.1
                     |   @552.1
                     |S  @471.1
    1                +
                     |   @501.1
                     |                     @467.3
                  #  |   @543.1   @467.2
                         @522.1
                         @516.1
                     |
                     |
                     |  @1560.1
                         @477.1
                         @474.1
                         @483.1
                        @1244.1
                         @479.1
                        @1461.1
                     |   @506.1
                         @511.1
    0             . +M  @467.1   @562.2
                         @564.1
                  . |   @475.1            @547.3
                         @559.1
                  # T|   @561.1   @481.2
                         @486.1
                        @1558.1
                         @492.1
                        @1237.1
```

```
                      @549.1
              .#  |  @1234.1   @547.2
                     @1459.1
                     @1463.1
                     @1259.1
                      @488.1
                      @489.1
                      @503.1
              .#  |   @505.1
                      @527.1
              ##  |   @493.1
                      @485.1
                      @525.1
                      @533.1
               #  |   @557.1
                      @494.1
                      @496.1
                      @547.1
               . S|   @498.1
-1           .##  +   @481.1
                      @565.1
                      @540.1
                     @1134.1
                      @541.1
           #####  |S @1241.1
             .##  |  @1065.1
                      @536.1
       .########  |   @508.1
                     @1568.1
           .####  |   @562.1
                      @616.1
          .##### M|   @523.1
   .############  |
         .######  |
-2          ####  +
          .#####  |
           .#### S|T
                  |
               . |
               #  |
                  |
              .# T|
-3                +
                  |
                  |
               . |
                  |
                  |
                  |
                  |
-4                +
            <less>|<freq> 0        1        2
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.12: Grade 8 MA Item Map

```
TABLE 12.6 20220602_Math_2022_GR8MA_EFTOT.sav    ZOU695WS.TXT  Jul  6 2022 14: 1
INPUT: 169 PERSON  62 ITEM  REPORTED: 169 PERSON  62 ITEM  130 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3
                     |  @1268.1
                        @1140.1
    3                +
                     |
                     |
                     |
                     |
                     |            @583.2
                     |T
                     |   @620.1
                         @588.1
    2                +
                     |   @548.1  @1138.2
                     |           @1556.2
                  . |  @1556.1
                        @1218.1
                     |
                     |  @1138.1
                         @591.1
                     |   @542.1
                     |S                    @613.3
    1                +           @1135.2
                     |  @1465.1
                  . |  @1135.1
                         @590.1
                     |  @1695.1   @613.2
                        @1466.1
                     |   @576.1
                        @1464.1
                     |   @582.1
                         @599.1
                  . |   @601.1
                     |  @1270.1
                        @1273.1
    0                +M  @612.1
                         @531.1
                         @602.1
                     |   @573.1
                   #  |   @615.1
                         @556.1
                        @1236.1
                         @617.1
                         @584.1
                         @594.1
                         @544.1
                  ## T|   @529.1
                         @566.1
                         @613.1
                  . |   @593.1
```

```
                    @1274.1
                    @1467.1
                     @569.1
              .#  |   @586.1
                     @604.1
               . |   @603.1
                     @592.1
                    @1228.1
                     @532.1
               #  |   @598.1
                    @1230.1
                     @607.1
                    @1141.1
                     @611.1
-1           .## S+   @530.1
                    @1269.1
         .######  |S  @583.1
                     @597.1
            .###  |   @621.1
                     @614.1
           #####  |   @589.1
   .############  |   @596.1
                     @600.1
      .######### M|   @608.1
      .#########  |
          ######  |
-2       #######  +
           #####  |   @618.1
          ###### S|T
                  |
              .#  |
               #  |
                 T|
               . |
-3                +
               . |
                  |
                  |
                  |
                  |
                  |
-4                +
            <less>|<freq> 0        1        2
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.13: Grade 5 SC Item Map

```
TABLE 12.6 20220602_Science_2022_GR5SC_EFTOT.sav ZOU032WS.TXT  Jul  6 2022 13:46
INPUT: 246 PERSON  58 ITEM  REPORTED: 246 PERSON  58 ITEM  134 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4
                     |           @1534.2
                     |
                     |                             @1372.4
                     |                             @1315.4
    2                +
                     |
                     |
                     |
                     |T
                     |  @1320.1           @1331.3
                     |  @1368.1
                     |
                  . |  @1369.1
                 .#  |  @1318.1  @1536.2  @1372.3
                        @1540.1
    1             # T+  @1349.1  @1533.2
                  #  |  @1366.1           @1315.3  @1980.4
                  . |S @1324.1
                 .#  |  @1348.1  @1372.2           @1979.4
               ####  |           @1315.2
              #####  |  @1536.1           @1980.3
                        @1337.1
                 .#  |  @1359.1
                        @1351.1
                        @1326.1
                        @1339.1
               .###  |  @1365.1
                        @1329.1
                        @1358.1
                        @1995.1
                ### S|  @1361.1  @1331.2
                        @1534.1
          ########  |  @1327.1  @1980.2  @1979.3
                        @1542.1
                        @1330.1
                        @1364.1
    0          .####  +M @1333.1
                        @1372.1
                        @1980.1
                 ###  |  @1370.1  @1356.2
                        @1332.1
                        @1315.1
                        @1999.1
             .######  |  @1338.1
                        @1336.1
                        @1373.1
                 ###  |  @1344.1  @1979.2
                        @1533.1
             .######  |
```

```
             .##  |  @1367.1
                     @1537.1
                     @1325.1
                     @1998.1
      ######### M|  @1347.1
         .#####  |  @1979.1
                     @1317.1
                     @1331.1
                     @1991.1
       ########  |S @1328.1
          #####  |  @1362.1
                     @1323.1
                     @1997.1
                     @1996.1
-1           .##  +  @1535.1
        #######  |
          #####  |  @1994.1
                     @1321.1
          .#### S|  @1993.1
             ##  |
          .####  |
            .##  |T @1322.1
                     @1356.1
             ##  |  @1992.1
           ####  |
                 |
-2            ##  +
             .# T|
                 |
              . |
              . |
                 |
                 |
                 |
                 |
                 |
-3               +
           <less>|<freq> 0        1        2        3
    EACH "#" IS 2: EACH "." IS 1
```

Appendix Figure F.14: Grade 8 SC Item Map

```
TABLE 12.6 20220602_Science_2022_GR8SC_EFTOT.sav ZOU021WS.TXT  Jul  6 2022 14: 3
INPUT: 168 PERSON  65 ITEM  REPORTED: 168 PERSON  65 ITEM  138 CATS WINSTEPS 5.2.3.0
--------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM - 50% Cumulative probabilities (Rasch-Thurstonian
thresholds)
               <more>|<rare> 1        2        3        4
                     |   @959.1
    3                +
                     |
                     |
                     |
                     |
                     |T  @983.1
                         @961.1
                     |
                     |
    2                +   @971.1
                     |
                     |   @978.1
                        @1056.1
                     |   @980.1
                     |   @958.1                    @945.4
                        @1110.1
                     |   @974.1
                     |   @951.1
                         @984.1
                         @955.1
                         @979.1
                     |S @1111.1
                         @975.1
    1                +
                     |  @1258.1
                     |   @964.1
                         @944.1
                     |   @987.1
                     |  @1519.1
                         @986.1
                  . |  @1260.1            @945.3
                         @967.1
                     |  @1238.1
                  . |  @1522.1                    @937.4
                         @947.1
    0             . +M
                  # T|  @1526.1   @945.2  @1114.3
                         @960.1
                 .#  |  @1263.1
                         @938.1
                 .#  |   @953.1
                         @932.1
                         @948.1
                         @981.1
                  #  |  @1530.1            @937.3
                         @970.1
                        @1205.1
              .#####  |   @939.1  @1114.2
```

```
                     @1265.1
                      @936.1
           .####  |   @945.1
                      @965.1
                      @954.1
                     @1524.1
                      @950.1
               # S|   @977.1
                     @1267.1
                      @949.1
                      @969.1
-1           .##  +  @1266.1
                     @1054.1
           #####  |S           @937.2
           #####  |  @1257.1
                      @972.1
               #  |  @1109.1
                     @1511.1
                      @952.1
                     @1114.1
        ########  |   @956.1
                      @942.1
                      @946.1
            #### M|   @937.1
                     @1513.1
            .###  |   @985.1
   .############  |
-2          ####  +   @962.1
         .######  |
          .##### S|
          ######  |T
                  |
               #  |
               . |
                  |
-3               T+
                  |
              .#  |
                  |
                  |
                  |
                  |
                  |
-4                +
            <less>|<freq> 0        1        2        3
    EACH "#" IS 2: EACH "." IS 1
```

Appendix G: Item Response Theory Item Statistics

This appendix contains the details of the Item Response Theory (IRT) item analysis.

Appendix Table G.1: 2022 HLA IRT Statistics

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	3	84	493.81	311	6.36	0.96	-0.98	0.91	-1.47	-54.35	0.55	1.17	0.69	0.44
HLA	3	87	575.85	310	7.93	1.05	0.59	0.89	-0.70	-7.60	0.42	0.98	0.21	0.37
HLA	3	88	517.12	310	6.53	0.88	-2.41	0.81	-2.82	0.22	0.53	1.33	0.38	0.42
HLA	3	89	470.33	311	6.40	1.19	3.92	1.37	4.88	34.83	0.30	0.34	0.43	0.49
HLA	3	90	400.06	310	7.89	0.88	-1.45	0.68	-2.23	0.25	0.46	1.18	0.81	0.34
HLA	3	91	404.55	310	7.72	1.01	0.16	1.00	0.02	13.95	0.46	0.99	0.76	0.38
HLA	3	92	513.79	310	6.50	0.94	-1.17	0.93	-1.07	0.22	0.47	1.16	0.40	0.43
HLA	3	93	433.66	311	6.88	0.88	-1.97	0.78	-2.27	-24.13	0.34	1.25	0.78	0.39
HLA	3	94	444.09	311	6.69	0.66	-7.02	0.57	-5.48	-27.07	0.58	1.76	0.76	0.35
HLA	3	95	557.90	310	7.34	0.94	-0.77	0.99	-0.01	0.21	0.42	1.07	0.24	0.38
HLA	3	96	543.82	310	6.98	0.95	-0.84	0.89	-1.13	0.21	0.45	1.11	0.29	0.40
HLA	3	97	509.67	310	6.46	0.93	-1.52	0.93	-1.09	0.22	0.48	1.20	0.41	0.43
HLA	3	99	497.51	311	6.37	0.96	-0.86	0.91	-1.41	3.60	0.46	1.15	0.45	0.44
HLA	3	101	519.77	311	6.56	0.89	-2.17	0.85	-2.04	0.22	0.52	1.28	0.37	0.42
HLA	3	104	556.68	309	7.31	0.82	-2.58	0.69	-2.98	0.21	0.56	1.29	0.25	0.36
HLA	3	107	478.46	310	6.37	1.12	2.56	1.11	1.63	0.23	0.30	0.64	0.54	0.48
HLA	3	108	535.52	311	6.81	0.99	-0.20	0.92	-0.92	-14.38	0.51	1.05	0.37	0.42
HLA	3	110	510.87	309	6.48	1.01	0.15	1.00	0.01	29.97	0.33	0.98	0.30	0.45
HLA	3	112	632.89	309	11.13	0.88	-0.70	0.51	-2.06	0.19	0.41	1.11	0.08	0.24
HLA	3	113	615.60	309	9.91	0.97	-0.17	0.90	-0.39	0.19	0.32	1.02	0.11	0.29
HLA	3	114	531.05	309	6.74	1.38	5.88	1.51	5.19	-43.02	0.33	0.19	0.50	0.50
HLA	3	117	479.16	309	6.38	0.90	-2.33	0.85	-2.38	-11.36	0.50	1.34	0.58	0.43
HLA	3	119	531.05	309	6.74	1.19	3.13	1.39	4.13	-11.20	0.27	0.53	0.38	0.47
HLA	3	123	500.62	308	6.41	1.10	2.08	1.11	1.62	12.15	0.30	0.70	0.40	0.47
HLA	3	125	469.59	309	6.42	0.96	-0.88	0.92	-1.21	8.77	0.47	1.15	0.54	0.44
HLA	3	127	680.44	308	16.02	0.91	-0.24	0.52	-1.15	0.17	0.30	1.07	0.04	0.17
HLA	3	130	533.04	309	6.78	1.32	4.90	1.56	5.54	-12.31	0.16	0.28	0.37	0.49
HLA	3	137	502.47	308	6.42	1.04	0.95	1.08	1.23	-1.08	0.37	0.85	0.45	0.46
HLA	3	138	570.22	308	5.49	0.77	-2.91	0.67	-3.52	18.62	0.57	1.36	0.34	0.47
HLA	3	143	538.85	308	6.89	1.12	1.93	1.36	3.48	0.21	0.24	0.69	0.31	0.45
HLA	3	145	511.79	308	6.49	0.83	-3.63	0.75	-3.87	0.22	0.58	1.49	0.41	0.41
HLA	3	150	449.40	308	6.64	0.84	-3.14	0.75	-3.12	-11.05	0.49	1.41	0.69	0.40

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	3	156	482.93	308	6.38	1.18	3.77	1.27	3.94	59.02	0.32	0.39	0.30	0.49
HLA	3	158	523.23	308	6.63	1.17	2.97	1.25	3.01	-12.67	0.31	0.58	0.41	0.47
HLA	3	161	464.70	309	6.46	1.11	2.20	1.12	1.60	19.27	0.37	0.69	0.52	0.47
HLA	3	162	454.63	309	6.56	1.00	-0.05	0.99	-0.06	-0.88	0.40	1.03	0.64	0.44
HLA	3	379	598.69	309	6.50	0.97	-0.24	0.89	-0.52	0.11	0.46	1.04	0.23	0.44
HLA	3	381	485.01	311	6.35	0.86	-3.21	0.82	-3.03	0.23	0.54	1.46	0.51	0.42
HLA	3	383	445.77	309	6.69	1.18	3.07	1.30	3.04	0.23	0.20	0.55	0.67	0.47
HLA	3	384	469.87	308	6.43	1.17	3.53	1.23	3.07	0.23	0.23	0.46	0.57	0.49
HLA	3	394	500.46	311	2.75	1.11	1.45	1.13	1.60	0.23	0.69	0.88	2.31	1.11
HLA	3	1020	589.32	309	6.00	0.84	-1.72	0.78	-1.75	0.16	0.56	1.14	0.32	0.44
HLA	3	1021	485.13	308	6.38	1.18	3.75	1.25	3.64	0.23	0.24	0.40	0.51	0.49
HLA	3	1022	528.94	309	6.71	1.31	5.03	1.41	4.43	0.22	0.11	0.31	0.34	0.50
HLA	3	1023	583.91	310	8.25	1.03	0.30	0.91	-0.53	0.20	0.34	1.00	0.17	0.36
HLA	3	1024	552.94	309	4.16	0.74	-2.88	0.74	-2.34	0.09	0.69	1.21	0.62	0.60
HLA	3	1025	559.87	309	7.41	1.17	2.17	1.15	1.23	0.21	0.23	0.78	0.24	0.42
HLA	3	1026	547.79	311	7.07	0.91	-1.35	0.78	-2.26	0.21	0.49	1.19	0.27	0.39
HLA	3	1277	552.48	308	7.20	1.30	3.85	1.58	4.46	0.21	0.08	0.49	0.26	0.46
HLA	3	1281	519.34	308	6.58	1.13	2.42	1.20	2.56	0.22	0.28	0.65	0.38	0.47
HLA	3	1282	505.22	308	6.44	1.08	1.70	1.09	1.31	0.22	0.34	0.77	0.43	0.47
HLA	3	1283	473.92	308	6.41	1.01	0.29	1.08	1.12	0.23	0.38	0.93	0.56	0.46
HLA	3	1284	535.09	308	4.58	0.76	-3.38	0.63	-3.69	0.18	0.69	1.29	0.58	0.55
HLA	3	1285	619.53	308	10.17	0.82	-1.31	0.59	-1.91	0.19	0.46	1.15	0.10	0.26
HLA	3	1286	608.18	308	9.47	1.00	0.03	1.11	0.58	0.19	0.29	0.99	0.12	0.31
HLA	3	1478	491.52	308	6.38	0.94	-1.34	0.92	-1.22	0.22	0.47	1.19	0.49	0.44
HLA	4	7	396.66	282	9.24	0.82	-1.99	0.67	-2.28	0.35	0.50	1.22	0.82	0.33
HLA	4	8	453.34	282	7.61	0.87	-2.60	0.84	-2.00	0.35	0.50	1.33	0.65	0.41
HLA	4	9	522.67	282	7.44	0.94	-1.12	0.93	-1.03	0.34	0.44	1.17	0.40	0.44
HLA	4	11	587.23	282	8.99	0.85	-1.70	0.77	-1.71	6.96	0.42	1.19	0.18	0.35
HLA	4	12	455.38	282	7.58	0.90	-1.98	0.85	-1.97	0.35	0.48	1.28	0.65	0.42
HLA	4	13	388.87	282	9.60	1.20	1.83	1.40	2.11	23.91	0.37	0.80	0.78	0.38
HLA	4	14	423.50	282	8.28	0.92	-1.08	0.84	-1.41	0.35	0.43	1.14	0.75	0.39
HLA	4	15	457.90	282	7.54	0.91	-1.75	0.84	-2.18	18.55	0.56	1.28	0.57	0.43
HLA	4	16	458.98	282	7.53	1.02	0.38	0.96	-0.48	12.64	0.42	0.99	0.59	0.45
HLA	4	17	528.09	282	7.51	1.15	2.75	1.12	1.54	-42.51	0.44	0.63	0.54	0.48
HLA	4	18	449.20	282	7.68	1.04	0.65	1.13	1.52	0.35	0.32	0.89	0.67	0.45
HLA	4	20	422.29	282	8.31	0.80	-2.97	0.68	-3.00	0.35	0.56	1.34	0.75	0.36
HLA	4	21	513.93	282	7.36	0.96	-0.78	0.92	-1.22	0.34	0.43	1.15	0.43	0.45

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	4	22	530.19	282	7.53	1.07	1.29	1.14	1.81	-5.13	0.32	0.78	0.39	0.46
HLA	4	23	530.19	282	7.53	1.30	5.30	1.45	5.30	1.76	0.05	0.14	0.37	0.51
HLA	4	24	577.29	282	8.63	1.13	1.51	1.05	0.45	-31.77	0.55	0.86	0.32	0.41
HLA	4	25	563.23	282	8.20	1.26	3.41	1.47	3.77	0.34	0.07	0.53	0.26	0.46
HLA	4	26	512.01	282	7.35	1.18	3.73	1.24	3.54	0.34	0.19	0.38	0.44	0.50
HLA	4	27	469.27	282	7.41	1.08	1.73	1.10	1.43	0.35	0.29	0.73	0.60	0.47
HLA	4	30	516.76	282	7.39	1.15	3.08	1.21	2.98	5.22	0.21	0.49	0.40	0.49
HLA	4	31	512.97	282	7.36	0.97	-0.64	0.98	-0.31	0.34	0.41	1.09	0.43	0.45
HLA	4	34	477.69	282	7.34	1.00	0.06	0.98	-0.22	13.86	0.42	1.01	0.51	0.46
HLA	4	35	594.06	282	6.60	0.63	-3.90	0.42	-4.65	29.38	0.55	1.45	0.20	0.41
HLA	4	36	515.85	282	7.38	1.26	5.02	1.31	4.35	0.34	0.12	0.16	0.42	0.51
HLA	4	37	517.79	282	7.39	1.02	0.53	1.04	0.69	0.34	0.35	0.91	0.41	0.46
HLA	4	38	459.42	282	7.52	1.06	1.19	1.09	1.17	0.35	0.31	0.82	0.63	0.46
HLA	4	40	511.22	281	7.35	1.14	2.82	1.17	2.59	0.34	0.24	0.53	0.44	0.49
HLA	4	41	576.24	281	8.62	1.08	1.03	1.25	1.87	0.34	0.22	0.85	0.22	0.41
HLA	4	42	569.31	281	4.84	0.81	-2.09	0.73	-2.42	0.32	0.64	1.20	0.62	0.63
HLA	4	46	540.73	281	7.71	1.11	1.80	1.16	1.85	-8.36	0.30	0.73	0.36	0.46
HLA	4	47	512.71	281	7.36	0.99	-0.22	1.00	0.01	0.77	0.39	1.03	0.43	0.45
HLA	4	48	477.69	281	7.35	0.81	-4.41	0.76	-4.05	-30.40	0.53	1.66	0.67	0.41
HLA	4	49	465.34	281	7.46	0.83	-3.67	0.78	-3.24	-4.53	0.54	1.52	0.63	0.41
HLA	4	50	558.13	281	8.09	1.10	1.42	1.18	1.67	-30.11	0.49	0.80	0.38	0.44
HLA	4	51	519.82	281	7.42	1.28	5.31	1.40	5.35	-9.10	0.11	0.08	0.44	0.51
HLA	4	54	508.36	281	7.34	1.05	1.05	1.07	1.18	0.34	0.33	0.82	0.45	0.47
HLA	4	55	542.26	281	7.74	1.21	3.35	1.35	3.68	0.34	0.14	0.49	0.33	0.48
HLA	4	56	560.09	281	8.14	1.20	2.74	1.49	4.03	0.34	0.10	0.58	0.27	0.45
HLA	4	57	568.56	281	8.37	1.18	2.30	1.46	3.46	0.34	0.12	0.66	0.25	0.44
HLA	4	60	463.23	281	7.48	0.83	-3.54	0.77	-3.34	-3.41	0.54	1.51	0.63	0.41
HLA	4	61	521.89	281	7.44	1.02	0.36	0.99	-0.06	0.34	0.37	0.96	0.40	0.46
HLA	4	62	527.04	281	7.50	1.04	0.80	1.10	1.33	-3.77	0.34	0.86	0.40	0.46
HLA	4	63	553.39	281	7.97	1.16	2.40	1.39	3.59	29.68	-0.06	0.62	0.21	0.46
HLA	4	64	436.37	282	7.94	0.83	-2.84	0.72	-3.01	-6.69	0.50	1.36	0.73	0.39
HLA	4	65	414.27	282	8.57	1.07	0.84	0.96	-0.31	14.53	0.42	0.94	0.73	0.41
HLA	4	387	503.60	281	7.32	1.07	1.51	1.11	1.82	0.34	0.30	0.72	0.47	0.48
HLA	4	389	418.57	282	8.43	0.84	-2.22	0.73	-2.38	0.35	0.51	1.26	0.76	0.37
HLA	4	395	536.27	282	3.47	1.04	0.46	1.02	0.21	0.33	0.65	0.96	1.67	0.99
HLA	4	1011	560.09	281	8.14	0.98	-0.25	0.95	-0.40	0.34	0.37	1.03	0.27	0.41
HLA	4	1012	576.24	281	8.62	0.81	-2.47	0.66	-2.99	0.34	0.55	1.29	0.22	0.35
HLA	4	1013	554.91	281	4.36	0.76	-3.01	0.70	-2.89	0.32	0.69	1.25	0.78	0.67

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	4	1014	574.93	281	8.57	0.85	-1.99	0.74	-2.27	0.34	0.51	1.23	0.23	0.36
HLA	4	1015	495.09	281	7.30	1.12	2.57	1.13	2.06	0.35	0.26	0.57	0.50	0.49
HLA	4	1016	573.63	281	8.53	1.06	0.82	1.30	2.26	0.34	0.24	0.86	0.23	0.41
HLA	4	1017	723.85	281	21.85	0.93	-0.08	0.36	-1.48	0.33	0.27	1.07	0.02	0.15
HLA	4	1019	527.61	282	7.50	0.90	-2.03	0.85	-2.09	0.34	0.49	1.30	0.38	0.42
HLA	4	1291	569.33	282	8.38	0.95	-0.62	0.86	-1.22	0.34	0.41	1.10	0.24	0.39
HLA	5	625	482.76	244	7.44	1.03	0.53	1.06	0.87	-0.63	0.38	0.90	0.54	0.46
HLA	5	626	453.22	244	7.72	0.96	-0.61	0.93	-0.78	6.48	0.46	1.10	0.63	0.43
HLA	5	627	496.42	245	7.42	1.17	3.14	1.23	3.13	-13.67	0.25	0.44	0.54	0.49
HLA	5	629	526.58	245	7.66	0.84	-2.86	0.81	-2.39	1.77	0.55	1.39	0.36	0.40
HLA	5	630	523.32	244	7.64	1.12	1.91	1.13	1.55	-12.60	0.36	0.71	0.43	0.47
HLA	5	631	510.91	245	7.49	0.99	-0.26	1.04	0.53	-4.14	0.43	1.01	0.44	0.45
HLA	5	633	507.27	245	7.46	1.12	2.16	1.19	2.54	4.72	0.28	0.61	0.42	0.48
HLA	5	634	454.24	244	7.70	1.20	3.27	1.22	2.20	22.75	0.33	0.51	0.56	0.48
HLA	5	636	488.25	245	7.41	0.88	-2.46	0.85	-2.31	-8.68	0.53	1.39	0.55	0.43
HLA	5	637	566.00	244	8.59	0.75	-3.16	0.67	-2.69	11.91	0.52	1.35	0.20	0.34
HLA	5	640	562.95	245	8.48	0.78	-2.94	0.65	-2.98	26.46	0.42	1.34	0.18	0.35
HLA	5	642	524.70	245	7.64	0.99	-0.13	0.99	-0.14	-3.99	0.43	1.02	0.39	0.44
HLA	5	644	370.78	245	10.84	1.00	0.01	0.63	-1.66	17.64	0.54	1.07	0.84	0.31
HLA	5	646	486.43	244	7.43	1.03	0.67	1.03	0.47	7.21	0.39	0.90	0.50	0.46
HLA	5	648	487.34	245	7.41	1.06	1.16	1.07	0.93	-7.78	0.35	0.81	0.55	0.47
HLA	5	672	514.55	245	7.52	1.19	3.24	1.25	3.09	-20.14	0.29	0.46	0.49	0.49
HLA	5	673	598.84	245	9.94	0.77	-2.06	0.70	-1.63	30.50	0.25	1.21	0.10	0.30
HLA	5	677	694.84	245	19.24	4.80	6.59	4.62	3.96	-96.00	0.42	-0.32	0.17	0.38
HLA	5	681	578.28	245	9.01	0.95	-0.47	0.91	-0.51	1.65	0.39	1.06	0.20	0.37
HLA	5	684	529.92	244	7.73	0.94	-0.91	0.91	-0.97	-24.22	0.58	1.14	0.45	0.42
HLA	5	689	444.67	245	7.85	1.00	-0.05	0.94	-0.55	15.84	0.49	1.03	0.62	0.43
HLA	5	690	517.30	245	7.55	0.92	-1.50	0.87	-1.77	-10.44	0.53	1.24	0.44	0.43
HLA	5	693	578.28	245	9.01	1.08	0.85	1.09	0.61	-5.69	0.34	0.90	0.22	0.39
HLA	5	696	465.86	244	7.55	0.87	-2.51	0.86	-1.77	7.87	0.55	1.36	0.57	0.42
HLA	5	699	468.04	244	7.53	1.01	0.17	0.99	-0.14	-28.38	0.32	0.99	0.70	0.45
HLA	5	702	564.07	244	8.53	1.20	2.31	1.42	2.83	-27.07	0.42	0.67	0.34	0.43
HLA	5	706	619.14	244	8.15	0.66	-2.59	0.44	-3.09	41.46	0.31	1.31	0.09	0.34
HLA	5	707	595.57	244	9.79	1.03	0.27	1.26	1.31	-4.18	0.32	0.93	0.17	0.35
HLA	5	708	547.64	244	8.08	0.72	-4.28	0.64	-3.72	41.67	0.45	1.50	0.18	0.36
HLA	5	709	481.84	244	7.44	1.02	0.34	1.01	0.21	-1.82	0.39	0.95	0.55	0.46
HLA	5	711	551.12	245	8.14	1.28	3.55	1.54	4.11	-9.80	0.18	0.45	0.32	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	5	712	563.49	244	3.83	0.76	-2.48	0.57	-2.39	-0.92	0.74	1.00	0.88	0.77
HLA	5	713	537.07	245	7.84	0.85	-2.45	0.77	-2.63	5.08	0.53	1.34	0.31	0.40
HLA	5	714	532.79	244	7.78	1.07	1.15	1.12	1.33	-15.50	0.41	0.82	0.41	0.45
HLA	5	716	549.05	245	8.09	1.26	3.34	1.42	3.39	-15.71	0.25	0.50	0.35	0.47
HLA	5	718	586.05	245	9.33	1.16	1.49	1.58	2.92	8.77	0.06	0.76	0.16	0.39
HLA	5	719	543.59	244	7.99	0.87	-1.95	0.85	-1.46	-8.55	0.56	1.24	0.34	0.39
HLA	5	720	534.72	244	7.81	0.92	-1.19	0.92	-0.86	-10.96	0.53	1.16	0.38	0.42
HLA	5	721	451.98	245	7.72	0.90	-1.77	0.85	-1.58	-1.69	0.48	1.25	0.66	0.41
HLA	5	722	538.93	245	4.44	0.85	-1.80	0.79	-2.27	9.66	0.66	1.27	0.87	0.70
HLA	5	723	542.98	245	7.96	0.84	-2.42	0.81	-1.94	27.67	0.40	1.30	0.22	0.39
HLA	5	724	514.55	245	7.52	1.15	2.58	1.23	2.82	0.68	0.26	0.56	0.41	0.48
HLA	5	725	500.04	245	7.43	1.05	0.91	1.09	1.28	7.70	0.36	0.83	0.44	0.46
HLA	5	726	525.64	245	7.65	1.10	1.70	1.10	1.18	-17.55	0.39	0.76	0.44	0.46
HLA	5	727	573.05	244	8.83	1.06	0.73	1.07	0.48	-16.84	0.47	0.92	0.27	0.39
HLA	5	728	487.34	245	7.41	0.98	-0.28	0.98	-0.27	1.62	0.43	1.05	0.51	0.45
HLA	5	729	462.96	245	7.57	1.20	3.44	1.26	2.89	3.93	0.22	0.44	0.60	0.49
HLA	5	730	534.17	244	7.80	1.23	3.42	1.46	4.38	-2.73	0.17	0.42	0.35	0.48
HLA	5	1030	492.86	245	2.87	1.09	1.07	1.06	0.72	1.84	0.78	0.99	2.97	1.23
HLA	5	1072	541.98	245	7.93	0.98	-0.28	0.98	-0.18	18.95	0.31	1.04	0.25	0.42
HLA	5	1074	378.93	245	10.33	1.25	1.88	1.64	2.47	21.53	0.30	0.75	0.82	0.37
HLA	5	1183	529.40	245	7.70	1.08	1.23	1.07	0.81	18.70	0.26	0.83	0.29	0.45
HLA	5	1186	494.08	245	7.41	1.02	0.31	1.02	0.35	0.08	0.40	0.95	0.49	0.46
HLA	5	1193	520.99	245	7.59	0.97	-0.59	0.97	-0.33	0.74	0.44	1.08	0.39	0.44
HLA	5	1208	595.57	244	9.79	1.38	3.01	1.98	4.04	-16.76	0.14	0.55	0.20	0.40
HLA	5	1215	543.98	245	7.98	1.44	5.68	1.70	5.57	-1.70	-0.03	0.10	0.31	0.51
HLA	5	1222	440.91	245	7.93	0.85	-2.37	0.74	-2.52	0.10	0.53	1.33	0.69	0.39
HLA	6	632	525.06	250	7.87	1.02	0.46	1.11	1.43	7.45	0.29	0.88	0.35	0.46
HLA	6	639	540.19	251	8.11	0.80	-3.59	0.74	-3.12	28.38	0.43	1.48	0.24	0.39
HLA	6	643	491.75	251	4.00	1.15	1.84	1.17	1.75	2.90	0.60	0.95	1.47	0.95
HLA	6	645	508.31	251	7.71	1.00	0.02	1.04	0.66	-36.89	0.47	0.98	0.58	0.46
HLA	6	647	533.11	250	7.99	0.88	-2.21	0.84	-1.95	28.54	0.36	1.33	0.26	0.42
HLA	6	649	521.67	250	7.83	1.13	2.45	1.22	2.80	-11.80	0.27	0.56	0.44	0.48
HLA	6	650	571.23	249	8.97	1.10	1.19	1.22	1.62	-11.90	0.32	0.83	0.27	0.42
HLA	6	651	611.34	250	10.84	1.15	1.19	0.93	-0.30	-17.23	0.39	0.92	0.17	0.35
HLA	6	652	480.67	251	7.69	0.90	-2.18	0.87	-2.18	0.80	0.49	1.37	0.54	0.44
HLA	6	653	439.82	250	8.26	0.84	-2.51	0.80	-2.19	-6.24	0.49	1.32	0.71	0.39
HLA	6	655	423.26	249	8.71	1.09	1.19	1.05	0.46	18.28	0.42	0.87	0.69	0.43

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	6	656	526.86	249	7.92	1.11	2.00	1.17	2.11	-7.81	0.28	0.65	0.40	0.47
HLA	6	657	479.55	250	7.71	1.11	2.18	1.14	2.12	34.26	0.33	0.61	0.42	0.48
HLA	6	659	501.70	251	7.68	1.04	0.94	1.06	0.89	-8.58	0.34	0.83	0.50	0.47
HLA	6	660	689.51	251	18.39	1.21	0.79	1.12	0.41	-10.96	0.16	0.92	0.05	0.21
HLA	6	661	535.45	251	8.02	1.21	3.51	1.32	3.38	-22.89	0.26	0.43	0.43	0.49
HLA	6	662	492.89	251	7.66	1.07	1.40	1.07	1.17	21.07	0.31	0.76	0.42	0.48
HLA	6	663	642.29	249	13.11	1.00	0.05	0.75	-0.90	-2.29	0.29	1.03	0.09	0.27
HLA	6	664	541.95	250	4.31	0.89	-1.39	0.77	-2.11	2.22	0.66	1.23	0.90	0.78
HLA	6	665	536.63	251	8.04	1.00	-0.02	1.02	0.25	-15.67	0.45	1.00	0.39	0.44
HLA	6	666	538.91	249	3.69	1.06	0.65	0.99	-0.04	9.54	0.57	1.00	0.96	0.99
HLA	6	667	448.86	250	8.08	1.12	1.99	1.13	1.50	16.27	0.34	0.72	0.60	0.47
HLA	6	668	611.34	249	10.85	0.89	-0.88	0.63	-2.03	-4.87	0.48	1.14	0.14	0.31
HLA	6	669	539.75	249	8.13	1.02	0.41	1.06	0.70	0.60	0.32	0.93	0.33	0.44
HLA	6	674	684.16	250	17.66	1.35	1.26	1.13	0.44	-19.27	0.20	0.87	0.06	0.23
HLA	6	675	567.02	250	8.81	1.16	1.93	1.23	1.73	-13.74	0.29	0.75	0.28	0.43
HLA	6	676	511.44	249	7.76	1.24	4.54	1.34	4.61	-0.12	0.11	0.15	0.43	0.51
HLA	6	678	484.03	251	7.68	0.89	-2.50	0.87	-2.20	-8.86	0.49	1.41	0.57	0.43
HLA	6	679	564.28	249	8.74	0.94	-0.73	0.91	-0.69	0.06	0.39	1.10	0.25	0.39
HLA	6	680	496.02	250	3.79	0.93	-0.87	0.94	-0.68	7.06	0.69	1.20	1.94	0.90
HLA	6	682	529.64	250	7.94	1.19	3.37	1.35	3.96	-0.39	0.13	0.39	0.36	0.49
HLA	6	683	423.00	250	8.70	1.03	0.38	0.96	-0.28	6.91	0.39	0.98	0.72	0.41
HLA	6	687	619.82	250	11.37	0.97	-0.18	0.83	-0.75	-0.43	0.31	1.04	0.12	0.31
HLA	6	688	546.25	250	8.24	0.90	-1.66	0.83	-1.81	-12.17	0.55	1.25	0.35	0.41
HLA	6	691	716.73	250	22.84	1.73	1.73	1.98	1.60	-32.64	0.12	0.75	0.04	0.20
HLA	6	692	569.81	249	8.92	1.18	2.11	1.34	2.41	0.09	0.11	0.70	0.23	0.43
HLA	6	694	581.39	249	6.58	0.71	-3.02	0.57	-3.40	12.72	0.53	1.31	0.30	0.46
HLA	6	697	511.62	249	7.76	0.99	-0.10	1.01	0.17	22.69	0.32	1.01	0.35	0.46
HLA	6	698	658.62	250	14.64	1.05	0.32	1.33	1.02	-1.87	0.14	0.95	0.07	0.25
HLA	6	700	465.81	249	7.85	0.79	-4.26	0.73	-4.14	-11.54	0.57	1.65	0.64	0.40
HLA	6	701	658.62	249	14.66	1.00	0.05	0.78	-0.62	-2.06	0.26	1.02	0.07	0.24
HLA	6	1031	495.71	251	2.92	1.26	2.82	1.33	3.35	-16.36	0.68	0.58	3.32	1.36
HLA	6	1075	510.52	251	7.72	1.10	1.93	1.14	2.02	36.08	0.19	0.65	0.30	0.48
HLA	6	1083	519.42	250	7.81	1.00	-0.07	1.01	0.14	5.29	0.35	1.00	0.38	0.45
HLA	6	1169	568.41	249	8.87	0.86	-1.77	0.83	-1.35	24.61	0.26	1.20	0.17	0.37
HLA	6	1170	658.62	250	14.64	0.86	-0.65	0.85	-0.38	10.13	0.19	1.07	0.06	0.22
HLA	6	1171	537.81	251	8.06	0.99	-0.18	0.95	-0.55	-0.44	0.38	1.05	0.33	0.44
HLA	6	1172	445.04	250	8.15	0.80	-3.53	0.72	-3.49	-38.21	0.41	1.48	0.79	0.39
HLA	6	1173	542.65	250	4.49	1.09	1.06	1.02	0.27	-2.83	0.57	0.98	0.93	0.83

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	6	1309	558.93	250	8.56	0.92	-1.11	0.89	-0.94	9.66	0.34	1.14	0.24	0.40
HLA	6	1566	475.97	250	7.74	1.17	3.28	1.26	3.74	-0.10	0.18	0.38	0.56	0.50
HLA	6	1661	509.59	251	4.37	0.87	-1.63	0.85	-1.88	-0.13	0.66	1.25	1.30	0.76
HLA	6	1755	507.63	250	7.71	0.91	-2.00	0.92	-1.23	-0.12	0.47	1.32	0.44	0.44
HLA	7	762	581.96	147	12.35	1.43	3.78	1.45	2.49	-56.34	0.47	0.36	0.44	0.48
HLA	7	763	483.17	147	10.98	1.20	2.83	1.35	3.45	-3.02	0.16	0.30	0.59	0.50
HLA	7	769	470.26	146	11.20	0.83	-2.53	0.81	-1.92	-30.21	0.46	1.46	0.71	0.41
HLA	7	770	583.28	146	8.81	0.93	-0.61	0.87	-0.93	12.54	0.55	1.23	0.44	0.55
HLA	7	774	596.79	147	13.00	0.86	-1.26	0.87	-0.67	59.25	0.02	1.16	0.10	0.36
HLA	7	777	541.04	146	11.23	1.10	1.36	1.20	1.80	0.12	0.27	0.69	0.38	0.47
HLA	7	784	494.97	147	10.90	1.01	0.13	1.00	0.03	-4.88	0.38	0.98	0.55	0.46
HLA	7	790	463.40	147	11.27	0.73	-4.08	0.67	-3.36	-29.03	0.56	1.71	0.73	0.38
HLA	7	803	544.25	146	11.29	0.81	-2.76	0.74	-2.59	16.13	0.53	1.51	0.32	0.40
HLA	7	806	549.15	147	11.35	1.14	1.75	1.27	2.24	9.47	0.18	0.61	0.32	0.47
HLA	7	808	544.79	146	5.13	1.08	0.67	1.06	0.42	5.57	0.59	0.85	1.23	1.01
HLA	7	811	554.16	146	11.50	0.91	-1.16	0.86	-1.17	25.01	0.36	1.22	0.26	0.42
HLA	7	822	684.89	146	20.50	0.95	-0.11	0.76	-0.45	-0.15	0.28	1.04	0.07	0.24
HLA	7	829	476.81	146	11.10	1.11	1.63	1.06	0.66	10.47	0.32	0.71	0.56	0.48
HLA	7	834	599.90	146	13.19	1.34	2.60	1.54	2.45	-48.25	0.50	0.57	0.35	0.44
HLA	7	839	590.83	146	12.75	0.71	-2.89	0.81	-1.10	15.69	0.50	1.37	0.19	0.33
HLA	7	843	674.70	147	19.21	0.91	-0.29	0.70	-0.73	3.53	0.29	1.07	0.07	0.25
HLA	7	869	751.40	146	32.54	4.00	3.79	1.84	1.16	-96.73	0.53	0.23	0.11	0.31
HLA	7	870	685.82	146	20.62	0.65	-1.40	0.30	-2.11	22.89	0.35	1.21	0.05	0.20
HLA	7	871	440.42	147	11.86	0.94	-0.64	0.89	-0.78	-15.79	0.33	1.12	0.76	0.41
HLA	7	872	623.94	146	8.58	1.11	0.50	0.99	0.11	-9.50	0.52	0.80	0.32	0.61
HLA	7	874	647.83	146	16.48	0.66	-1.99	0.86	-0.37	43.90	0.14	1.21	0.06	0.25
HLA	7	875	533.18	146	11.11	1.04	0.60	1.14	1.44	-8.21	0.36	0.83	0.43	0.46
HLA	7	876	604.71	146	13.44	0.98	-0.09	1.22	1.07	29.02	0.04	0.96	0.14	0.37
HLA	7	877	509.04	146	10.92	1.15	2.28	1.13	1.53	11.74	0.25	0.51	0.45	0.49
HLA	7	878	594.73	147	7.49	0.90	-0.60	0.71	-1.27	-9.18	0.64	0.98	0.53	0.63
HLA	7	879	562.82	146	11.73	1.22	2.41	1.39	2.70	6.84	0.08	0.50	0.29	0.47
HLA	7	880	608.34	146	13.64	0.99	-0.06	0.90	-0.40	1.50	0.34	1.03	0.18	0.36
HLA	7	882	447.24	147	11.66	1.04	0.52	1.00	0.06	-5.43	0.30	0.93	0.71	0.44
HLA	7	883	594.56	147	12.90	0.98	-0.12	0.90	-0.48	6.47	0.32	1.05	0.20	0.38
HLA	7	884	632.78	146	15.25	0.74	-1.66	0.72	-1.06	27.75	0.27	1.21	0.10	0.28
HLA	7	885	422.06	147	12.55	1.02	0.24	0.92	-0.40	15.36	0.46	1.00	0.72	0.40
HLA	7	886	651.96	147	16.83	1.27	1.35	1.55	1.56	-9.26	0.10	0.78	0.12	0.33

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	7	887	460.87	146	11.37	0.94	-0.84	0.90	-0.83	10.24	0.49	1.17	0.62	0.43
HLA	7	888	398.61	147	13.74	1.19	1.38	1.56	2.26	18.76	0.28	0.75	0.78	0.40
HLA	7	889	606.68	146	7.48	1.06	0.46	0.79	-0.72	-8.84	0.59	0.89	0.53	0.69
HLA	7	891	557.58	146	11.59	0.91	-1.09	1.02	0.16	2.95	0.43	1.15	0.32	0.41
HLA	7	892	583.98	147	12.43	1.07	0.67	1.18	1.06	-11.15	0.36	0.87	0.28	0.41
HLA	7	897	533.18	146	11.11	0.95	-0.64	0.99	-0.10	-4.25	0.44	1.11	0.42	0.44
HLA	7	899	561.45	146	11.69	0.91	-1.04	0.86	-1.10	-21.81	0.59	1.19	0.38	0.41
HLA	7	902	588.66	146	12.66	0.87	-1.24	0.76	-1.48	-6.51	0.54	1.21	0.25	0.37
HLA	7	903	706.95	146	23.69	1.23	0.77	0.86	-0.10	-21.72	0.35	0.94	0.07	0.23
HLA	7	930	530.09	146	11.07	1.05	0.73	1.07	0.78	-3.19	0.35	0.84	0.42	0.46
HLA	7	1032	492.88	147	4.30	0.93	-0.56	0.92	-0.67	0.98	0.75	1.05	3.35	1.12
HLA	7	1088	583.64	146	12.45	0.96	-0.40	0.96	-0.22	11.35	0.31	1.06	0.22	0.39
HLA	7	1089	656.03	147	17.21	1.13	0.69	0.97	0.03	-13.20	0.32	0.93	0.12	0.31
HLA	7	1096	526.25	146	5.65	1.00	0.08	0.92	-0.53	19.29	0.59	0.88	0.98	0.89
HLA	7	1097	524.11	147	6.11	0.95	-0.42	0.93	-0.55	3.08	0.63	1.03	1.18	0.80
HLA	7	1098	546.32	147	11.29	1.05	0.69	1.05	0.46	14.48	0.27	0.87	0.31	0.45
HLA	7	1099	514.07	147	10.90	0.98	-0.22	0.98	-0.24	19.26	0.40	1.05	0.40	0.45
HLA	7	1104	568.73	146	11.91	1.36	3.61	1.64	3.91	-30.81	0.20	0.24	0.39	0.49
HLA	7	1118	396.24	147	13.88	1.56	3.58	2.17	3.99	34.05	0.10	0.32	0.74	0.45
HLA	7	1175	530.59	147	11.04	0.79	-3.33	0.73	-3.12	4.84	0.60	1.65	0.39	0.40
HLA	7	1178	633.83	147	15.30	0.91	-0.50	0.97	0.00	21.90	0.14	1.06	0.10	0.31
HLA	7	1179	637.13	146	15.58	0.86	-0.83	0.81	-0.63	13.69	0.31	1.13	0.11	0.30
HLA	7	1182	571.93	146	12.01	0.93	-0.72	0.93	-0.42	-8.87	0.49	1.12	0.31	0.40
HLA	7	1185	610.88	146	13.79	2.10	6.35	2.39	4.70	-83.47	0.42	-0.18	0.44	0.53
HLA	8	761	539.23	166	9.31	0.83	-2.41	0.77	-2.15	11.04	0.50	1.41	0.30	0.40
HLA	8	764	595.52	166	11.48	1.07	0.55	1.30	1.30	0.10	0.21	0.89	0.17	0.37
HLA	8	766	649.73	166	16.13	0.79	-0.86	0.88	-0.17	11.12	0.25	1.11	0.06	0.22
HLA	8	767	504.90	166	5.71	0.94	-0.65	0.87	-1.02	15.58	0.63	1.25	0.78	0.69
HLA	8	771	555.77	166	9.73	0.70	-3.89	0.57	-3.57	25.43	0.52	1.57	0.20	0.35
HLA	8	772	590.34	166	11.19	0.92	-0.65	0.79	-1.00	2.73	0.38	1.11	0.17	0.35
HLA	8	778	535.23	166	9.23	1.04	0.64	1.02	0.19	-6.19	0.38	0.91	0.38	0.45
HLA	8	780	587.28	166	4.96	1.01	0.16	1.05	0.31	-16.11	0.69	0.72	1.10	0.82
HLA	8	785	499.90	166	8.90	1.01	0.26	0.98	-0.17	11.81	0.39	0.98	0.45	0.46
HLA	8	793	719.53	166	28.46	1.40	0.87	1.08	0.35	-18.85	0.17	0.90	0.03	0.17
HLA	8	796	514.54	166	8.96	1.11	1.73	1.08	0.94	15.76	0.26	0.69	0.37	0.48
HLA	8	802	741.69	166	34.66	3.28	2.53	3.28	1.99	-66.61	0.24	0.44	0.05	0.21
HLA	8	805	511.56	166	8.94	1.10	1.55	1.11	1.24	-2.75	0.31	0.69	0.46	0.48

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	8	810	703.55	166	24.78	2.49	2.66	2.27	1.67	-52.11	0.23	0.52	0.07	0.26
HLA	8	820	570.83	166	4.82	1.02	0.16	1.10	0.57	1.73	0.56	0.91	0.75	0.85
HLA	8	826	531.28	166	9.16	1.12	1.70	1.33	2.95	2.37	0.23	0.61	0.36	0.47
HLA	8	833	479.57	166	8.99	0.98	-0.33	1.00	-0.01	23.09	0.48	1.05	0.48	0.45
HLA	8	848	440.66	166	9.75	0.80	-2.49	0.71	-2.38	-22.29	0.44	1.38	0.78	0.37
HLA	8	855	509.04	166	8.92	0.92	-1.28	0.89	-1.27	-22.66	0.52	1.26	0.55	0.44
HLA	8	867	549.39	166	9.55	1.16	1.90	1.20	1.49	-7.27	0.27	0.67	0.33	0.46
HLA	8	893	576.82	166	10.52	1.18	1.68	1.54	2.65	0.40	0.09	0.66	0.22	0.42
HLA	8	894	516.39	166	8.98	0.99	-0.10	1.06	0.68	12.34	0.37	1.00	0.38	0.45
HLA	8	901	624.36	166	13.56	1.45	2.27	0.97	-0.01	-38.89	0.56	0.78	0.20	0.36
HLA	8	904	426.14	166	10.26	1.06	0.61	1.15	0.93	10.77	0.38	0.89	0.73	0.41
HLA	8	905	532.33	166	9.18	1.02	0.28	1.00	0.08	28.70	0.25	0.96	0.27	0.45
HLA	8	906	533.35	166	9.20	1.09	1.24	1.23	2.03	5.14	0.26	0.74	0.34	0.46
HLA	8	909	389.77	166	12.21	1.12	0.81	1.41	1.54	13.35	0.34	0.88	0.83	0.35
HLA	8	910	490.74	166	8.91	0.92	-1.37	0.89	-1.33	-18.50	0.47	1.28	0.60	0.44
HLA	8	911	556.76	166	6.15	0.72	-2.80	0.74	-2.60	17.36	0.61	1.42	0.75	0.56
HLA	8	912	527.60	166	9.11	0.97	-0.36	0.92	-0.77	4.41	0.41	1.10	0.37	0.44
HLA	8	913	605.99	166	12.14	1.17	1.14	1.42	1.55	-7.59	0.20	0.82	0.16	0.36
HLA	8	914	535.29	166	9.23	1.29	3.76	1.50	4.03	4.86	0.04	0.20	0.34	0.50
HLA	8	916	555.77	166	9.73	1.04	0.48	1.00	0.04	-11.80	0.43	0.95	0.33	0.43
HLA	8	917	316.05	166	20.32	1.56	1.58	0.86	-0.09	34.33	0.41	0.84	0.92	0.25
HLA	8	920	566.17	166	10.08	1.22	2.17	1.30	1.80	-28.10	0.41	0.65	0.35	0.45
HLA	8	921	492.58	166	8.91	0.82	-3.07	0.78	-2.82	4.06	0.58	1.59	0.51	0.41
HLA	8	922	510.87	166	8.94	0.79	-3.59	0.75	-3.25	11.59	0.59	1.67	0.40	0.40
HLA	8	924	561.54	166	9.92	0.95	-0.50	1.18	1.16	9.29	0.28	1.00	0.23	0.40
HLA	8	925	498.66	166	8.90	0.98	-0.35	0.96	-0.44	13.05	0.43	1.08	0.45	0.45
HLA	8	926	553.61	166	9.67	1.28	3.12	1.44	2.88	-12.96	0.18	0.42	0.34	0.48
HLA	8	927	423.54	166	10.37	1.14	1.36	1.11	0.67	24.23	0.46	0.82	0.69	0.42
HLA	8	929	382.06	166	12.77	1.42	2.34	1.32	1.17	37.10	0.47	0.71	0.78	0.38
HLA	8	1034	513.81	166	3.44	1.20	1.77	1.24	2.02	10.09	0.67	0.71	2.39	1.29
HLA	8	1078	574.30	166	10.41	1.39	3.41	1.72	3.44	-26.24	0.22	0.39	0.31	0.46
HLA	8	1079	531.42	166	9.17	1.14	1.93	1.24	2.15	-25.01	0.36	0.60	0.47	0.47
HLA	8	1092	550.55	166	9.58	0.87	-1.62	0.92	-0.55	55.82	0.15	1.22	0.14	0.40
HLA	8	1105	569.42	166	10.21	1.47	4.27	2.21	5.53	-18.29	0.02	0.18	0.30	0.48
HLA	8	1126	403.42	166	11.36	0.70	-2.54	0.64	-1.91	-23.55	0.39	1.30	0.87	0.30
HLA	8	1127	593.27	166	11.35	1.40	2.82	1.47	1.95	-32.36	0.37	0.58	0.27	0.42
HLA	8	1190	509.04	166	8.92	1.00	0.01	1.06	0.78	-4.75	0.40	0.97	0.48	0.46
HLA	8	1192	480.03	166	8.98	0.92	-1.29	0.90	-1.12	1.45	0.48	1.25	0.57	0.43

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
HLA	8	1199	499.60	166	8.90	1.02	0.40	1.02	0.25	0.09	0.38	0.93	0.49	0.46
HLA	8	1201	592.49	166	11.31	1.23	1.75	1.00	0.08	-35.07	0.59	0.83	0.28	0.40
HLA	8	1210	531.42	166	9.17	1.04	0.65	1.09	0.86	10.32	0.29	0.86	0.33	0.45
HLA	8	1212	517.13	166	8.98	1.09	1.41	1.21	2.28	-27.50	0.37	0.67	0.54	0.47
HLA	8	1214	554.97	166	4.30	1.03	0.22	1.14	0.58	-10.57	0.67	0.51	0.96	0.96

Appendix Table G.2: 2022 Math IRT Statistics

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	3	169	-0.85	309	0.12	0.87	-3.38	0.83	-3.09	0.00	0.51	1.53	0.55	0.43
MA	3	172	-0.06	309	0.13	0.79	-4.42	0.74	-4.38	0.00	0.60	1.58	0.38	0.40
MA	3	173	-0.37	309	0.12	1.12	2.59	1.12	2.16	0.00	0.25	0.60	0.45	0.49
MA	3	174	-1.11	309	0.12	0.83	-4.34	0.76	-3.78	0.00	0.54	1.63	0.61	0.42
MA	3	178	-3.79	309	0.26	1.03	0.21	1.36	1.06	0.00	0.08	0.96	0.95	0.22
MA	3	180	-0.46	309	0.12	0.97	-0.67	0.95	-0.95	0.00	0.41	1.12	0.47	0.46
MA	3	182	-0.54	309	0.12	0.92	-1.95	0.91	-1.70	0.00	0.46	1.30	0.48	0.44
MA	3	184	-2.03	309	0.14	1.01	0.18	1.16	1.26	0.00	0.25	0.95	0.78	0.40
MA	3	185	2.32	309	0.23	0.97	-0.10	1.53	1.76	0.00	0.23	0.98	0.07	0.24
MA	3	186	-0.14	309	0.13	0.95	-1.13	0.96	-0.71	0.00	0.43	1.14	0.40	0.44
MA	3	187	-1.91	309	0.14	0.88	-1.88	0.79	-1.94	0.00	0.44	1.22	0.76	0.38
MA	3	188	-1.38	309	0.13	0.95	-0.94	0.90	-1.25	0.00	0.39	1.15	0.66	0.44
MA	3	189	-2.18	309	0.15	0.93	-0.85	0.82	-1.32	0.00	0.36	1.11	0.80	0.37
MA	3	190	-1.89	309	0.14	0.98	-0.33	1.00	0.03	0.00	0.32	1.03	0.75	0.40
MA	3	191	-0.06	309	0.13	1.03	0.59	1.02	0.26	0.00	0.35	0.93	0.38	0.46
MA	3	193	-1.16	309	0.12	0.97	-0.62	0.97	-0.41	0.00	0.37	1.08	0.61	0.45
MA	3	198	-2.46	309	0.16	0.92	-0.83	0.78	-1.43	0.00	0.36	1.11	0.84	0.34
MA	3	201	-1.51	309	0.13	1.05	1.05	1.14	1.51	0.00	0.25	0.82	0.69	0.45
MA	3	202	-2.52	309	0.16	1.00	0.08	1.13	0.77	0.00	0.23	0.98	0.84	0.35
MA	3	204	-0.84	309	0.12	0.94	-1.52	0.94	-1.02	0.00	0.42	1.23	0.55	0.45
MA	3	205	0.35	309	0.13	1.08	1.34	1.19	2.17	0.00	0.26	0.80	0.30	0.44
MA	3	206	-1.63	309	0.13	0.99	-0.09	1.10	1.01	0.00	0.30	0.98	0.71	0.43
MA	3	207	-1.11	309	0.12	0.95	-1.11	0.95	-0.66	0.00	0.40	1.16	0.61	0.45
MA	3	208	-0.02	309	0.13	0.87	-2.62	0.89	-1.81	0.00	0.51	1.32	0.38	0.42
MA	3	209	0.77	309	0.14	0.98	-0.22	1.12	1.11	0.00	0.35	0.99	0.23	0.39
MA	3	210	0.90	309	0.15	1.12	1.36	1.22	1.76	0.00	0.22	0.85	0.21	0.40
MA	3	211	1.24	309	0.16	1.09	0.95	1.23	1.52	0.00	0.22	0.89	0.17	0.37
MA	3	212	-0.20	309	0.12	0.84	-3.74	0.81	-3.35	0.00	0.55	1.51	0.41	0.42
MA	3	213	0.26	309	0.13	0.91	-1.47	0.88	-1.56	0.00	0.47	1.18	0.32	0.41

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	3	214	-0.38	309	0.12	0.87	-3.02	0.86	-2.70	0.00	0.51	1.45	0.45	0.43
MA	3	215	-2.60	309	0.17	0.95	-0.41	0.86	-0.74	0.00	0.30	1.06	0.85	0.33
MA	3	216	-0.73	309	0.12	1.07	1.65	1.08	1.34	0.00	0.29	0.73	0.52	0.48
MA	3	217	1.16	309	0.16	1.04	0.46	1.11	0.78	0.00	0.29	0.95	0.18	0.37
MA	3	218	0.61	309	0.14	1.20	2.68	1.36	3.33	0.00	0.12	0.65	0.26	0.45
MA	3	219	1.59	309	0.18	1.05	0.44	1.09	0.56	0.00	0.26	0.96	0.13	0.32
MA	3	221	0.26	309	0.13	1.01	0.26	0.99	-0.12	0.00	0.37	0.98	0.32	0.44
MA	3	223	0.17	309	0.13	1.15	2.60	1.23	2.89	0.00	0.20	0.63	0.34	0.47
MA	3	224	0.22	309	0.13	1.13	2.17	1.21	2.65	0.00	0.22	0.69	0.33	0.46
MA	3	225	0.33	309	0.13	1.25	3.79	1.39	4.28	0.00	0.08	0.47	0.31	0.48
MA	3	226	1.06	309	0.15	1.13	1.38	1.46	3.08	0.00	0.15	0.79	0.19	0.39
MA	3	229	-0.66	309	0.12	1.10	2.33	1.10	1.74	0.00	0.27	0.63	0.51	0.49
MA	3	230	0.57	309	0.14	1.11	1.54	1.27	2.63	0.00	0.22	0.78	0.27	0.43
MA	3	231	-0.20	309	0.12	1.04	0.85	1.06	0.97	0.00	0.33	0.87	0.41	0.46
MA	3	233	3.15	309	0.39	0.95	0.11	0.26	-1.00	0.00	0.22	1.04	0.02	0.14
MA	3	234	1.84	309	0.16	0.94	-0.27	0.54	-1.38	0.00	0.44	1.05	0.11	0.34
MA	3	235	1.82	309	0.15	0.83	-1.11	0.61	-1.88	0.00	0.51	1.10	0.16	0.35
MA	3	368	0.69	309	0.14	0.84	-2.18	0.76	-2.43	0.00	0.54	1.24	0.25	0.37
MA	3	371	0.57	309	0.14	0.96	-0.54	1.02	0.24	0.00	0.39	1.04	0.27	0.40
MA	3	374	0.63	309	0.14	1.15	2.01	1.20	1.86	0.00	0.21	0.77	0.26	0.43
MA	3	992	3.44	309	0.36	0.93	-0.11	0.75	-0.40	0.00	0.26	1.05	0.03	0.15
MA	3	995	0.51	309	0.14	1.18	2.56	1.24	2.43	0.00	0.17	0.69	0.28	0.45
MA	3	1035	0.36	309	0.13	0.97	-0.47	0.99	-0.05	0.00	0.40	1.05	0.30	0.42
MA	3	1036	2.12	309	0.21	0.96	-0.22	0.85	-0.55	0.00	0.32	1.04	0.08	0.26
MA	3	1303	1.59	309	0.18	1.10	0.83	1.22	1.18	0.00	0.21	0.92	0.13	0.33
MA	3	1305	2.17	309	0.22	0.94	-0.32	0.81	-0.70	0.00	0.34	1.05	0.08	0.25
MA	4	103	-0.24	280	0.13	0.99	-0.20	1.01	0.19	0.00	0.33	1.02	0.38	0.46
MA	4	109	-0.81	281	0.13	1.00	-0.07	0.97	-0.59	0.00	0.33	1.05	0.51	0.47
MA	4	135	-1.09	281	0.13	0.86	-4.03	0.82	-3.60	0.00	0.50	1.73	0.57	0.44
MA	4	140	-1.63	281	0.13	0.90	-1.88	0.90	-1.23	0.00	0.40	1.26	0.69	0.42
MA	4	154	-0.87	280	0.13	0.96	-1.07	0.95	-1.08	0.00	0.37	1.22	0.52	0.47
MA	4	157	-0.11	281	0.13	0.93	-1.36	0.93	-1.07	0.00	0.41	1.19	0.36	0.44
MA	4	163	-1.46	280	0.13	0.97	-0.57	0.95	-0.69	0.00	0.32	1.10	0.65	0.45
MA	4	164	0.06	280	0.14	1.06	1.09	1.11	1.50	0.00	0.23	0.83	0.32	0.46
MA	4	165	-0.13	280	0.13	1.03	0.58	1.04	0.60	0.00	0.29	0.91	0.36	0.46
MA	4	166	0.62	281	0.15	0.93	-0.82	1.01	0.15	0.00	0.37	1.06	0.22	0.38
MA	4	167	-1.04	280	0.13	1.11	2.87	1.20	3.65	0.00	0.14	0.35	0.56	0.50

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	4	168	0.15	280	0.14	0.94	-0.95	0.94	-0.77	0.00	0.39	1.12	0.30	0.42
MA	4	170	-0.28	281	0.13	1.12	2.54	1.14	2.44	0.00	0.17	0.57	0.39	0.49
MA	4	171	0.32	281	0.14	0.98	-0.29	0.94	-0.72	0.00	0.36	1.06	0.27	0.42
MA	4	236	-0.17	281	0.13	0.93	-1.40	0.91	-1.49	0.00	0.42	1.22	0.37	0.44
MA	4	238	-0.21	281	0.13	1.02	0.38	1.05	0.95	0.00	0.29	0.91	0.38	0.46
MA	4	239	2.63	281	0.30	0.92	-0.23	0.60	-1.23	0.00	0.33	1.06	0.04	0.19
MA	4	240	1.54	280	0.20	0.98	-0.13	0.91	-0.40	0.00	0.30	1.02	0.11	0.30
MA	4	241	0.13	279	0.14	1.11	1.80	1.14	1.79	0.00	0.17	0.75	0.31	0.46
MA	4	242	-2.15	280	0.15	0.89	-1.37	0.77	-2.12	0.00	0.41	1.19	0.78	0.38
MA	4	243	0.34	279	0.14	1.15	2.10	1.18	2.00	0.00	0.12	0.73	0.27	0.45
MA	4	244	3.79	281	0.51	0.99	0.15	1.33	0.69	0.00	0.09	0.99	0.01	0.12
MA	4	245	-0.22	280	0.13	0.93	-1.42	0.93	-1.24	0.00	0.41	1.22	0.38	0.44
MA	4	246	1.16	280	0.18	0.94	-0.48	0.88	-0.75	0.00	0.36	1.06	0.15	0.33
MA	4	247	0.11	281	0.14	1.01	0.15	1.04	0.60	0.00	0.30	0.96	0.31	0.44
MA	4	249	-0.78	279	0.13	0.92	-2.16	0.91	-1.93	0.00	0.42	1.42	0.50	0.46
MA	4	250	-0.24	280	0.13	0.87	-2.87	0.85	-2.76	0.00	0.50	1.44	0.38	0.43
MA	4	252	2.71	279	0.31	0.83	-0.58	0.30	-2.57	0.00	0.47	1.13	0.04	0.17
MA	4	253	1.07	280	0.17	1.12	1.10	1.26	1.69	0.00	0.11	0.87	0.16	0.37
MA	4	254	0.44	281	0.14	1.22	2.80	1.31	3.01	0.00	0.02	0.64	0.25	0.45
MA	4	256	0.56	280	0.15	0.99	-0.08	1.03	0.31	0.00	0.31	1.00	0.23	0.40
MA	4	257	0.44	281	0.14	1.01	0.20	0.98	-0.19	0.00	0.31	0.99	0.25	0.41
MA	4	258	-0.41	279	0.13	1.08	1.77	1.10	1.93	0.00	0.22	0.67	0.42	0.48
MA	4	259	0.58	280	0.15	1.05	0.60	1.04	0.40	0.00	0.25	0.94	0.23	0.41
MA	4	261	-0.20	280	0.13	1.06	1.17	1.08	1.31	0.00	0.25	0.81	0.38	0.47
MA	4	262	-1.12	281	0.08	0.96	-0.67	0.98	-0.25	0.00	0.46	1.07	1.19	0.74
MA	4	263	-0.53	280	0.13	1.02	0.62	1.04	0.77	0.00	0.29	0.87	0.45	0.48
MA	4	264	0.23	280	0.14	1.12	1.83	1.10	1.18	0.00	0.18	0.78	0.29	0.45
MA	4	265	-0.93	280	0.13	1.24	6.32	1.32	5.86	0.00	-0.02	-0.36	0.54	0.53
MA	4	267	-1.17	280	0.13	0.83	-4.71	0.79	-4.04	0.00	0.53	1.81	0.59	0.43
MA	4	268	-1.41	281	0.13	1.03	0.73	1.11	1.61	0.00	0.23	0.83	0.64	0.47
MA	4	271	-0.76	280	0.13	0.92	-2.17	0.89	-2.32	0.00	0.42	1.44	0.50	0.46
MA	4	274	-0.06	280	0.13	0.98	-0.38	0.99	-0.08	0.00	0.35	1.05	0.35	0.45
MA	4	276	0.28	281	0.14	1.09	1.26	1.08	1.00	0.00	0.22	0.85	0.28	0.44
MA	4	277	-0.10	280	0.13	0.94	-1.24	0.93	-1.15	0.00	0.41	1.18	0.35	0.44
MA	4	278	0.70	280	0.15	0.94	-0.66	0.94	-0.52	0.00	0.38	1.07	0.21	0.38
MA	4	373	-0.05	280	0.13	1.12	2.16	1.14	2.10	0.00	0.16	0.67	0.34	0.48
MA	4	375	0.44	280	0.10	0.96	-0.49	0.95	-0.69	0.00	0.45	1.08	0.55	0.56
MA	4	377	-0.46	279	0.13	1.00	-0.05	1.00	0.06	0.00	0.32	1.00	0.43	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	4	378	-0.30	279	0.13	0.82	-4.28	0.79	-4.11	0.00	0.57	1.66	0.39	0.42
MA	4	1005	-1.06	281	0.13	0.90	-2.82	0.86	-2.68	0.00	0.45	1.53	0.57	0.45
MA	4	1006	0.17	280	0.14	1.06	0.99	1.10	1.26	0.00	0.23	0.86	0.30	0.45
MA	4	1007	0.29	280	0.14	1.10	1.50	1.13	1.47	0.00	0.18	0.81	0.28	0.45
MA	4	1009	0.60	281	0.15	1.05	0.57	1.12	1.14	0.00	0.23	0.92	0.23	0.41
MA	4	1010	3.36	280	0.42	0.99	0.09	0.85	-0.15	0.00	0.17	1.01	0.02	0.14
MA	4	1981	-1.34	280	0.13	0.91	-2.24	0.84	-2.54	0.00	0.43	1.40	0.63	0.44
MA	5	412	0.42	246	0.15	0.88	-1.50	0.82	-1.83	0.00	0.47	1.20	0.25	0.39
MA	5	413	-1.17	246	0.14	0.90	-2.41	0.87	-2.39	0.00	0.44	1.47	0.58	0.45
MA	5	414	0.20	246	0.08	1.66	4.40	2.59	4.06	0.00	0.31	0.76	0.50	1.04
MA	5	415	-0.29	246	0.14	1.01	0.18	1.05	0.81	0.00	0.30	0.94	0.39	0.46
MA	5	416	-0.72	246	0.13	0.94	-1.62	0.92	-1.62	0.00	0.41	1.33	0.48	0.46
MA	5	417	1.14	246	0.19	0.93	-0.54	0.92	-0.43	0.00	0.34	1.06	0.15	0.33
MA	5	419	0.40	246	0.15	1.06	0.73	1.11	1.10	0.00	0.21	0.89	0.25	0.42
MA	5	420	2.32	246	0.29	0.94	-0.17	0.62	-1.26	0.00	0.31	1.06	0.05	0.21
MA	5	421	-1.23	246	0.14	1.00	-0.06	1.03	0.52	0.00	0.30	0.98	0.59	0.47
MA	5	422	-0.77	246	0.13	1.00	0.10	1.01	0.17	0.00	0.31	0.98	0.49	0.47
MA	5	424	-0.95	246	0.13	0.96	-1.09	0.94	-1.20	0.00	0.38	1.24	0.53	0.46
MA	5	425	-0.27	246	0.14	1.14	2.69	1.20	3.13	0.00	0.12	0.49	0.38	0.49
MA	5	426	0.38	246	0.15	1.04	0.48	1.05	0.56	0.00	0.25	0.94	0.26	0.42
MA	5	428	-0.05	245	0.14	1.16	2.56	1.18	2.36	0.00	0.10	0.60	0.33	0.48
MA	5	429	0.52	246	0.16	1.01	0.16	1.05	0.46	0.00	0.27	0.97	0.23	0.40
MA	5	431	-0.29	246	0.14	1.00	-0.07	1.01	0.24	0.00	0.32	1.00	0.39	0.46
MA	5	432	0.38	246	0.15	1.06	0.76	1.06	0.61	0.00	0.23	0.91	0.26	0.43
MA	5	433	-1.51	246	0.14	0.93	-1.50	0.90	-1.37	0.00	0.39	1.24	0.65	0.44
MA	5	434	-0.18	246	0.14	0.95	-0.91	0.97	-0.52	0.00	0.38	1.13	0.36	0.44
MA	5	435	0.29	246	0.08	1.05	0.51	0.96	-0.18	0.00	0.54	0.99	0.60	0.81
MA	5	436	0.09	246	0.15	0.93	-1.06	0.94	-0.74	0.00	0.40	1.14	0.31	0.42
MA	5	437	-0.01	245	0.14	1.05	0.79	1.05	0.68	0.00	0.25	0.89	0.33	0.46
MA	5	439	-0.16	246	0.14	1.02	0.47	1.03	0.44	0.00	0.28	0.93	0.36	0.46
MA	5	440	1.25	246	0.19	1.08	0.62	1.23	1.26	0.00	0.11	0.91	0.13	0.34
MA	5	441	-1.28	246	0.14	1.03	0.60	1.02	0.38	0.00	0.27	0.90	0.61	0.47
MA	5	442	0.28	246	0.15	1.00	-0.04	1.00	0.03	0.00	0.31	1.00	0.27	0.42
MA	5	443	0.47	246	0.16	0.96	-0.44	0.90	-0.94	0.00	0.36	1.08	0.24	0.40
MA	5	444	-0.72	246	0.13	0.97	-0.62	0.96	-0.80	0.00	0.36	1.14	0.48	0.47
MA	5	445	0.28	246	0.15	0.95	-0.66	0.92	-0.86	0.00	0.38	1.10	0.27	0.41
MA	5	446	-0.46	246	0.14	0.99	-0.18	0.98	-0.37	0.00	0.34	1.05	0.42	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	5	448	-0.75	246	0.13	0.96	-0.89	0.95	-0.99	0.00	0.37	1.19	0.49	0.47
MA	5	449	1.07	246	0.18	1.07	0.63	1.02	0.19	0.00	0.19	0.95	0.15	0.36
MA	5	450	0.26	246	0.15	1.13	1.76	1.20	2.09	0.00	0.12	0.74	0.28	0.45
MA	5	451	-0.52	246	0.14	0.91	-2.17	0.89	-2.25	0.00	0.45	1.42	0.44	0.45
MA	5	452	-0.66	246	0.13	1.11	2.55	1.13	2.54	0.00	0.17	0.46	0.47	0.50
MA	5	453	0.46	245	0.16	0.87	-1.69	0.78	-2.20	0.00	0.49	1.22	0.24	0.38
MA	5	454	-0.72	246	0.13	0.94	-1.48	0.93	-1.50	0.00	0.40	1.31	0.48	0.46
MA	5	455	-0.46	246	0.14	1.01	0.14	1.00	0.07	0.00	0.31	0.98	0.42	0.47
MA	5	456	-0.57	246	0.14	1.01	0.34	1.02	0.40	0.00	0.30	0.93	0.45	0.47
MA	5	457	-0.37	246	0.14	0.99	-0.12	1.00	0.09	0.00	0.32	1.01	0.40	0.46
MA	5	458	-1.78	246	0.15	1.02	0.32	0.99	-0.03	0.00	0.26	0.97	0.71	0.44
MA	5	459	0.55	246	0.16	0.97	-0.33	0.92	-0.66	0.00	0.35	1.06	0.23	0.39
MA	5	460	-1.84	246	0.15	1.00	0.02	0.98	-0.23	0.00	0.27	1.01	0.72	0.43
MA	5	462	0.63	246	0.16	1.06	0.64	1.13	1.11	0.00	0.19	0.90	0.22	0.40
MA	5	463	0.58	246	0.11	0.91	-0.79	0.77	-1.37	0.00	0.50	1.07	0.33	0.54
MA	5	464	0.87	245	0.12	0.97	-0.22	0.86	-0.98	0.00	0.43	1.05	0.32	0.51
MA	5	1058	0.33	246	0.15	1.01	0.12	1.04	0.40	0.00	0.29	0.98	0.26	0.42
MA	5	1093	1.59	246	0.19	1.03	0.19	0.91	-0.10	0.00	0.27	1.00	0.09	0.34
MA	5	1121	-0.48	245	0.14	1.07	1.50	1.08	1.55	0.00	0.22	0.70	0.42	0.48
MA	5	1128	-1.36	246	0.14	0.97	-0.74	0.95	-0.71	0.00	0.35	1.14	0.62	0.45
MA	5	1130	-0.75	246	0.13	0.85	-3.95	0.83	-3.91	0.00	0.53	1.79	0.49	0.44
MA	5	1136	-0.18	246	0.14	1.17	3.11	1.24	3.51	0.00	0.07	0.44	0.36	0.49
MA	5	1187	-0.55	246	0.14	0.89	-2.75	0.87	-2.75	0.00	0.48	1.52	0.44	0.44
MA	5	1202	0.35	246	0.15	0.95	-0.68	0.94	-0.64	0.00	0.37	1.09	0.26	0.41
MA	5	1217	1.49	246	0.21	1.07	0.48	1.27	1.26	0.00	0.10	0.92	0.11	0.31
MA	5	1223	0.76	246	0.17	0.96	-0.34	0.96	-0.24	0.00	0.33	1.04	0.20	0.37
MA	5	1229	1.10	246	0.19	0.91	-0.74	0.81	-1.16	0.00	0.40	1.10	0.15	0.33
MA	5	1232	1.25	246	0.19	1.00	0.02	0.84	-0.87	0.00	0.30	1.03	0.13	0.33
MA	6	466	0.82	238	0.19	1.16	1.18	1.33	1.79	0.00	0.05	0.84	0.14	0.36
MA	6	468	-0.84	250	0.14	0.90	-2.41	0.92	-1.56	0.00	0.45	1.41	0.43	0.44
MA	6	469	0.01	250	0.07	0.87	-1.36	0.85	-1.32	0.00	0.65	1.11	0.94	0.84
MA	6	470	0.68	250	0.18	1.14	1.17	1.19	1.18	0.00	0.10	0.86	0.16	0.37
MA	6	476	1.02	239	0.21	1.11	0.80	1.29	1.43	0.00	0.10	0.90	0.12	0.33
MA	6	478	-0.12	240	0.15	1.03	0.49	1.05	0.56	0.00	0.27	0.93	0.28	0.43
MA	6	480	-0.18	250	0.15	1.13	1.83	1.16	1.81	0.00	0.15	0.74	0.29	0.46
MA	6	482	1.95	238	0.29	0.98	-0.01	0.96	-0.01	0.00	0.21	1.01	0.05	0.22
MA	6	484	-0.08	248	0.15	1.06	0.87	1.11	1.16	0.00	0.22	0.87	0.27	0.44

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	6	487	0.17	244	0.16	1.22	2.36	1.42	3.31	0.00	-0.01	0.66	0.23	0.44
MA	6	490	-0.42	248	0.14	1.10	1.65	1.11	1.49	0.00	0.19	0.74	0.34	0.47
MA	6	491	0.15	240	0.09	0.92	-0.73	0.82	-1.51	0.00	0.59	1.09	0.61	0.70
MA	6	495	-1.12	241	0.14	0.93	-1.86	0.91	-1.85	0.00	0.41	1.40	0.49	0.46
MA	6	499	-0.14	241	0.15	1.10	1.32	1.11	1.18	0.00	0.19	0.82	0.28	0.45
MA	6	502	1.26	248	0.13	1.00	0.07	1.00	0.00	0.00	0.37	0.99	0.33	0.49
MA	6	509	-0.66	241	0.14	1.04	0.73	1.06	0.97	0.00	0.27	0.86	0.39	0.47
MA	6	512	0.48	240	0.18	1.00	0.06	0.93	-0.43	0.00	0.31	1.01	0.18	0.37
MA	6	514	-1.10	238	0.14	0.91	-2.31	0.89	-2.21	0.00	0.44	1.48	0.48	0.45
MA	6	515	-0.25	241	0.15	1.07	0.99	1.06	0.71	0.00	0.24	0.87	0.30	0.45
MA	6	517	-0.46	238	0.14	1.06	1.03	1.08	1.08	0.00	0.24	0.83	0.34	0.46
MA	6	520	0.16	242	0.16	1.04	0.48	1.03	0.29	0.00	0.26	0.95	0.23	0.41
MA	6	521	0.55	240	0.18	1.12	1.11	1.11	0.76	0.00	0.15	0.89	0.18	0.38
MA	6	524	1.35	238	0.23	1.00	0.08	0.98	-0.02	0.00	0.24	1.00	0.09	0.28
MA	6	526	-0.14	244	0.15	1.09	1.27	1.10	1.08	0.00	0.20	0.83	0.28	0.45
MA	6	534	0.41	243	0.17	1.10	0.99	1.21	1.54	0.00	0.14	0.86	0.19	0.39
MA	6	535	-0.92	242	0.14	0.96	-1.03	0.94	-1.22	0.00	0.38	1.22	0.44	0.46
MA	6	537	-0.65	245	0.14	1.00	-0.02	1.00	0.08	0.00	0.32	1.00	0.38	0.46
MA	6	545	0.45	238	0.17	0.98	-0.14	0.98	-0.12	0.00	0.32	1.02	0.19	0.37
MA	6	550	-1.21	241	0.14	0.91	-2.51	0.87	-2.53	0.00	0.44	1.54	0.51	0.45
MA	6	551	-0.30	250	0.14	1.05	0.85	1.07	0.87	0.00	0.25	0.87	0.32	0.45
MA	6	553	-0.18	241	0.15	0.95	-0.68	0.99	-0.03	0.00	0.37	1.08	0.29	0.42
MA	6	563	-0.60	241	0.14	1.04	0.70	1.07	1.14	0.00	0.26	0.86	0.37	0.47
MA	6	567	-0.18	245	0.15	0.92	-1.10	0.87	-1.56	0.00	0.43	1.17	0.29	0.41
MA	6	568	-0.98	251	0.13	1.07	1.61	1.10	1.91	0.00	0.22	0.64	0.46	0.49
MA	6	570	1.30	238	0.23	0.93	-0.39	0.68	-1.47	0.00	0.39	1.08	0.10	0.27
MA	6	571	-2.44	241	0.16	0.86	-1.80	0.74	-2.46	0.00	0.46	1.26	0.76	0.38
MA	6	572	-0.07	240	0.15	0.99	-0.16	0.99	-0.04	0.00	0.33	1.02	0.27	0.42
MA	6	574	-0.34	241	0.15	0.90	-1.63	0.89	-1.37	0.00	0.45	1.23	0.32	0.42
MA	6	575	1.41	240	0.24	0.86	-0.73	0.57	-1.97	0.00	0.46	1.12	0.09	0.25
MA	6	577	0.63	244	0.18	1.23	1.92	1.42	2.44	0.00	-0.04	0.75	0.16	0.39
MA	6	578	-0.04	248	0.15	1.00	0.06	1.04	0.42	0.00	0.30	0.98	0.27	0.42
MA	6	579	-0.77	250	0.14	0.89	-2.41	0.86	-2.58	0.00	0.47	1.44	0.41	0.44
MA	6	580	0.33	244	0.17	1.12	1.19	1.22	1.70	0.00	0.12	0.83	0.20	0.41
MA	6	581	0.15	251	0.16	0.91	-1.02	0.90	-0.87	0.00	0.42	1.12	0.24	0.39
MA	6	585	1.63	248	0.25	0.92	-0.36	0.70	-1.13	0.00	0.36	1.07	0.07	0.24
MA	6	1062	0.88	247	0.11	0.87	-0.62	0.51	-2.28	0.00	0.60	1.09	0.26	0.52
MA	6	1063	-1.06	238	0.14	0.97	-0.70	0.97	-0.60	0.00	0.35	1.15	0.47	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	6	1101	-0.59	240	0.14	1.03	0.55	1.05	0.79	0.00	0.28	0.90	0.37	0.46
MA	6	1131	0.09	248	0.07	0.81	-1.64	0.53	-2.94	0.00	0.70	1.11	0.64	0.77
MA	6	1142	-0.52	244	0.14	0.91	-1.75	0.87	-1.96	0.00	0.45	1.29	0.36	0.43
MA	6	1200	-0.38	250	0.14	1.02	0.35	1.04	0.56	0.00	0.29	0.94	0.33	0.45
MA	6	1203	-0.87	239	0.14	0.99	-0.26	1.00	0.10	0.00	0.33	1.04	0.43	0.47
MA	6	1225	1.81	243	0.27	1.02	0.14	0.98	0.05	0.00	0.19	0.99	0.06	0.24
MA	6	1251	2.67	248	0.39	0.92	-0.13	0.40	-1.51	0.00	0.33	1.07	0.03	0.16
MA	6	1253	0.22	243	0.16	0.93	-0.78	0.93	-0.61	0.00	0.39	1.09	0.22	0.38
MA	6	1254	-0.52	238	0.14	0.92	-1.43	0.89	-1.67	0.00	0.43	1.25	0.36	0.44
MA	6	1256	0.13	248	0.16	1.03	0.38	1.10	0.92	0.00	0.25	0.94	0.24	0.41
MA	7	467	0.44	149	0.19	0.80	-0.71	0.66	-1.14	0.00	0.49	1.07	0.17	0.39
MA	7	471	1.14	149	0.32	0.88	-0.42	0.75	-0.72	0.00	0.39	1.08	0.07	0.24
MA	7	474	0.27	149	0.23	1.02	0.17	1.25	1.24	0.00	0.15	0.94	0.15	0.35
MA	7	475	-0.08	149	0.21	1.02	0.23	1.08	0.58	0.00	0.21	0.96	0.20	0.39
MA	7	477	0.27	149	0.23	1.22	1.35	1.46	2.13	0.00	-0.13	0.76	0.15	0.39
MA	7	479	0.21	148	0.23	0.98	-0.11	0.90	-0.48	0.00	0.30	1.04	0.16	0.35
MA	7	481	-0.65	147	0.12	0.86	-1.18	0.82	-1.18	0.00	0.55	1.13	0.48	0.62
MA	7	483	0.26	148	0.23	1.05	0.35	1.11	0.59	0.00	0.16	0.95	0.16	0.36
MA	7	485	-0.61	147	0.19	1.09	1.10	1.10	1.00	0.00	0.14	0.80	0.29	0.46
MA	7	486	-0.22	147	0.21	1.16	1.42	1.22	1.50	0.00	0.01	0.76	0.22	0.43
MA	7	488	-0.41	149	0.20	1.15	1.48	1.18	1.46	0.00	0.05	0.75	0.26	0.45
MA	7	489	-0.43	147	0.20	0.97	-0.25	0.93	-0.55	0.00	0.33	1.06	0.26	0.41
MA	7	492	-0.23	146	0.21	0.94	-0.48	0.91	-0.60	0.00	0.36	1.08	0.23	0.39
MA	7	493	-0.58	146	0.19	1.14	1.60	1.24	2.15	0.00	0.04	0.67	0.29	0.46
MA	7	494	-0.73	149	0.18	0.97	-0.36	0.95	-0.46	0.00	0.33	1.08	0.32	0.44
MA	7	496	-0.73	149	0.18	0.88	-1.65	0.85	-1.64	0.00	0.47	1.31	0.32	0.42
MA	7	498	-0.81	147	0.18	0.92	-1.13	0.91	-1.05	0.00	0.41	1.23	0.33	0.43
MA	7	501	0.85	146	0.29	1.10	0.51	1.44	1.47	0.00	-0.02	0.89	0.10	0.30
MA	7	503	-0.43	146	0.20	1.06	0.67	1.07	0.58	0.00	0.18	0.89	0.26	0.43
MA	7	505	-0.48	149	0.19	1.09	0.98	1.17	1.47	0.00	0.12	0.80	0.27	0.44
MA	7	506	0.16	149	0.23	1.16	1.07	1.22	1.17	0.00	0.01	0.84	0.17	0.39
MA	7	508	-1.36	149	0.17	1.13	2.69	1.19	3.17	0.00	0.06	0.15	0.45	0.51
MA	7	511	0.09	146	0.22	1.01	0.12	1.02	0.16	0.00	0.23	0.98	0.18	0.37
MA	7	513	2.94	146	0.72	1.00	0.22	0.67	-0.17	0.00	0.15	1.02	0.01	0.12
MA	7	516	0.57	149	0.26	0.97	-0.12	0.98	-0.02	0.00	0.27	1.02	0.12	0.31
MA	7	522	0.63	148	0.27	0.89	-0.52	0.83	-0.66	0.00	0.38	1.08	0.11	0.29
MA	7	523	-1.65	147	0.17	0.94	-1.29	0.95	-0.93	0.00	0.36	1.37	0.52	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	7	525	-0.63	149	0.19	0.97	-0.32	0.95	-0.51	0.00	0.33	1.08	0.30	0.43
MA	7	527	-0.54	147	0.19	0.83	-2.03	0.77	-2.26	0.00	0.55	1.36	0.28	0.39
MA	7	533	-0.66	149	0.19	0.96	-0.50	0.94	-0.58	0.00	0.35	1.10	0.30	0.43
MA	7	536	-1.27	146	0.17	0.90	-2.07	0.89	-1.89	0.00	0.44	1.55	0.43	0.45
MA	7	540	-1.05	147	0.18	0.94	-1.08	0.92	-1.10	0.00	0.39	1.26	0.38	0.45
MA	7	541	-1.05	146	0.18	0.90	-1.65	0.89	-1.57	0.00	0.43	1.39	0.38	0.44
MA	7	543	0.64	149	0.27	1.05	0.30	1.22	0.92	0.00	0.11	0.94	0.11	0.32
MA	7	547	-0.41	146	0.11	0.77	-1.37	0.64	-1.47	0.00	0.62	1.09	0.45	0.64
MA	7	549	-0.27	146	0.20	1.17	1.50	1.18	1.32	0.00	0.02	0.75	0.23	0.44
MA	7	552	1.23	146	0.33	0.98	0.03	0.79	-0.54	0.00	0.26	1.03	0.07	0.25
MA	7	555	2.95	147	0.72	0.98	0.20	0.41	-0.64	0.00	0.21	1.04	0.01	0.11
MA	7	557	-0.69	146	0.19	1.11	1.30	1.11	1.08	0.00	0.13	0.76	0.31	0.47
MA	7	559	-0.13	148	0.21	1.05	0.44	1.07	0.50	0.00	0.18	0.93	0.21	0.40
MA	7	561	-0.19	146	0.21	0.95	-0.36	0.99	-0.01	0.00	0.32	1.05	0.22	0.39
MA	7	562	-0.73	149	0.13	0.83	-1.72	0.81	-1.81	0.00	0.55	1.27	0.60	0.59
MA	7	564	-0.03	149	0.21	0.99	-0.05	0.89	-0.64	0.00	0.31	1.04	0.19	0.38
MA	7	565	-1.02	149	0.18	0.87	-2.21	0.84	-2.35	0.00	0.49	1.51	0.38	0.43
MA	7	616	-1.56	149	0.17	0.99	-0.25	0.97	-0.58	0.00	0.31	1.11	0.50	0.48
MA	7	1065	-1.24	146	0.17	0.98	-0.44	0.98	-0.36	0.00	0.32	1.12	0.42	0.47
MA	7	1066	3.66	149	1.01	1.02	0.35	2.00	1.07	0.00	-0.06	0.96	0.01	0.08
MA	7	1134	-1.05	149	0.18	1.01	0.17	1.01	0.13	0.00	0.27	0.97	0.38	0.47
MA	7	1234	-0.34	147	0.20	1.11	1.09	1.11	0.84	0.00	0.11	0.83	0.24	0.44
MA	7	1237	-0.26	147	0.20	1.13	1.15	1.23	1.64	0.00	0.05	0.79	0.23	0.43
MA	7	1241	-1.15	146	0.18	0.93	-1.23	0.92	-1.23	0.00	0.39	1.31	0.40	0.45
MA	7	1244	0.25	146	0.24	1.06	0.42	1.07	0.43	0.00	0.16	0.94	0.16	0.36
MA	7	1247	1.36	147	0.35	1.08	0.35	1.18	0.58	0.00	0.04	0.95	0.06	0.24
MA	7	1252	1.79	146	0.42	0.97	0.05	0.73	-0.47	0.00	0.23	1.03	0.04	0.19
MA	7	1259	-0.40	146	0.20	1.01	0.09	1.01	0.11	0.00	0.26	0.99	0.25	0.42
MA	7	1264	1.63	146	0.39	0.99	0.07	0.67	-0.74	0.00	0.26	1.03	0.05	0.21
MA	8	529	-0.32	166	0.19	0.88	-1.16	0.93	-0.56	0.00	0.43	1.15	0.23	0.38
MA	8	530	-0.96	166	0.17	1.11	1.79	1.09	1.27	0.00	0.11	0.64	0.36	0.49
MA	8	531	0.00	169	0.21	1.01	0.08	1.02	0.20	0.00	0.24	0.99	0.18	0.37
MA	8	532	-0.78	166	0.17	1.02	0.32	1.02	0.29	0.00	0.24	0.94	0.32	0.45
MA	8	542	1.25	166	0.32	1.11	0.48	1.18	0.64	0.00	0.06	0.94	0.07	0.25
MA	8	544	-0.31	169	0.19	1.14	1.30	1.23	1.77	0.00	0.03	0.78	0.23	0.43
MA	8	548	1.93	168	0.43	0.95	0.00	1.12	0.39	0.00	0.19	1.00	0.04	0.18
MA	8	556	-0.21	166	0.20	1.09	0.85	1.13	0.96	0.00	0.12	0.87	0.22	0.41

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	8	566	-0.36	166	0.19	0.99	-0.09	0.94	-0.50	0.00	0.31	1.04	0.24	0.41
MA	8	569	-0.55	169	0.18	1.01	0.18	0.99	-0.10	0.00	0.26	0.99	0.27	0.43
MA	8	573	-0.12	169	0.20	1.04	0.39	1.06	0.47	0.00	0.19	0.95	0.20	0.39
MA	8	576	0.49	168	0.24	1.11	0.69	1.33	1.48	0.00	0.03	0.89	0.13	0.34
MA	8	582	0.44	168	0.24	0.93	-0.39	0.82	-0.89	0.00	0.38	1.07	0.13	0.31
MA	8	583	0.65	169	0.16	0.88	-1.57	0.85	-1.84	0.00	0.49	1.25	0.40	0.46
MA	8	584	-0.29	166	0.19	0.94	-0.53	1.00	0.04	0.00	0.33	1.06	0.23	0.39
MA	8	586	-0.63	166	0.18	1.14	1.70	1.17	1.69	0.00	0.05	0.70	0.29	0.47
MA	8	588	2.12	166	0.46	1.11	0.39	1.57	1.11	0.00	-0.05	0.93	0.03	0.18
MA	8	589	-1.42	166	0.16	0.96	-0.97	0.94	-1.05	0.00	0.33	1.30	0.46	0.47
MA	8	590	0.75	169	0.26	0.97	-0.08	0.81	-0.75	0.00	0.33	1.04	0.10	0.29
MA	8	591	1.36	168	0.34	0.82	-0.59	0.51	-1.60	0.00	0.52	1.12	0.06	0.21
MA	8	592	-0.72	166	0.17	1.06	0.80	1.06	0.66	0.00	0.18	0.86	0.31	0.46
MA	8	593	-0.45	169	0.18	1.09	1.01	1.12	1.07	0.00	0.12	0.84	0.25	0.44
MA	8	594	-0.31	169	0.19	1.03	0.28	1.04	0.35	0.00	0.22	0.96	0.23	0.41
MA	8	596	-1.49	169	0.16	1.04	1.14	1.04	0.79	0.00	0.19	0.67	0.47	0.49
MA	8	597	-1.18	169	0.16	0.95	-0.94	0.94	-0.95	0.00	0.34	1.23	0.40	0.46
MA	8	598	-0.86	168	0.17	1.07	1.00	1.08	0.97	0.00	0.16	0.80	0.33	0.47
MA	8	599	0.32	166	0.23	0.87	-0.80	0.81	-0.99	0.00	0.45	1.11	0.14	0.32
MA	8	600	-1.55	166	0.16	1.00	0.02	1.00	-0.07	0.00	0.26	1.00	0.49	0.48
MA	8	601	0.23	169	0.22	1.05	0.36	1.19	1.08	0.00	0.15	0.94	0.15	0.36
MA	8	602	-0.04	169	0.20	1.03	0.28	0.97	-0.17	0.00	0.24	0.99	0.19	0.38
MA	8	603	-0.69	166	0.18	0.97	-0.43	0.98	-0.19	0.00	0.32	1.07	0.30	0.43
MA	8	604	-0.64	169	0.18	1.03	0.38	1.03	0.32	0.00	0.23	0.94	0.29	0.44
MA	8	607	-0.88	169	0.17	1.03	0.42	1.05	0.62	0.00	0.22	0.91	0.34	0.46
MA	8	608	-1.60	166	0.16	1.02	0.62	1.01	0.17	0.00	0.23	0.84	0.50	0.49
MA	8	611	-0.90	166	0.17	1.03	0.41	1.03	0.37	0.00	0.23	0.92	0.34	0.46
MA	8	612	0.03	166	0.21	0.81	-1.49	0.69	-2.14	0.00	0.57	1.22	0.18	0.33
MA	8	613	0.42	168	0.16	1.01	0.14	0.85	-0.71	0.00	0.48	1.04	0.27	0.50
MA	8	614	-1.31	166	0.16	0.95	-1.25	0.93	-1.30	0.00	0.36	1.35	0.43	0.46
MA	8	615	-0.20	169	0.20	1.11	0.94	1.16	1.17	0.00	0.09	0.86	0.21	0.41
MA	8	617	-0.28	168	0.19	1.09	0.90	1.08	0.62	0.00	0.14	0.88	0.23	0.42
MA	8	618	-2.11	169	0.16	0.93	-1.55	0.89	-1.57	0.00	0.37	1.41	0.62	0.45
MA	8	620	2.13	169	0.46	1.11	0.40	2.18	1.88	0.00	-0.12	0.90	0.03	0.17
MA	8	621	-1.23	166	0.16	1.00	0.07	1.01	0.20	0.00	0.26	0.98	0.42	0.48
MA	8	1135	0.92	169	0.29	0.74	-0.54	0.33	-1.28	0.00	0.51	1.07	0.06	0.23
MA	8	1138	1.63	169	0.39	1.31	0.74	1.09	0.36	0.00	0.15	0.96	0.04	0.23
MA	8	1140	3.08	166	0.72	0.98	0.20	0.30	-0.90	0.00	0.28	1.05	0.01	0.11

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
MA	8	1141	-0.90	166	0.17	0.90	-1.58	0.87	-1.75	0.00	0.43	1.33	0.34	0.43
MA	8	1218	1.60	166	0.37	1.08	0.35	0.95	0.01	0.00	0.13	0.98	0.05	0.22
MA	8	1228	-0.72	166	0.17	1.04	0.58	1.05	0.58	0.00	0.20	0.89	0.31	0.45
MA	8	1230	-0.88	169	0.17	1.11	1.61	1.11	1.35	0.00	0.11	0.69	0.34	0.48
MA	8	1236	-0.27	169	0.19	0.96	-0.35	0.93	-0.50	0.00	0.33	1.06	0.22	0.39
MA	8	1268	3.08	166	0.72	1.05	0.30	1.20	0.50	0.00	0.01	0.97	0.01	0.11
MA	8	1269	-1.03	168	0.17	0.94	-1.09	0.93	-1.02	0.00	0.37	1.24	0.37	0.45
MA	8	1270	0.18	169	0.22	0.97	-0.15	1.03	0.23	0.00	0.29	1.02	0.16	0.35
MA	8	1273	0.18	168	0.22	1.08	0.61	1.12	0.74	0.00	0.12	0.91	0.16	0.37
MA	8	1274	-0.50	166	0.18	0.87	-1.42	0.84	-1.59	0.00	0.47	1.23	0.27	0.40

Appendix Table G.3: 2022 Science IRT Item Statistics

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
SC	5	1369	1.24	246	0.18	1.06	0.59	1.16	0.99	0.00	0.16	0.91	0.17	0.37
SC	5	1327	0.14	246	0.14	1.03	0.49	1.03	0.48	0.00	0.30	0.92	0.35	0.46
SC	5	1365	0.33	246	0.15	1.09	1.49	1.18	2.07	0.00	0.19	0.74	0.31	0.46
SC	5	1320	1.51	246	0.19	1.13	0.98	1.57	2.66	0.00	0.00	0.82	0.13	0.35
SC	5	1372	1.00	246	0.08	0.85	-1.33	0.72	-1.97	0.00	0.60	1.15	0.58	0.71
SC	5	1344	-0.30	246	0.14	1.13	2.81	1.15	2.62	0.00	0.18	0.47	0.44	0.50
SC	5	1373	-0.24	246	0.14	1.13	2.67	1.14	2.40	0.00	0.19	0.50	0.43	0.49
SC	5	1324	0.81	246	0.16	1.03	0.38	0.98	-0.11	0.00	0.27	0.97	0.23	0.41
SC	5	1366	0.86	246	0.16	1.08	0.89	1.26	1.93	0.00	0.17	0.86	0.22	0.41
SC	5	1358	0.27	246	0.14	1.12	1.98	1.18	2.07	0.00	0.17	0.68	0.33	0.47
SC	5	1349	0.97	246	0.17	0.97	-0.27	0.93	-0.50	0.00	0.32	1.04	0.20	0.38
SC	5	1359	0.44	246	0.15	0.98	-0.27	0.97	-0.33	0.00	0.34	1.04	0.29	0.43
SC	5	1328	-0.80	246	0.14	0.95	-1.19	0.96	-0.65	0.00	0.40	1.19	0.55	0.45
SC	5	1370	-0.07	246	0.14	0.97	-0.62	0.94	-0.90	0.00	0.38	1.12	0.39	0.45
SC	5	1361	0.20	246	0.14	1.07	1.17	1.07	0.89	0.00	0.25	0.83	0.34	0.46
SC	5	1331	0.33	246	0.08	0.84	-2.05	0.80	-2.18	0.00	0.63	1.22	0.89	0.74
SC	5	1348	0.69	246	0.16	1.27	3.23	1.75	5.58	0.00	-0.12	0.43	0.25	0.46
SC	5	1994	-1.21	246	0.14	1.06	1.20	1.07	0.96	0.00	0.26	0.81	0.64	0.47
SC	5	1533	0.34	246	0.10	0.82	-2.33	0.75	-2.70	0.00	0.60	1.29	0.58	0.58
SC	5	1326	0.39	246	0.15	1.10	1.61	1.16	1.73	0.00	0.18	0.75	0.30	0.46
SC	5	1325	-0.51	246	0.14	1.01	0.33	1.02	0.44	0.00	0.33	0.93	0.49	0.47
SC	5	1332	-0.13	246	0.14	1.01	0.20	1.02	0.27	0.00	0.33	0.96	0.41	0.46
SC	5	1368	1.44	246	0.19	0.98	-0.13	0.98	-0.06	0.00	0.27	1.02	0.14	0.33
SC	5	1347	-0.64	246	0.14	1.14	3.17	1.16	2.88	0.00	0.17	0.38	0.52	0.50

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
SC	5	1991	-0.71	246	0.14	0.95	-1.21	0.94	-1.16	0.00	0.41	1.23	0.53	0.46
SC	5	1540	1.06	246	0.17	1.07	0.73	1.25	1.69	0.00	0.15	0.88	0.19	0.39
SC	5	1362	-0.86	246	0.14	0.89	-2.49	0.88	-2.24	0.00	0.48	1.44	0.57	0.44
SC	5	1992	-1.67	246	0.15	0.93	-1.01	0.91	-0.85	0.00	0.40	1.13	0.73	0.41
SC	5	1318	1.08	246	0.17	0.86	-1.42	0.71	-2.22	0.00	0.47	1.19	0.19	0.35
SC	5	1536	0.80	246	0.11	0.96	-0.29	0.83	-0.91	0.00	0.45	1.05	0.33	0.57
SC	5	1998	-0.54	246	0.14	0.83	-4.17	0.80	-4.16	0.00	0.56	1.76	0.50	0.43
SC	5	1980	0.39	246	0.06	1.08	0.81	0.76	-1.19	0.00	0.60	1.01	0.84	1.05
SC	5	1321	-1.21	246	0.14	0.97	-0.61	0.93	-0.98	0.00	0.38	1.12	0.64	0.44
SC	5	1330	0.08	246	0.14	1.05	0.94	1.03	0.51	0.00	0.28	0.87	0.36	0.46
SC	5	1356	-0.87	246	0.09	0.84	-2.35	0.84	-2.19	0.00	0.59	1.36	1.14	0.62
SC	5	1996	-0.92	246	0.14	0.93	-1.47	0.92	-1.37	0.00	0.43	1.26	0.58	0.45
SC	5	1995	0.27	246	0.14	1.09	1.53	1.10	1.20	0.00	0.22	0.78	0.33	0.46
SC	5	1329	0.31	246	0.15	0.99	-0.20	0.99	-0.14	0.00	0.34	1.03	0.32	0.44
SC	5	1979	-0.03	246	0.06	0.81	-2.24	0.72	-2.43	0.00	0.73	1.18	1.39	0.98
SC	5	1322	-1.60	246	0.15	0.81	-3.04	0.76	-2.76	0.00	0.55	1.39	0.72	0.38
SC	5	1999	-0.15	246	0.14	1.14	2.82	1.20	3.09	0.00	0.16	0.46	0.41	0.49
SC	5	1367	-0.47	246	0.14	1.09	2.01	1.09	1.61	0.00	0.24	0.63	0.48	0.49
SC	5	1336	-0.23	246	0.14	0.94	-1.29	0.96	-0.62	0.00	0.41	1.20	0.43	0.45
SC	5	1534	1.27	246	0.13	0.81	-2.07	0.73	-2.66	0.00	0.57	1.24	0.37	0.46
SC	5	1323	-0.86	246	0.14	1.01	0.32	0.99	-0.08	0.00	0.33	0.97	0.57	0.47
SC	5	1364	0.08	246	0.14	0.99	-0.13	0.96	-0.56	0.00	0.35	1.04	0.36	0.45
SC	5	1997	-0.86	246	0.14	0.88	-2.81	0.86	-2.56	0.00	0.50	1.49	0.57	0.44
SC	5	1993	-1.33	246	0.14	0.83	-3.21	0.77	-3.14	0.00	0.55	1.47	0.66	0.41
SC	5	1315	0.88	246	0.08	0.93	-0.61	0.81	-1.35	0.00	0.58	1.11	0.65	0.78
SC	5	1317	-0.67	246	0.14	1.13	2.89	1.15	2.66	0.00	0.19	0.44	0.52	0.50
SC	5	1542	0.12	246	0.14	1.24	4.06	1.34	4.26	0.00	0.02	0.28	0.35	0.50
SC	5	1333	0.00	246	0.14	1.07	1.38	1.18	2.54	0.00	0.22	0.70	0.38	0.47
SC	5	1351	0.42	246	0.15	0.92	-1.24	0.96	-0.43	0.00	0.40	1.15	0.30	0.41
SC	5	1535	-1.01	246	0.14	0.92	-1.71	0.88	-1.99	0.00	0.45	1.31	0.60	0.44
SC	5	1337	0.46	246	0.15	1.13	1.97	1.28	2.81	0.00	0.12	0.67	0.29	0.46
SC	5	1338	-0.19	246	0.14	1.20	4.01	1.28	4.38	0.00	0.08	0.20	0.42	0.51
SC	5	1339	0.35	246	0.15	1.06	0.93	1.09	1.01	0.00	0.24	0.86	0.31	0.45
SC	5	1537	-0.49	246	0.14	0.91	-2.23	0.89	-2.20	0.00	0.47	1.42	0.48	0.45
SC	8	983	2.06	168	0.44	0.73	-0.63	0.50	-0.97	0.32	0.17	1.11	0.02	0.15
SC	8	962	-1.95	168	0.17	0.87	-2.47	0.84	-2.49	-0.11	0.48	1.55	0.60	0.44
SC	8	952	-0.76	168	0.17	1.35	4.34	1.43	3.95	-0.63	0.18	0.14	0.46	0.51

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
SC	8	951	0.19	168	0.22	0.55	-4.00	0.50	-3.25	1.11	0.19	1.43	0.07	0.27
SC	8	977	-1.13	168	0.17	0.95	-0.90	0.97	-0.42	0.22	0.34	1.17	0.35	0.45
SC	8	1109	-1.13	168	0.17	1.10	1.60	1.09	1.18	-0.22	0.27	0.67	0.45	0.48
SC	8	956	-1.20	168	0.17	1.07	1.26	1.09	1.33	-0.31	0.31	0.71	0.48	0.48
SC	8	959	3.10	168	0.71	1.00	0.23	1.03	0.32	0.00	0.08	1.00	0.01	0.11
SC	8	955	0.68	168	0.25	0.71	-1.75	0.69	-1.27	0.52	0.17	1.19	0.07	0.26
SC	8	1238	-0.34	168	0.19	0.93	-0.77	0.94	-0.38	0.53	0.08	1.10	0.17	0.39
SC	8	1205	-0.57	168	0.18	1.19	2.20	1.22	1.87	0.00	0.07	0.63	0.29	0.47
SC	8	1257	-1.88	168	0.16	1.09	1.61	1.11	1.63	0.64	0.33	0.61	0.42	0.49
SC	8	932	0.77	168	0.26	2.11	4.54	2.12	3.29	-1.09	0.41	0.32	0.25	0.43
SC	8	1111	0.07	168	0.21	0.52	-4.72	0.43	-4.12	1.05	0.34	1.52	0.08	0.27
SC	8	1260	0.38	168	0.23	0.98	-0.09	0.86	-0.60	-0.04	0.34	1.04	0.15	0.34
SC	8	1265	-0.64	168	0.18	1.12	1.45	1.18	1.60	0.01	0.15	0.73	0.30	0.46
SC	8	953	-0.60	168	0.18	1.01	0.10	1.05	0.46	0.27	0.16	0.97	0.24	0.43
SC	8	954	-0.47	168	0.18	1.10	1.16	1.20	1.61	-0.31	0.33	0.78	0.33	0.44
SC	8	942	-1.88	168	0.16	1.11	1.98	1.14	2.05	0.37	0.25	0.51	0.48	0.49
SC	8	936	-0.76	168	0.17	0.91	-1.31	0.87	-1.40	0.13	0.39	1.24	0.30	0.42
SC	8	964	0.38	168	0.23	0.76	-1.72	0.63	-1.94	0.42	0.26	1.22	0.10	0.30
SC	8	937	-0.69	168	0.08	0.82	-1.71	0.77	-1.62	0.05	0.68	1.04	1.10	0.91
SC	8	971	3.49	167	0.87	4.44	2.57	5.51	2.66	-1.52	0.03	0.16	0.04	0.19
SC	8	972	1.63	167	0.37	8.78	9.91	9.90	9.01	-2.77	0.16	-2.38	0.44	0.63
SC	8	1258	0.53	167	0.24	0.64	-2.48	0.41	-3.19	0.34	0.48	1.31	0.10	0.26
SC	8	947	0.07	167	0.21	1.06	0.52	1.13	0.75	0.07	0.13	0.92	0.17	0.38
SC	8	1114	-0.37	167	0.10	1.28	1.98	1.45	1.85	-0.35	0.56	0.54	0.77	0.87
SC	8	984	1.47	166	0.34	1.20	0.74	1.16	0.51	-0.19	0.15	0.91	0.07	0.25
SC	8	948	0.02	165	0.21	1.29	2.27	1.29	1.65	-0.40	0.26	0.68	0.25	0.43
SC	8	950	-0.91	165	0.17	0.97	-0.40	0.97	-0.32	0.09	0.32	1.08	0.33	0.45
SC	8	961	2.36	165	0.51	1.01	0.18	0.94	0.10	0.00	0.09	0.99	0.02	0.15
SC	8	987	0.07	165	0.21	0.62	-3.50	0.47	-3.77	0.58	0.44	1.43	0.12	0.29
SC	8	970	-1.41	165	0.17	1.21	3.86	1.24	3.50	0.88	-0.04	0.03	0.28	0.52
SC	8	985	-1.61	165	0.16	1.01	0.14	1.00	-0.06	-0.13	0.32	0.98	0.53	0.47
SC	8	949	-1.24	165	0.17	1.13	2.30	1.16	2.19	0.30	0.10	0.46	0.36	0.50
SC	8	981	-0.34	165	0.19	1.07	0.78	1.29	2.06	-0.09	0.22	0.83	0.26	0.43
SC	8	946	-1.17	165	0.17	0.91	-1.59	0.90	-1.46	-0.38	0.53	1.34	0.49	0.44
SC	8	944	0.25	165	0.22	0.66	-2.78	0.53	-2.87	0.53	0.36	1.34	0.10	0.29
SC	8	978	1.47	165	0.34	0.71	-1.02	0.38	-1.94	0.30	0.31	1.16	0.04	0.19
SC	8	945	-0.08	165	0.10	0.70	-2.01	0.56	-2.19	0.10	0.57	1.15	0.42	0.63
SC	8	1266	-0.76	165	0.18	1.13	1.77	1.25	2.46	-0.23	0.23	0.63	0.37	0.47

subject	grade	item	measure	count	modlse	in_msq	in_zstd	out_msq	out_zstd	displace	ptma	discrim	pvalue	rmsr
SC	8	986	0.60	165	0.25	1.07	0.47	0.97	-0.06	-0.13	0.28	0.96	0.13	0.33
SC	8	967	0.68	165	0.25	1.30	1.57	1.30	1.16	-0.36	0.24	0.80	0.15	0.35
SC	8	969	-0.51	165	0.18	1.17	1.90	1.20	1.62	-0.42	0.33	0.68	0.36	0.46
SC	8	980	2.36	165	0.51	1.96	1.76	1.82	1.27	-0.72	0.18	0.72	0.05	0.21
SC	8	1267	-1.09	165	0.17	0.99	-0.21	1.01	0.22	0.18	0.28	1.02	0.35	0.46
SC	8	965	-0.76	165	0.18	0.88	-1.68	0.82	-2.00	-0.02	0.49	1.32	0.33	0.42
SC	8	960	0.13	165	0.21	1.12	0.91	1.10	0.61	-0.26	0.33	0.88	0.21	0.39
SC	8	958	1.32	165	0.32	0.83	-0.59	0.93	-0.08	0.18	0.20	1.08	0.05	0.22
SC	8	938	-0.60	165	0.18	0.81	-2.53	0.72	-2.82	0.35	0.42	1.43	0.23	0.39
SC	8	979	0.86	165	0.27	0.73	-1.43	0.62	-1.46	0.32	0.29	1.18	0.07	0.25
SC	8	939	-0.64	165	0.18	0.78	-2.94	0.73	-2.78	0.04	0.57	1.47	0.29	0.38
SC	8	974	0.77	165	0.26	0.64	-2.06	0.50	-2.22	0.61	0.22	1.24	0.06	0.24
SC	8	1056	0.96	165	0.28	0.59	-2.16	0.57	-1.62	0.81	0.07	1.22	0.04	0.21
SC	8	1110	1.50	165	0.35	0.94	-0.12	0.63	-0.93	0.00	0.29	1.06	0.05	0.22
SC	8	1263	0.07	165	0.21	1.20	1.55	1.34	1.81	-0.27	0.23	0.77	0.22	0.41
SC	8	975	0.77	165	0.26	0.81	-0.99	0.85	-0.51	0.32	0.15	1.11	0.08	0.27
SC	8	1054	-1.51	165	0.17	1.00	-0.03	0.99	-0.11	0.51	0.32	1.02	0.37	0.47

Appendix H: Standard Error Statistics

This appendix contains the details of the Score File from Winsteps.

Performance levels are indicated by increasing shading in the tables.

Appendix Table H.1: 2022 Grade 3 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	225	94	0.3	-25	186	0	0.0	0	0.0	0
1	288	52	0.97	100	103	0	0.0	0	0.0	0
2	325	37	1.87	174	74	0	0.0	0	0.0	0
3	347	31	2.73	219	61	0	0.0	0	0.0	0
4	364	27	3.55	251	54	0	0.0	0	0.0	0
5	377	24	4.33	277	49	0	0.0	0	0.0	0
6	388	23	5.07	299	45	2	0.6	2	0.6	0
7	397	21	5.78	317	42	7	2.3	9	2.9	2
8	405	20	6.46	334	40	7	2.3	16	5.1	4
9	413	19	7.1	349	38	10	3.2	26	8.4	7
10	420	18	7.71	362	37	5	1.6	31	10.0	9
11	426	18	8.28	375	35	9	2.9	40	12.9	11
12	432	17	8.81	387	34	10	3.2	50	16.1	14
13	438	17	9.3	398	33	7	2.3	57	18.3	17
14	443	16	9.75	409	32	7	2.3	64	20.6	19
15	448	16	10.17	419	32	3	1.0	67	21.5	21
16	453	16	10.56	429	31	10	3.2	77	24.8	23
17	458	15	10.91	438	31	15	4.8	92	29.6	27
18	462	15	11.23	447	30	8	2.6	100	32.2	31
19	467	15	11.53	456	30	10	3.2	110	35.4	34
20	471	15	11.8	465	30	12	3.9	122	39.2	37
21	475	15	12.05	474	29	11	3.5	133	42.8	41
22	480	15	12.28	482	29	15	4.8	148	47.6	45
23	484	14	12.49	490	29	10	3.2	158	50.8	49
24	488	14	12.68	498	28	7	2.3	165	53.1	52
25	492	14	12.86	506	28	3	1.0	168	54.0	54
26	496	14	13.02	514	28	12	3.9	180	57.9	56
27	500	14	13.16	522	28	5	1.6	185	59.5	59
28	504	14	13.28	529	28	13	4.2	198	63.7	62
29	507	14	13.39	537	28	10	3.2	208	66.9	65
30	511	14	13.48	545	28	10	3.2	218	70.1	68
31	515	14	13.55	552	28	11	3.5	229	73.6	72
32	519	14	13.6	560	28	5	1.6	234	75.2	74
33	522	14	13.64	567	27	8	2.6	242	77.8	77
34	526	14	13.65	574	27	5	1.6	247	79.4	79
35	530	14	13.64	582	27	5	1.6	252	81.0	80
36	534	14	13.61	589	27	7	2.3	259	83.3	82
37	537	14	13.56	597	28	0	0.0	259	83.3	83
38	541	14	13.49	604	28	1	0.3	260	83.6	83
39	545	14	13.39	612	28	5	1.6	265	85.2	84
40	549	14	13.27	619	28	5	1.6	270	86.8	86
41	553	14	13.12	627	28	11	3.5	281	90.4	89
42	556	14	12.95	635	28	5	1.6	286	92.0	91
43	560	14	12.75	643	28	3	1.0	289	92.9	92
44	564	14	12.51	651	29	2	0.6	291	93.6	93
45	569	15	12.25	659	29	1	0.3	292	93.9	94
46	573	15	11.96	667	29	1	0.3	293	94.2	94
47	577	15	11.64	676	30	4	1.3	297	95.5	95

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
48	582	15	11.28	685	30	3	1.0	300	96.5	96
49	586	15	10.9	694	31	0	0.0	300	96.5	96
50	591	16	10.49	703	31	1	0.3	301	96.8	97
51	596	16	10.04	713	32	3	1.0	304	97.7	97
52	601	16	9.57	724	33	2	0.6	306	98.4	98
53	607	17	9.07	735	34	0	0.0	306	98.4	98
54	612	17	8.55	746	35	1	0.3	307	98.7	99
55	619	18	8	758	36	1	0.3	308	99.0	99
56	625	19	7.42	772	37	2	0.6	310	99.7	99
57	632	20	6.82	786	39	1	0.3	311	100.0	99
58	640	20	6.19	801	41	0	0.0	311	100.0	100
59	649	22	5.54	819	43	0	0.0	311	100.0	100
60	659	23	4.86	838	46	0	0.0	311	100.0	100
61	670	25	4.15	861	50	0	0.0	311	100.0	100
62	683	28	3.41	888	55	0	0.0	311	100.0	100
63	700	31	2.64	921	62	0	0.0	311	100.0	100
64	723	38	1.82	967	75	0	0.0	311	100.0	100
65	761	52	0.95	1043	104	0	0.0	311	100.0	100
66	825	94	0.29	1169	187	0	0.0	311	100.0	100

Appendix Table H.2: 2022 Grade 4 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	187	104	0.30	-102	202	0	0.0	0	0.0	0
1	256	57	0.96	33	112	0	0.0	0	0.0	0
2	297	41	1.86	113	81	0	0.0	0	0.0	0
3	322	34	2.70	162	67	0	0.0	0	0.0	0
4	341	30	3.49	198	59	0	0.0	0	0.0	0
5	355	27	4.22	227	54	1	0.4	1	0.4	0
6	368	25	4.91	251	50	2	0.7	3	1.1	1
7	378	24	5.57	272	47	0	0.0	3	1.1	1
8	388	23	6.18	290	44	3	1.1	6	2.1	2
9	397	22	6.77	307	42	3	1.1	9	3.2	3
10	405	21	7.32	323	41	2	0.7	11	3.9	4
11	412	20	7.84	338	39	7	2.5	18	6.4	5
12	419	20	8.33	351	38	6	2.1	24	8.5	7
13	426	19	8.79	364	37	1	0.4	25	8.9	9
14	432	19	9.24	376	36	9	3.2	34	12.1	10
15	438	18	9.65	388	35	4	1.4	38	13.5	13
16	444	18	10.05	399	35	4	1.4	42	14.9	14
17	449	17	10.43	410	34	11	3.9	53	18.8	17
18	455	17	10.78	420	34	5	1.8	58	20.6	20
19	460	17	11.12	430	33	9	3.2	67	23.8	22
20	465	17	11.43	440	33	9	3.2	76	27.0	25
21	470	16	11.73	449	32	13	4.6	89	31.6	29
22	474	16	12.01	459	32	8	2.8	97	34.4	33
23	479	16	12.27	468	31	15	5.3	112	39.7	37
24	484	16	12.52	477	31	15	5.3	127	45.0	42
25	488	16	12.74	485	31	11	3.9	138	48.9	47
26	493	16	12.96	494	31	9	3.2	147	52.1	51
27	497	16	13.15	502	30	10	3.5	157	55.7	54
28	501	15	13.32	511	30	4	1.4	161	57.1	56
29	505	15	13.48	519	30	11	3.9	172	61.0	59
30	509	15	13.62	527	30	10	3.5	182	64.5	63
31	514	15	13.75	535	30	6	2.1	188	66.7	66
32	518	15	13.85	543	30	8	2.8	196	69.5	68
33	522	15	13.93	551	29	9	3.2	205	72.7	71

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
34	526	15	13.99	559	29	6	2.1	211	74.8	74
35	530	15	14.03	567	29	4	1.4	215	76.2	76
36	534	15	14.05	575	29	4	1.4	219	77.7	77
37	538	15	14.04	582	29	6	2.1	225	79.8	79
38	542	15	14.01	590	29	8	2.8	233	82.6	81
39	546	15	13.95	598	29	6	2.1	239	84.8	84
40	550	15	13.86	606	30	2	0.7	241	85.5	85
41	554	15	13.74	614	30	5	1.8	246	87.2	86
42	558	15	13.60	622	30	6	2.1	252	89.4	88
43	562	15	13.42	630	30	4	1.4	256	90.8	90
44	567	16	13.21	638	30	3	1.1	259	91.8	91
45	571	16	12.97	647	31	1	0.4	260	92.2	92
46	575	16	12.70	655	31	1	0.4	261	92.6	92
47	580	16	12.38	664	31	2	0.7	263	93.3	93
48	584	16	12.04	673	32	3	1.1	266	94.3	94
49	589	17	11.65	682	32	4	1.4	270	95.7	95
50	594	17	11.23	692	33	5	1.8	275	97.5	97
51	599	17	10.77	702	34	2	0.7	277	98.2	98
52	605	18	10.27	713	34	1	0.4	278	98.6	98
53	610	18	9.73	724	35	0	0.0	278	98.6	99
54	616	19	9.16	735	36	1	0.4	279	98.9	99
55	623	19	8.55	748	38	2	0.7	281	99.6	99
56	630	20	7.90	761	39	0	0.0	281	99.6	99
57	637	21	7.22	776	41	0	0.0	281	99.6	99
58	645	22	6.51	792	43	1	0.4	282	100.0	99
59	654	23	5.77	810	46	0	0.0	282	100.0	100
60	665	25	5.01	830	49	0	0.0	282	100.0	100
61	677	27	4.22	854	54	0	0.0	282	100.0	100
62	692	31	3.41	883	60	0	0.0	282	100.0	100
63	711	35	2.59	920	68	0	0.0	282	100.0	100
64	737	42	1.77	971	83	0	0.0	282	100.0	100
65	781	59	0.92	1055	115	0	0.0	282	100.0	100
66	852	105	0.29	1195	204	0	0.0	282	100.0	100

Appendix Table H.3: 2022 Grade 5 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	212	97	0.30	-45	188	0	0.0	0	0.0	0
1	277	54	0.95	81	105	0	0.0	0	0.0	0
2	316	39	1.83	157	76	0	0.0	0	0.0	0
3	340	32	2.65	203	63	0	0.0	0	0.0	0
4	358	28	3.43	237	55	0	0.0	0	0.0	0
5	371	26	4.19	264	50	0	0.0	0	0.0	0
6	383	24	4.91	287	46	2	0.8	2	0.8	0
7	393	22	5.61	306	43	3	1.2	5	2.0	1
8	402	21	6.29	323	41	5	2.0	10	4.1	3
9	410	20	6.94	339	39	6	2.4	16	6.5	5
10	417	19	7.56	353	37	3	1.2	19	7.8	7
11	424	18	8.15	366	36	6	2.4	25	10.2	9
12	430	18	8.71	378	35	5	2.0	30	12.2	11
13	436	17	9.24	389	34	5	2.0	35	14.3	13
14	442	17	9.75	400	33	10	4.1	45	18.4	16
15	447	16	10.23	410	32	5	2.0	50	20.4	19
16	452	16	10.68	420	31	13	5.3	63	25.7	23

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
17	457	16	11.11	429	31	6	2.4	69	28.2	27
18	461	16	11.51	438	30	11	4.5	80	32.7	30
19	466	15	11.90	447	30	4	1.6	84	34.3	33
20	470	15	12.26	456	29	5	2.0	89	36.3	35
21	475	15	12.61	464	29	6	2.4	95	38.8	38
22	479	15	12.94	472	28	8	3.3	103	42.0	40
23	483	14	13.25	480	28	3	1.2	106	43.3	43
24	487	14	13.54	487	28	7	2.9	113	46.1	45
25	490	14	13.81	495	27	5	2.0	118	48.2	47
26	494	14	14.06	502	27	9	3.7	127	51.8	50
27	498	14	14.30	509	27	7	2.9	134	54.7	53
28	502	14	14.51	516	27	11	4.5	145	59.2	57
29	505	14	14.69	523	27	7	2.9	152	62.0	61
30	509	14	14.85	530	27	6	2.4	158	64.5	63
31	512	14	14.99	537	26	4	1.6	162	66.1	65
32	516	14	15.09	544	26	3	1.2	165	67.3	67
33	519	14	15.16	551	26	11	4.5	176	71.8	70
34	523	14	15.20	557	26	8	3.3	184	75.1	73
35	526	14	15.20	564	26	4	1.6	188	76.7	76
36	530	14	15.17	571	26	6	2.4	194	79.2	78
37	533	14	15.10	578	26	6	2.4	200	81.6	80
38	537	14	14.99	584	26	3	1.2	203	82.9	82
39	540	14	14.85	591	27	1	0.4	204	83.3	83
40	544	14	14.67	598	27	3	1.2	207	84.5	84
41	547	14	14.46	605	27	1	0.4	208	84.9	85
42	551	14	14.22	612	27	2	0.8	210	85.7	85
43	555	14	13.94	620	27	1	0.4	211	86.1	86
44	559	14	13.64	627	28	5	2.0	216	88.2	87
45	563	14	13.31	635	28	2	0.8	218	89.0	89
46	567	15	12.97	642	28	2	0.8	220	89.8	89
47	571	15	12.60	650	29	4	1.6	224	91.4	91
48	575	15	12.21	659	29	3	1.2	227	92.7	92
49	579	15	11.81	667	30	5	2.0	232	94.7	94
50	584	16	11.39	676	30	3	1.2	235	95.9	95
51	589	16	10.95	685	31	1	0.4	236	96.3	96
52	594	16	10.50	695	32	2	0.8	238	97.1	97
53	599	17	10.04	704	32	1	0.4	239	97.6	97
54	604	17	9.55	715	33	2	0.8	241	98.4	98
55	610	18	9.05	726	34	2	0.8	243	99.2	99
56	616	18	8.53	738	35	1	0.4	244	99.6	99
57	622	19	7.99	750	36	1	0.4	245	100.0	99
58	629	19	7.42	763	37	0	0.0	245	100.0	100
59	636	20	6.83	777	39	0	0.0	245	100.0	100
60	645	21	6.21	793	41	0	0.0	245	100.0	100
61	653	22	5.56	811	43	0	0.0	245	100.0	100
62	664	24	4.88	830	46	0	0.0	245	100.0	100
63	675	26	4.17	853	50	0	0.0	245	100.0	100
64	689	29	3.42	880	55	0	0.0	245	100.0	100
65	707	32	2.64	914	63	0	0.0	245	100.0	100
66	731	39	1.82	960	76	0	0.0	245	100.0	100

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
67	770	54	0.95	1036	105	0	0.0	245	100.0	100
68	836	97	0.29	1163	188	0	0.0	245	100.0	100

Appendix Table H.4: 2022 Grade 6 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	210	103	0.30	-71	208	0	0.0	0	0.0	0
1	278	57	0.97	68	115	0	0.0	0	0.0	0
2	319	41	1.90	149	82	0	0.0	0	0.0	0
3	343	34	2.79	198	68	1	0.4	1	0.4	0
4	361	29	3.65	234	59	1	0.4	2	0.8	1
5	374	27	4.48	262	54	0	0.0	2	0.8	1
6	386	24	5.28	285	49	5	2.0	7	2.8	2
7	396	23	6.06	305	46	0	0.0	7	2.8	3
8	404	21	6.81	323	43	4	1.6	11	4.4	4
9	412	20	7.54	338	41	7	2.8	18	7.2	6
10	419	20	8.24	353	40	4	1.6	22	8.8	8
11	426	19	8.92	366	38	6	2.4	28	11.2	10
12	432	18	9.57	378	37	4	1.6	32	12.7	12
13	438	18	10.19	390	36	6	2.4	38	15.1	14
14	443	17	10.79	401	35	8	3.2	46	18.3	17
15	448	17	11.36	411	34	3	1.2	49	19.5	19
16	453	16	11.90	421	33	6	2.4	55	21.9	21
17	458	16	12.41	430	32	8	3.2	63	25.1	24
18	462	16	12.90	439	32	11	4.4	74	29.5	27
19	466	15	13.35	447	31	3	1.2	77	30.7	30
20	470	15	13.78	456	31	10	4.0	87	34.7	33
21	474	15	14.18	464	30	6	2.4	93	37.1	36
22	478	15	14.54	472	30	8	3.2	101	40.2	39
23	482	15	14.88	480	29	8	3.2	109	43.4	42
24	486	14	15.18	487	29	8	3.2	117	46.6	45
25	490	14	15.45	495	29	11	4.4	128	51.0	49
26	493	14	15.70	502	29	6	2.4	134	53.4	52
27	497	14	15.91	509	28	5	2.0	139	55.4	54
28	500	14	16.09	516	28	3	1.2	142	56.6	56
29	504	14	16.24	523	28	6	2.4	148	59.0	58
30	507	14	16.36	530	28	4	1.6	152	60.6	60
31	510	14	16.45	537	28	8	3.2	160	63.7	62
32	514	14	16.51	544	28	5	2.0	165	65.7	65
33	517	14	16.54	551	28	5	2.0	170	67.7	67
34	521	14	16.55	558	28	5	2.0	175	69.7	69
35	524	14	16.53	564	28	6	2.4	181	72.1	71
36	527	14	16.48	571	28	7	2.8	188	74.9	74
37	531	14	16.40	578	28	8	3.2	196	78.1	76
38	534	14	16.30	585	28	9	3.6	205	81.7	80
39	538	14	16.17	592	28	2	0.8	207	82.5	82
40	541	14	16.01	599	28	7	2.8	214	85.3	84
41	545	14	15.83	606	29	5	2.0	219	87.3	86
42	548	14	15.62	614	29	4	1.6	223	88.8	88
43	552	14	15.39	621	29	5	2.0	228	90.8	90
44	556	14	15.13	628	29	2	0.8	230	91.6	91
45	559	15	14.85	636	29	1	0.4	231	92.0	92
46	563	15	14.54	644	30	2	0.8	233	92.8	92
47	567	15	14.21	651	30	3	1.2	236	94.0	93
48	571	15	13.86	660	30	3	1.2	239	95.2	95
49	575	15	13.49	668	31	2	0.8	241	96.0	96
50	579	16	13.09	676	31	3	1.2	244	97.2	97

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
51	584	16	12.68	685	32	1	0.4	245	97.6	97
52	588	16	12.26	694	32	1	0.4	246	98.0	98
53	593	16	11.82	704	33	2	0.8	248	98.8	98
54	598	17	11.36	714	34	0	0.0	248	98.8	99
55	603	17	10.90	724	34	0	0.0	248	98.8	99
56	608	17	10.42	734	35	2	0.8	250	99.6	99
57	614	18	9.93	745	36	1	0.4	251	100.0	99
58	619	18	9.44	757	37	0	0.0	251	100.0	100
59	625	19	8.93	770	38	0	0.0	251	100.0	100
60	632	19	8.42	783	39	0	0.0	251	100.0	100
61	639	20	7.89	797	40	0	0.0	251	100.0	100
62	646	21	7.36	811	42	0	0.0	251	100.0	100
63	654	21	6.82	827	43	0	0.0	251	100.0	100
64	663	22	6.27	845	45	0	0.0	251	100.0	100
65	672	23	5.70	864	48	0	0.0	251	100.0	100
66	682	25	5.12	885	50	0	0.0	251	100.0	100
67	694	26	4.52	908	53	0	0.0	251	100.0	100
68	707	28	3.90	935	57	0	0.0	251	100.0	100
69	723	31	3.24	967	63	0	0.0	251	100.0	100
70	743	35	2.53	1007	71	0	0.0	251	100.0	100
71	769	42	1.77	1060	85	0	0.0	251	100.0	100
72	811	58	0.94	1146	117	0	0.0	251	100.0	100
73	882	103	0.29	1288	209	0	0.0	251	100.0	100

Appendix Table H.5: 2022 Grade 7 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	196	111	0.30	-51	198	0	0.0	0	0.0	0
1	271	62	0.96	82	110	0	0.0	0	0.0	0
2	315	44	1.87	161	79	0	0.0	0	0.0	0
3	341	37	2.73	208	65	0	0.0	0	0.0	0
4	361	32	3.56	243	57	1	0.7	1	0.7	0
5	376	29	4.36	270	52	1	0.7	2	1.4	1
6	389	27	5.13	293	48	1	0.7	3	2.0	2
7	400	25	5.86	312	45	1	0.7	4	2.7	2
8	410	24	6.55	330	42	3	2.0	7	4.8	4
9	418	23	7.20	346	40	3	2.0	10	6.8	6
10	426	22	7.81	360	39	4	2.7	14	9.5	8
11	434	21	8.37	373	37	1	0.7	15	10.2	10
12	441	20	8.91	386	36	7	4.8	22	15.0	13
13	448	20	9.41	398	35	6	4.1	28	19.0	17
14	454	19	9.89	409	34	1	0.7	29	19.7	19
15	460	19	10.35	419	34	7	4.8	36	24.5	22
16	466	18	10.79	430	33	2	1.4	38	25.9	25
17	471	18	11.22	439	32	9	6.1	47	32.0	29
18	476	18	11.63	449	32	2	1.4	49	33.3	33
19	481	17	12.02	458	31	2	1.4	51	34.7	34
20	486	17	12.40	467	31	5	3.4	56	38.1	36
21	491	17	12.77	475	30	6	4.1	62	42.2	40
22	496	17	13.12	484	30	5	3.4	67	45.6	44
23	500	17	13.46	492	29	4	2.7	71	48.3	47
24	505	16	13.77	500	29	3	2.0	74	50.3	49
25	509	16	14.07	508	29	4	2.7	78	53.1	52

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
26	514	16	14.35	515	29	5	3.4	83	56.5	55
27	518	16	14.61	523	28	7	4.8	90	61.2	59
28	522	16	14.86	530	28	3	2.0	93	63.3	62
29	526	16	15.08	537	28	5	3.4	98	66.7	65
30	530	15	15.28	544	28	2	1.4	100	68.0	67
31	534	15	15.47	551	27	5	3.4	105	71.4	70
32	538	15	15.64	558	27	2	1.4	107	72.8	72
33	542	15	15.79	565	27	4	2.7	111	75.5	74
34	545	15	15.92	572	27	5	3.4	116	78.9	77
35	549	15	16.04	579	27	2	1.4	118	80.3	80
36	553	15	16.14	585	27	2	1.4	120	81.6	81
37	557	15	16.22	592	27	2	1.4	122	83.0	82
38	560	15	16.29	599	27	1	0.7	123	83.7	83
39	564	15	16.35	605	27	2	1.4	125	85.0	84
40	568	15	16.39	612	27	3	2.0	128	87.1	86
41	571	15	16.42	619	27	3	2.0	131	89.1	88
42	575	15	16.44	625	27	1	0.7	132	89.8	89
43	579	15	16.44	632	27	2	1.4	134	91.2	90
44	583	15	16.44	638	27	4	2.7	138	93.9	93
45	586	15	16.42	645	27	0	0.0	138	93.9	94
46	590	15	16.39	651	27	0	0.0	138	93.9	94
47	594	15	16.34	658	27	2	1.4	140	95.2	95
48	597	15	16.27	665	27	0	0.0	140	95.2	95
49	601	15	16.19	671	27	0	0.0	140	95.2	95
50	605	15	16.08	678	27	0	0.0	140	95.2	95
51	609	15	15.94	685	27	1	0.7	141	95.9	96
52	612	15	15.77	692	27	0	0.0	141	95.9	96
53	616	15	15.55	698	27	0	0.0	141	95.9	96
54	620	15	15.29	705	28	1	0.7	142	96.6	96
55	624	16	14.97	713	28	0	0.0	142	96.6	97
56	628	16	14.59	720	28	4	2.7	146	99.3	98
57	632	16	14.15	727	29	0	0.0	146	99.3	99
58	637	16	13.65	735	29	0	0.0	146	99.3	99
59	641	17	13.09	743	30	0	0.0	146	99.3	99
60	646	17	12.47	752	31	1	0.7	147	100.0	99
61	651	18	11.82	761	31	0	0.0	147	100.0	100
62	656	18	11.13	770	32	0	0.0	147	100.0	100
63	662	19	10.42	780	33	0	0.0	147	100.0	100
64	668	19	9.70	791	35	0	0.0	147	100.0	100
65	674	20	8.98	802	36	0	0.0	147	100.0	100
66	681	21	8.27	815	38	0	0.0	147	100.0	100
67	689	22	7.57	829	39	0	0.0	147	100.0	100
68	698	23	6.88	843	41	0	0.0	147	100.0	100
69	707	24	6.19	860	43	0	0.0	147	100.0	100
70	717	26	5.51	879	46	0	0.0	147	100.0	100
71	729	28	4.81	899	49	0	0.0	147	100.0	100
72	743	30	4.11	924	53	0	0.0	147	100.0	100
73	759	33	3.38	953	59	0	0.0	147	100.0	100
74	779	37	2.62	989	67	0	0.0	147	100.0	100
75	807	45	1.81	1038	80	0	0.0	147	100.0	100

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
76	852	62	0.95	1119	111	0	0.0	147	100.0	100
77	927	111	0.29	1253	199	0	0.0	147	100.0	100

Appendix Table H.6: 2022 Grade 8 HLA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	199	98	0.29	-104	198	0	0.0	0	0.0	0
1	267	56	0.89	33	112	0	0.0	0	0.0	0
2	310	41	1.65	119	83	0	0.0	0	0.0	0
3	336	34	2.36	172	69	0	0.0	0	0.0	0
4	355	30	3.04	211	61	2	1.2	2	1.2	1
5	371	27	3.69	243	55	0	0.0	2	1.2	1
6	384	25	4.33	270	51	0	0.0	2	1.2	1
7	395	24	4.97	292	48	0	0.0	2	1.2	1
8	405	22	5.59	312	45	2	1.2	4	2.4	2
9	414	21	6.21	330	43	3	1.8	7	4.2	3
10	422	20	6.82	347	41	5	3.0	12	7.2	6
11	430	19	7.42	362	39	4	2.4	16	9.6	8
12	436	19	8.00	375	37	5	3.0	21	12.7	11
13	443	18	8.58	388	36	4	2.4	25	15.1	14
14	449	17	9.13	400	35	2	1.2	27	16.3	16
15	454	17	9.66	412	34	9	5.4	36	21.7	19
16	460	16	10.18	422	33	5	3.0	41	24.7	23
17	465	16	10.67	432	32	4	2.4	45	27.1	26
18	469	16	11.13	442	32	9	5.4	54	32.5	30
19	474	15	11.58	451	31	7	4.2	61	36.7	35
20	478	15	12.00	460	31	3	1.8	64	38.6	38
21	483	15	12.40	469	30	5	3.0	69	41.6	40
22	487	15	12.77	478	30	8	4.8	77	46.4	44
23	491	14	13.13	486	29	5	3.0	82	49.4	48
24	495	14	13.47	494	29	3	1.8	85	51.2	50
25	499	14	13.79	502	29	3	1.8	88	53.0	52
26	503	14	14.09	509	28	2	1.2	90	54.2	54
27	506	14	14.38	517	28	3	1.8	93	56.0	55
28	510	14	14.65	524	28	3	1.8	96	57.8	57
29	513	14	14.91	531	27	2	1.2	98	59.0	58
30	517	13	15.15	538	27	4	2.4	102	61.4	60
31	520	13	15.38	545	27	2	1.2	104	62.7	62
32	524	13	15.60	552	27	5	3.0	109	65.7	64
33	527	13	15.80	559	27	3	1.8	112	67.5	67
34	530	13	15.98	565	27	7	4.2	119	71.7	70
35	534	13	16.15	572	26	3	1.8	122	73.5	73
36	537	13	16.29	579	26	6	3.6	128	77.1	75
37	540	13	16.40	585	26	4	2.4	132	79.5	78
38	543	13	16.47	591	26	5	3.0	137	82.5	81
39	546	13	16.51	598	26	5	3.0	142	85.5	84
40	550	13	16.50	604	26	3	1.8	145	87.3	86
41	553	13	16.45	611	26	0	0.0	145	87.3	87
42	556	13	16.34	617	26	3	1.8	148	89.2	88
43	559	13	16.18	624	26	4	2.4	152	91.6	90
44	562	13	15.96	630	27	3	1.8	155	93.4	92
45	566	13	15.69	637	27	1	0.6	156	94.0	94
46	569	13	15.37	644	27	0	0.0	156	94.0	94
47	573	14	15.00	651	27	0	0.0	156	94.0	94
48	576	14	14.59	658	28	2	1.2	158	95.2	95
49	580	14	14.14	665	28	1	0.6	159	95.8	95

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
50	584	14	13.67	673	29	0	0.0	159	95.8	96
51	587	14	13.17	681	29	2	1.2	161	97.0	96
52	591	15	12.66	689	30	1	0.6	162	97.6	97
53	596	15	12.14	698	30	0	0.0	162	97.6	98
54	600	15	11.61	707	31	1	0.6	163	98.2	98
55	605	16	11.07	716	32	2	1.2	165	99.4	99
56	610	16	10.54	726	33	0	0.0	165	99.4	99
57	615	17	9.99	736	34	1	0.6	166	100.0	99
58	620	17	9.45	747	35	0	0.0	166	100.0	100
59	626	18	8.90	759	36	0	0.0	166	100.0	100
60	632	18	8.34	771	37	0	0.0	166	100.0	100
61	638	19	7.78	784	38	0	0.0	166	100.0	100
62	645	20	7.20	798	40	0	0.0	166	100.0	100
63	653	20	6.62	814	41	0	0.0	166	100.0	100
64	661	21	6.04	830	43	0	0.0	166	100.0	100
65	670	22	5.44	849	45	0	0.0	166	100.0	100
66	681	24	4.84	870	48	0	0.0	166	100.0	100
67	692	25	4.23	893	52	0	0.0	166	100.0	100
68	706	28	3.62	920	56	0	0.0	166	100.0	100
69	721	30	3.00	952	61	0	0.0	166	100.0	100
70	741	34	2.36	992	69	0	0.0	166	100.0	100
71	767	41	1.67	1045	82	0	0.0	166	100.0	100
72	809	55	0.90	1130	112	0	0.0	166	100.0	100
73	876	97	0.29	1265	197	0	0.0	166	100.0	100

Appendix Table H.7: 2022 Grade 3 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	273	73	0.29	-150	208	0	0.0	0	0.0	0
1	323	41	0.91	-7	118	0	0.0	0	0.0	0
2	354	30	1.70	81	86	0	0.0	0	0.0	0
3	374	25	2.41	136	72	0	0.0	0	0.0	0
4	388	23	3.05	178	64	0	0.0	0	0.0	0
5	400	21	3.65	211	59	0	0.0	0	0.0	0
6	410	19	4.20	240	55	0	0.0	0	0.0	0
7	419	18	4.71	265	52	2	0.6	2	0.6	0
8	427	17	5.19	288	49	1	0.3	3	1.0	1
9	434	17	5.64	309	47	2	0.6	5	1.6	1
10	441	16	6.05	328	46	2	0.6	7	2.3	2
11	447	16	6.45	346	44	4	1.3	11	3.6	3
12	453	15	6.81	363	43	11	3.6	22	7.1	5
13	459	15	7.16	379	42	11	3.6	33	10.7	9
14	464	14	7.48	395	41	15	4.9	48	15.5	13
15	469	14	7.77	409	40	14	4.5	62	20.1	18
16	474	14	8.05	424	40	16	5.2	78	25.2	23
17	479	14	8.31	437	39	22	7.1	100	32.4	29
18	484	13	8.54	451	38	17	5.5	117	37.9	35
19	488	13	8.76	464	38	12	3.9	129	41.7	40
20	493	13	8.95	476	38	19	6.1	148	47.9	45
21	497	13	9.13	489	37	11	3.6	159	51.5	50
22	501	13	9.29	501	37	11	3.6	170	55.0	53
23	506	13	9.43	513	37	18	5.8	188	60.8	58
24	510	13	9.55	525	36	21	6.8	209	67.6	64
25	514	13	9.65	537	36	7	2.3	216	69.9	69
26	518	13	9.73	548	36	9	2.9	225	72.8	71
27	522	13	9.79	560	36	10	3.2	235	76.1	74
28	526	13	9.83	571	36	13	4.2	248	80.3	78

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
29	530	13	9.86	583	36	12	3.9	260	84.1	82
30	534	13	9.87	594	36	6	1.9	266	86.1	85
31	538	13	9.86	605	36	3	1.0	269	87.1	87
32	542	13	9.83	617	36	5	1.6	274	88.7	88
33	546	13	9.78	628	36	4	1.3	278	90.0	89
34	550	13	9.72	640	36	3	1.0	281	90.9	90
35	554	13	9.64	651	36	2	0.6	283	91.6	91
36	558	13	9.55	663	36	2	0.6	285	92.2	92
37	562	13	9.43	675	37	3	1.0	288	93.2	93
38	567	13	9.31	687	37	5	1.6	293	94.8	94
39	571	13	9.16	699	37	3	1.0	296	95.8	95
40	575	13	8.99	712	38	2	0.6	298	96.4	96
41	580	13	8.81	724	38	2	0.6	300	97.1	97
42	584	13	8.60	737	38	3	1.0	303	98.1	98
43	589	14	8.36	750	39	3	1.0	306	99.0	99
44	594	14	8.09	764	40	2	0.6	308	99.7	99
45	599	14	7.79	778	40	0	0.0	308	99.7	99
46	604	14	7.46	793	41	0	0.0	308	99.7	99
47	609	15	7.09	809	42	0	0.0	308	99.7	99
48	615	15	6.69	825	43	0	0.0	308	99.7	99
49	621	16	6.27	842	45	0	0.0	308	99.7	99
50	627	16	5.81	861	47	1	0.3	309	100.0	99
51	635	17	5.34	881	49	0	0.0	309	100.0	100
52	642	18	4.82	903	51	0	0.0	309	100.0	100
53	651	19	4.26	928	55	0	0.0	309	100.0	100
54	661	21	3.61	957	59	0	0.0	309	100.0	100
55	673	23	2.85	991	67	0	0.0	309	100.0	100
56	690	28	1.97	1038	80	0	0.0	309	100.0	100
57	717	39	1.00	1117	113	0	0.0	309	100.0	100
58	765	72	0.30	1252	205	0	0.0	309	100.0	100

Appendix Table H.8: 2022 Grade 4 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	161	125	0.30	-172	251	0	0.0	0	0.0	0
1	244	69	0.97	-4	139	0	0.0	0	0.0	0
2	293	50	1.88	95	100	0	0.0	0	0.0	0
3	323	41	2.75	155	83	0	0.0	0	0.0	0
4	345	36	3.56	199	73	0	0.0	0	0.0	0
5	362	33	4.34	234	66	0	0.0	0	0.0	0
6	376	30	5.08	263	61	0	0.0	0	0.0	0
7	389	28	5.78	288	57	0	0.0	0	0.0	0
8	400	27	6.44	311	54	1	0.4	1	0.4	0
9	410	26	7.07	331	52	6	2.1	7	2.5	1
10	419	25	7.66	349	50	7	2.5	14	5.0	4
11	428	24	8.22	367	48	9	3.2	23	8.2	7
12	436	23	8.74	383	46	10	3.6	33	11.7	10
13	444	22	9.23	398	45	15	5.3	48	17.1	14
14	451	22	9.68	413	44	7	2.5	55	19.6	18
15	458	21	10.09	426	43	21	7.5	76	27.0	23
16	464	21	10.47	440	42	16	5.7	92	32.7	30
17	471	21	10.81	453	42	11	3.9	103	36.7	35
18	477	20	11.11	465	41	17	6.0	120	42.7	40
19	483	20	11.38	477	41	17	6.0	137	48.8	46
20	489	20	11.61	489	40	15	5.3	152	54.1	51
21	495	20	11.80	501	40	13	4.6	165	58.7	56
22	500	20	11.97	513	40	10	3.6	175	62.3	60

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
23	506	20	12.09	524	39	10	3.6	185	65.8	64
24	512	19	12.19	535	39	13	4.6	198	70.5	68
25	517	19	12.25	546	39	11	3.9	209	74.4	72
26	523	19	12.29	558	39	13	4.6	222	79.0	77
27	528	19	12.29	569	39	8	2.8	230	81.9	80
28	534	19	12.27	580	39	5	1.8	235	83.6	83
29	539	19	12.22	591	39	3	1.1	238	84.7	84
30	545	20	12.14	602	39	3	1.1	241	85.8	85
31	551	20	12.04	614	40	5	1.8	246	87.5	87
32	556	20	11.91	625	40	5	1.8	251	89.3	88
33	562	20	11.75	637	40	7	2.5	258	91.8	91
34	568	20	11.56	649	40	3	1.1	261	92.9	92
35	574	20	11.35	660	41	3	1.1	264	94.0	93
36	580	20	11.12	673	41	1	0.4	265	94.3	94
37	586	21	10.86	685	42	2	0.7	267	95.0	95
38	592	21	10.57	698	42	2	0.7	269	95.7	95
39	599	21	10.26	711	43	0	0.0	269	95.7	96
40	606	22	9.92	725	44	2	0.7	271	96.4	96
41	613	22	9.55	739	44	1	0.4	272	96.8	97
42	620	22	9.16	753	45	3	1.1	275	97.9	97
43	627	23	8.75	769	46	3	1.1	278	98.9	98
44	635	24	8.31	785	48	0	0.0	278	98.9	99
45	644	24	7.85	802	49	0	0.0	278	98.9	99
46	653	25	7.37	820	50	1	0.4	279	99.3	99
47	662	26	6.87	839	52	2	0.7	281	100.0	99
48	673	27	6.34	860	54	0	0.0	281	100.0	100
49	684	28	5.80	882	57	0	0.0	281	100.0	100
50	696	30	5.25	907	60	0	0.0	281	100.0	100
51	710	31	4.68	935	63	0	0.0	281	100.0	100
52	725	34	4.10	966	68	0	0.0	281	100.0	100
53	743	36	3.51	1002	73	0	0.0	281	100.0	100
54	765	40	2.91	1045	80	0	0.0	281	100.0	100
55	791	45	2.29	1098	91	0	0.0	281	100.0	100
56	826	53	1.63	1169	107	0	0.0	281	100.0	100
57	881	72	0.89	1280	145	0	0.0	281	100.0	100
58	969	127	0.29	1457	255	0	0.0	281	100.0	100

Appendix Table H.9: 2022 Grade 5 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	146	138	0.30	-201	268	0	0.0	0	0.0	0
1	238	76	0.97	-22	149	0	0.0	0	0.0	0
2	293	55	1.87	85	107	0	0.0	0	0.0	0
3	326	45	2.72	149	88	0	0.0	0	0.0	0
4	350	40	3.53	196	78	0	0.0	0	0.0	0
5	369	36	4.30	233	70	0	0.0	0	0.0	0
6	385	33	5.03	264	65	0	0.0	0	0.0	0
7	399	31	5.73	292	61	0	0.0	0	0.0	0
8	411	30	6.40	316	58	4	1.6	4	1.6	1
9	422	28	7.04	337	55	5	2.0	9	3.7	3
10	433	27	7.66	357	53	9	3.7	18	7.3	5
11	442	26	8.27	376	51	15	6.1	33	13.4	10
12	451	25	8.85	393	49	7	2.8	40	16.3	15
13	459	24	9.42	409	48	13	5.3	53	21.5	19
14	467	24	9.98	424	46	11	4.5	64	26.0	24
15	474	23	10.52	438	45	16	6.5	80	32.5	29
16	481	23	11.05	452	44	11	4.5	91	37.0	35

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
17	487	22	11.57	464	43	14	5.7	105	42.7	40
18	494	22	12.08	477	42	12	4.9	117	47.6	45
19	500	21	12.56	489	41	9	3.7	126	51.2	49
20	506	21	13.03	500	40	8	3.3	134	54.5	53
21	511	20	13.48	511	40	16	6.5	150	61.0	58
22	517	20	13.90	522	39	11	4.5	161	65.4	63
23	522	20	14.28	532	39	6	2.4	167	67.9	67
24	527	20	14.62	542	38	8	3.3	175	71.1	70
25	532	19	14.92	552	38	11	4.5	186	75.6	73
26	537	19	15.18	562	37	2	0.8	188	76.4	76
27	542	19	15.39	571	37	5	2.0	193	78.5	77
28	547	19	15.54	581	37	5	2.0	198	80.5	79
29	552	19	15.65	590	37	3	1.2	201	81.7	81
30	557	19	15.71	599	37	4	1.6	205	83.3	83
31	561	19	15.72	609	37	5	2.0	210	85.4	84
32	566	19	15.69	618	37	3	1.2	213	86.6	86
33	571	19	15.62	627	37	4	1.6	217	88.2	87
34	576	19	15.52	637	37	1	0.4	218	88.6	88
35	581	19	15.39	646	37	4	1.6	222	90.2	89
36	586	19	15.23	656	37	4	1.6	226	91.9	91
37	591	19	15.05	665	38	4	1.6	230	93.5	93
38	596	19	14.86	675	38	2	0.8	232	94.3	94
39	601	20	14.65	685	38	4	1.6	236	95.9	95
40	606	20	14.42	695	38	3	1.2	239	97.2	97
41	611	20	14.19	705	39	1	0.4	240	97.6	97
42	616	20	13.94	716	39	1	0.4	241	98.0	98
43	622	20	13.68	726	39	0	0.0	241	98.0	98
44	627	20	13.40	737	40	2	0.8	243	98.8	98
45	633	21	13.11	748	40	1	0.4	244	99.2	99
46	639	21	12.81	759	41	0	0.0	244	99.2	99
47	645	21	12.48	771	41	0	0.0	244	99.2	99
48	651	22	12.13	783	42	1	0.4	245	99.6	99
49	657	22	11.75	795	43	0	0.0	245	99.6	99
50	663	22	11.34	807	43	1	0.4	246	100.0	99
51	670	23	10.90	821	44	0	0.0	246	100.0	100
52	677	23	10.43	834	45	0	0.0	246	100.0	100
53	685	24	9.92	849	46	0	0.0	246	100.0	100
54	692	24	9.37	864	48	0	0.0	246	100.0	100
55	701	25	8.78	880	49	0	0.0	246	100.0	100
56	709	26	8.15	897	51	0	0.0	246	100.0	100
57	719	27	7.49	916	53	0	0.0	246	100.0	100
58	730	29	6.79	936	56	0	0.0	246	100.0	100
59	741	30	6.06	959	59	0	0.0	246	100.0	100
60	754	33	5.29	985	63	0	0.0	246	100.0	100
61	770	35	4.49	1015	69	0	0.0	246	100.0	100
62	788	39	3.66	1050	76	0	0.0	246	100.0	100
63	812	45	2.80	1096	87	0	0.0	246	100.0	100
64	844	54	1.91	1159	106	0	0.0	246	100.0	100
65	898	76	0.97	1263	148	0	0.0	246	100.0	100
66	989	137	0.30	1442	268	0	0.0	246	100.0	100

Appendix Table H.10: 2022 Grade 6 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	174	132	0.30	-114	256	0	0.0	0	0.0	0
1	262	73	0.97	57	142	0	0.0	0	0.0	0
2	314	53	1.89	158	102	0	0.0	0	0.0	0

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
3	346	43	2.76	219	84	0	0.0	0	0.0	0
4	369	38	3.60	263	74	2	0.8	2	0.8	0
5	387	34	4.40	298	67	4	1.6	6	2.4	2
6	402	32	5.18	327	61	2	0.8	8	3.2	3
7	415	30	5.93	352	57	5	2.0	13	5.2	4
8	426	28	6.65	374	54	11	4.4	24	9.6	7
9	437	27	7.36	394	51	8	3.2	32	12.7	11
10	446	25	8.05	412	49	18	7.2	50	19.9	16
11	455	24	8.71	429	47	19	7.6	69	27.5	24
12	463	24	9.36	445	46	15	6.0	84	33.5	30
13	470	23	9.99	459	44	21	8.4	105	41.8	38
14	477	22	10.61	472	43	14	5.6	119	47.4	45
15	484	22	11.20	485	42	17	6.8	136	54.2	51
16	490	21	11.78	497	41	10	4.0	146	58.2	56
17	496	21	12.33	509	40	4	1.6	150	59.8	59
18	502	20	12.86	520	39	14	5.6	164	65.3	63
19	507	20	13.37	531	38	7	2.8	171	68.1	67
20	512	19	13.85	541	37	5	2.0	176	70.1	69
21	518	19	14.31	551	37	5	2.0	181	72.1	71
22	523	19	14.73	561	36	7	2.8	188	74.9	74
23	527	19	15.12	570	36	9	3.6	197	78.5	77
24	532	18	15.48	579	35	6	2.4	203	80.9	80
25	537	18	15.80	588	35	1	0.4	204	81.3	81
26	541	18	16.09	597	35	10	4.0	214	85.3	83
27	546	18	16.34	605	35	5	2.0	219	87.3	86
28	550	18	16.55	614	34	4	1.6	223	88.8	88
29	554	18	16.74	622	34	6	2.4	229	91.2	90
30	559	18	16.89	630	34	0	0.0	229	91.2	91
31	563	18	17.00	639	34	2	0.8	231	92.0	92
32	567	17	17.09	647	34	0	0.0	231	92.0	92
33	571	17	17.15	655	34	4	1.6	235	93.6	93
34	576	17	17.19	663	34	0	0.0	235	93.6	94
35	580	17	17.20	671	34	3	1.2	238	94.8	94
36	584	17	17.18	679	34	2	0.8	240	95.6	95
37	588	17	17.15	687	34	1	0.4	241	96.0	96
38	592	17	17.09	696	34	1	0.4	242	96.4	96
39	597	18	17.00	704	34	1	0.4	243	96.8	97
40	601	18	16.90	712	34	0	0.0	243	96.8	97
41	605	18	16.77	720	34	0	0.0	243	96.8	97
42	610	18	16.61	729	34	0	0.0	243	96.8	97
43	614	18	16.42	737	34	1	0.4	244	97.2	97
44	618	18	16.20	746	35	2	0.8	246	98.0	98
45	623	18	15.95	754	35	1	0.4	247	98.4	98
46	627	18	15.65	763	35	1	0.4	248	98.8	99
47	632	18	15.32	772	36	0	0.0	248	98.8	99
48	637	19	14.95	781	36	1	0.4	249	99.2	99
49	642	19	14.53	791	37	0	0.0	249	99.2	99
50	647	19	14.07	801	37	0	0.0	249	99.2	99
51	652	20	13.57	811	38	0	0.0	249	99.2	99
52	657	20	13.04	821	39	0	0.0	249	99.2	99
53	663	20	12.47	832	40	1	0.4	250	99.6	99
54	669	21	11.87	844	41	0	0.0	250	99.6	99
55	675	22	11.24	856	42	0	0.0	250	99.6	99
56	682	22	10.60	869	43	1	0.4	251	100.0	99
57	689	23	9.95	882	44	0	0.0	251	100.0	100
58	696	24	9.28	897	46	0	0.0	251	100.0	100

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
59	704	25	8.60	912	48	0	0.0	251	100.0	100
60	713	26	7.92	929	50	0	0.0	251	100.0	100
61	723	27	7.23	948	52	0	0.0	251	100.0	100
62	733	28	6.53	968	55	0	0.0	251	100.0	100
63	745	30	5.81	991	58	0	0.0	251	100.0	100
64	758	32	5.08	1016	62	0	0.0	251	100.0	100
65	774	35	4.33	1046	67	0	0.0	251	100.0	100
66	792	38	3.55	1081	74	0	0.0	251	100.0	100
67	815	44	2.73	1126	84	0	0.0	251	100.0	100
68	847	53	1.87	1187	102	0	0.0	251	100.0	100
69	899	73	0.97	1289	142	0	0.0	251	100.0	100
70	988	132	0.30	1460	256	0	0.0	251	100.0	100

Appendix Table H.11: 2022 Grade 7 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	155	155	0.30	-120	275	0	0.0	0	0.0	0
1	258	86	0.97	63	152	0	0.0	0	0.0	0
2	319	61	1.89	172	109	0	0.0	0	0.0	0
3	356	51	2.77	237	90	1	0.7	1	0.7	0
4	383	45	3.60	284	79	1	0.7	2	1.3	1
5	404	40	4.38	322	72	4	2.7	6	4.0	3
6	422	37	5.13	354	66	2	1.3	8	5.4	5
7	437	35	5.83	381	62	8	5.4	16	10.7	8
8	451	33	6.50	405	59	8	5.4	24	16.1	13
9	463	32	7.13	427	56	18	12.1	42	28.2	22
10	475	30	7.72	448	54	12	8.1	54	36.2	32
11	485	29	8.28	466	52	9	6.0	63	42.3	39
12	495	28	8.80	484	51	15	10.1	78	52.3	47
13	505	28	9.29	501	49	14	9.4	92	61.7	57
14	513	27	9.75	516	48	3	2.0	95	63.8	63
15	522	26	10.18	531	47	10	6.7	105	70.5	67
16	530	26	10.57	546	46	7	4.7	112	75.2	73
17	538	26	10.94	560	45	5	3.4	117	78.5	77
18	546	25	11.28	573	45	5	3.4	122	81.9	80
19	553	25	11.59	586	44	3	2.0	125	83.9	83
20	560	25	11.87	599	44	4	2.7	129	86.6	85
21	567	24	12.13	612	43	1	0.7	130	87.2	87
22	574	24	12.37	624	43	2	1.3	132	88.6	88
23	581	24	12.59	636	42	2	1.3	134	89.9	89
24	587	24	12.80	648	42	3	2.0	137	91.9	91
25	594	23	12.98	660	42	3	2.0	140	94.0	93
26	601	23	13.15	671	41	2	1.3	142	95.3	95
27	607	23	13.31	682	41	0	0.0	142	95.3	95
28	613	23	13.45	694	41	0	0.0	142	95.3	95
29	619	23	13.58	705	41	2	1.3	144	96.6	96
30	626	23	13.69	716	41	1	0.7	145	97.3	97
31	632	23	13.78	727	40	1	0.7	146	98.0	98
32	638	23	13.85	737	40	0	0.0	146	98.0	98
33	644	23	13.89	748	40	0	0.0	146	98.0	98
34	650	23	13.89	759	40	0	0.0	146	98.0	98
35	656	23	13.87	770	40	1	0.7	147	98.7	98
36	662	23	13.80	781	40	0	0.0	147	98.7	99
37	668	23	13.70	792	41	0	0.0	147	98.7	99
38	675	23	13.54	803	41	0	0.0	147	98.7	99
39	681	23	13.35	814	41	1	0.7	148	99.3	99
40	687	23	13.11	825	41	0	0.0	148	99.3	99

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
41	694	24	12.82	837	42	1	0.7	149	100.0	99
42	701	24	12.50	849	42	0	0.0	149	100.0	100
43	707	24	12.13	861	43	0	0.0	149	100.0	100
44	714	25	11.72	873	44	0	0.0	149	100.0	100
45	722	25	11.28	886	45	0	0.0	149	100.0	100
46	729	26	10.80	900	46	0	0.0	149	100.0	100
47	737	26	10.30	914	47	0	0.0	149	100.0	100
48	746	27	9.77	929	48	0	0.0	149	100.0	100
49	755	28	9.22	945	49	0	0.0	149	100.0	100
50	764	29	8.66	962	51	0	0.0	149	100.0	100
51	774	30	8.08	980	53	0	0.0	149	100.0	100
52	785	31	7.49	999	55	0	0.0	149	100.0	100
53	797	32	6.88	1020	57	0	0.0	149	100.0	100
54	810	34	6.27	1043	60	0	0.0	149	100.0	100
55	824	36	5.64	1068	63	0	0.0	149	100.0	100
56	840	38	5.01	1096	67	0	0.0	149	100.0	100
57	858	40	4.37	1128	72	0	0.0	149	100.0	100
58	879	44	3.72	1166	78	0	0.0	149	100.0	100
59	904	48	3.06	1210	86	0	0.0	149	100.0	100
60	935	55	2.38	1266	97	0	0.0	149	100.0	100
61	977	65	1.67	1340	116	0	0.0	149	100.0	100
62	1045	89	0.90	1460	158	0	0.0	149	100.0	100
63	1154	157	0.29	1654	279	0	0.0	149	100.0	100

Appendix Table H.12: 2022 Grade 8 MA IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	199	133	0.30	-222	317	0	0.0	0	0.0	0
1	289	74	0.97	-10	175	0	0.0	0	0.0	0
2	341	53	1.87	115	126	0	0.0	0	0.0	0
3	373	44	2.73	191	104	0	0.0	0	0.0	0
4	397	39	3.53	246	92	1	0.6	1	0.6	0
5	415	35	4.29	290	83	1	0.6	2	1.2	1
6	431	32	5.01	327	77	4	2.4	6	3.6	2
7	445	30	5.69	360	72	6	3.6	12	7.1	5
8	457	29	6.33	388	69	12	7.1	24	14.2	11
9	468	28	6.94	414	66	9	5.3	33	19.5	17
10	478	27	7.52	438	63	16	9.5	49	29.0	24
11	487	26	8.06	461	61	14	8.3	63	37.3	33
12	496	25	8.58	481	59	23	13.6	86	50.9	44
13	504	24	9.06	501	57	16	9.5	102	60.4	56
14	512	24	9.52	519	56	14	8.3	116	68.6	64
15	519	23	9.96	537	55	7	4.1	123	72.8	71
16	526	23	10.37	554	54	9	5.3	132	78.1	75
17	533	22	10.76	570	53	9	5.3	141	83.4	81
18	540	22	11.12	586	52	6	3.6	147	87.0	85
19	546	21	11.46	601	51	4	2.4	151	89.3	88
20	553	21	11.79	616	50	4	2.4	155	91.7	91
21	559	21	12.09	631	50	1	0.6	156	92.3	92
22	565	21	12.37	645	49	1	0.6	157	92.9	93
23	571	20	12.63	659	49	3	1.8	160	94.7	94
24	576	20	12.87	672	48	0	0.0	160	94.7	95
25	582	20	13.09	686	48	0	0.0	160	94.7	95
26	587	20	13.29	699	47	3	1.8	163	96.4	96
27	593	20	13.46	712	47	2	1.2	165	97.6	97
28	598	20	13.61	724	47	1	0.6	166	98.2	98

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
29	603	20	13.74	737	47	0	0.0	166	98.2	98
30	609	20	13.83	749	46	0	0.0	166	98.2	98
31	614	19	13.90	762	46	0	0.0	166	98.2	98
32	619	19	13.93	774	46	0	0.0	166	98.2	98
33	624	19	13.93	787	46	1	0.6	167	98.8	99
34	630	20	13.90	799	46	0	0.0	167	98.8	99
35	635	20	13.82	811	46	0	0.0	167	98.8	99
36	640	20	13.71	824	47	0	0.0	167	98.8	99
37	645	20	13.56	837	47	0	0.0	167	98.8	99
38	651	20	13.36	849	47	1	0.6	168	99.4	99
39	656	20	13.13	862	48	0	0.0	168	99.4	99
40	662	20	12.86	876	48	0	0.0	168	99.4	99
41	668	21	12.54	889	49	0	0.0	168	99.4	99
42	674	21	12.19	903	49	0	0.0	168	99.4	99
43	680	21	11.80	918	50	0	0.0	168	99.4	99
44	686	22	11.38	933	51	0	0.0	168	99.4	99
45	692	22	10.93	948	52	0	0.0	168	99.4	99
46	699	22	10.44	964	53	0	0.0	168	99.4	99
47	706	23	9.94	981	55	1	0.6	169	100.0	99
48	714	24	9.41	999	56	0	0.0	169	100.0	100
49	722	24	8.86	1018	58	0	0.0	169	100.0	100
50	730	25	8.29	1038	60	0	0.0	169	100.0	100
51	739	26	7.71	1060	62	0	0.0	169	100.0	100
52	749	27	7.11	1083	65	0	0.0	169	100.0	100
53	760	29	6.50	1108	68	0	0.0	169	100.0	100
54	772	30	5.88	1136	71	0	0.0	169	100.0	100
55	785	32	5.24	1167	75	0	0.0	169	100.0	100
56	800	34	4.58	1202	81	0	0.0	169	100.0	100
57	817	37	3.90	1243	87	0	0.0	169	100.0	100
58	837	41	3.20	1292	96	0	0.0	169	100.0	100
59	863	46	2.48	1353	110	0	0.0	169	100.0	100
60	898	55	1.72	1436	131	0	0.0	169	100.0	100
61	955	76	0.91	1570	181	0	0.0	169	100.0	100
62	1047	135	0.29	1790	320	0	0.0	169	100.0	100

Appendix Table H.13: 2022 Grade 5 SC IRT Statistics

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	164	127	0.30	-144	238	0	0.0	0	0.0	0
1	249	71	0.97	15	132	0	0.0	0	0.0	0
2	299	51	1.88	109	95	0	0.0	0	0.0	0
3	330	42	2.74	166	78	0	0.0	0	0.0	0
4	352	37	3.54	207	69	0	0.0	0	0.0	0
5	370	34	4.30	240	63	1	0.4	1	0.4	0
6	385	31	5.01	268	58	1	0.4	2	0.8	1
7	398	29	5.69	292	54	3	1.2	5	2.0	1
8	409	28	6.32	314	52	6	2.4	11	4.5	3
9	420	26	6.92	334	49	5	2.0	16	6.5	5
10	429	25	7.49	352	47	8	3.3	24	9.8	8
11	438	25	8.03	368	46	4	1.6	28	11.4	11
12	447	24	8.54	384	44	7	2.8	35	14.2	13
13	455	23	9.03	399	43	8	3.3	43	17.5	16
14	462	23	9.50	413	42	13	5.3	56	22.8	20
15	469	22	9.94	426	41	13	5.3	69	28.0	25
16	476	22	10.38	439	40	4	1.6	73	29.7	29
17	483	21	10.80	451	39	11	4.5	84	34.1	32
18	489	21	11.21	463	39	11	4.5	95	38.6	36

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
19	495	20	11.62	474	38	8	3.3	103	41.9	40
20	501	20	12.01	485	37	13	5.3	116	47.2	45
21	507	20	12.41	496	37	10	4.1	126	51.2	49
22	512	19	12.80	506	36	6	2.4	132	53.7	52
23	518	19	13.18	516	36	9	3.7	141	57.3	55
24	523	19	13.56	526	35	6	2.4	147	59.8	59
25	528	19	13.93	536	35	10	4.1	157	63.8	62
26	533	18	14.30	545	34	4	1.6	161	65.4	65
27	538	18	14.64	554	34	8	3.3	169	68.7	67
28	542	18	14.97	562	34	8	3.3	177	72.0	70
29	547	18	15.28	571	33	10	4.1	187	76.0	74
30	551	18	15.56	579	33	6	2.4	193	78.5	77
31	556	17	15.81	588	33	4	1.6	197	80.1	79
32	560	17	16.01	596	32	8	3.3	205	83.3	82
33	565	17	16.18	604	32	3	1.2	208	84.6	84
34	569	17	16.30	612	32	5	2.0	213	86.6	86
35	573	17	16.38	620	32	2	0.8	215	87.4	87
36	577	17	16.40	628	32	8	3.3	223	90.7	89
37	582	17	16.38	636	32	4	1.6	227	92.3	91
38	586	17	16.30	644	32	3	1.2	230	93.5	93
39	590	17	16.17	652	32	4	1.6	234	95.1	94
40	594	17	15.98	660	32	2	0.8	236	95.9	96
41	599	18	15.75	668	33	1	0.4	237	96.3	96
42	603	18	15.45	676	33	0	0.0	237	96.3	96
43	608	18	15.11	685	33	3	1.2	240	97.6	97
44	612	18	14.72	693	34	0	0.0	240	97.6	98
45	617	18	14.27	702	34	2	0.8	242	98.4	98
46	622	19	13.78	712	35	2	0.8	244	99.2	99
47	627	19	13.24	721	36	2	0.8	246	100.0	99
48	633	20	12.66	731	36	0	0.0	246	100.0	100
49	638	20	12.03	742	37	0	0.0	246	100.0	100
50	644	21	11.37	753	38	0	0.0	246	100.0	100
51	651	21	10.68	765	40	0	0.0	246	100.0	100
52	657	22	9.96	777	41	0	0.0	246	100.0	100
53	665	23	9.22	791	43	0	0.0	246	100.0	100
54	672	24	8.46	805	45	0	0.0	246	100.0	100
55	681	25	7.69	822	47	0	0.0	246	100.0	100
56	691	26	6.90	839	49	0	0.0	246	100.0	100
57	701	28	6.10	859	53	0	0.0	246	100.0	100
58	713	30	5.30	882	56	0	0.0	246	100.0	100
59	728	33	4.48	909	61	0	0.0	246	100.0	100
60	745	36	3.64	941	68	0	0.0	246	100.0	100
61	767	42	2.78	981	78	0	0.0	246	100.0	100
62	797	50	1.90	1038	94	0	0.0	246	100.0	100
63	847	70	0.97	1131	132	0	0.0	246	100.0	100
64	932	127	0.30	1290	238	0	0.0	246	100.0	100

Appendix Table H.14: 2022 Grade 8 SC IRT Statistic

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
0	218	124	0.30	-63	247	0	0.0	0	0.0	0
1	301	69	0.97	102	137	0	0.0	0	0.0	0
2	351	49	1.89	199	98	1	0.6	1	0.6	0
3	380	41	2.75	258	81	1	0.6	2	1.2	1
4	402	36	3.58	301	71	2	1.2	4	2.4	2
5	419	32	4.37	335	64	4	2.4	8	4.8	4
6	433	30	5.13	363	59	6	3.6	14	8.3	7

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
7	445	28	5.87	387	56	11	6.5	25	14.9	12
8	456	26	6.58	409	53	8	4.8	33	19.6	17
9	466	25	7.27	429	50	16	9.5	49	29.2	24
10	475	24	7.93	446	48	12	7.1	61	36.3	33
11	483	23	8.58	463	46	12	7.1	73	43.5	40
12	491	22	9.20	478	44	6	3.6	79	47.0	45
13	498	22	9.79	492	43	10	6.0	89	53.0	50
14	505	21	10.35	505	42	6	3.6	95	56.5	55
15	511	21	10.88	518	41	8	4.8	103	61.3	59
16	517	20	11.37	530	40	7	4.2	110	65.5	63
17	523	20	11.82	542	39	5	3.0	115	68.5	67
18	529	19	12.24	553	38	6	3.6	121	72.0	70
19	534	19	12.62	564	38	2	1.2	123	73.2	73
20	539	19	12.97	574	37	5	3.0	128	76.2	75
21	545	19	13.28	585	37	5	3.0	133	79.2	78
22	550	18	13.56	595	37	1	0.6	134	79.8	79
23	555	18	13.80	604	36	4	2.4	138	82.1	81
24	559	18	14.02	614	36	6	3.6	144	85.7	84
25	564	18	14.21	624	36	4	2.4	148	88.1	87
26	569	18	14.37	633	36	7	4.2	155	92.3	90
27	574	18	14.50	642	35	2	1.2	157	93.5	93
28	578	18	14.59	652	35	0	0.0	157	93.5	93
29	583	18	14.66	661	35	1	0.6	158	94.0	94
30	588	18	14.69	670	35	3	1.8	161	95.8	95
31	592	18	14.69	679	35	1	0.6	162	96.4	96
32	597	18	14.65	688	35	2	1.2	164	97.6	97
33	602	18	14.58	698	35	1	0.6	165	98.2	98
34	606	18	14.47	707	35	1	0.6	166	98.8	99
35	611	18	14.32	716	36	0	0.0	166	98.8	99
36	616	18	14.13	726	36	1	0.6	167	99.4	99
37	621	18	13.92	735	36	0	0.0	167	99.4	99
38	625	18	13.67	745	36	0	0.0	167	99.4	99
39	630	19	13.39	755	37	0	0.0	167	99.4	99
40	636	19	13.09	765	37	1	0.6	168	100.0	99
41	641	19	12.77	776	38	0	0.0	168	100.0	100
42	646	19	12.43	786	38	0	0.0	168	100.0	100
43	652	20	12.07	797	39	0	0.0	168	100.0	100
44	657	20	11.71	809	39	0	0.0	168	100.0	100
45	663	20	11.33	820	40	0	0.0	168	100.0	100
46	669	21	10.94	832	41	0	0.0	168	100.0	100
47	676	21	10.55	845	41	0	0.0	168	100.0	100
48	682	21	10.15	858	42	0	0.0	168	100.0	100
49	689	22	9.74	872	43	0	0.0	168	100.0	100
50	696	22	9.32	886	44	0	0.0	168	100.0	100
51	704	23	8.89	900	45	0	0.0	168	100.0	100
52	712	23	8.45	916	46	0	0.0	168	100.0	100
53	720	24	7.99	932	48	0	0.0	168	100.0	100
54	729	25	7.52	950	49	0	0.0	168	100.0	100
55	738	26	7.04	968	51	0	0.0	168	100.0	100
56	748	27	6.54	988	53	0	0.0	168	100.0	100
57	759	28	6.03	1009	55	0	0.0	168	100.0	100
58	770	29	5.49	1033	57	0	0.0	168	100.0	100
59	783	31	4.94	1059	61	0	0.0	168	100.0	100
60	798	32	4.36	1088	64	0	0.0	168	100.0	100
61	815	35	3.76	1121	69	0	0.0	168	100.0	100
62	835	38	3.12	1160	76	0	0.0	168	100.0	100

SCORE	MEASURE	S.E.	INFO	NORMED	S.E. NORMED	FREQ	FREQ %	CUM. FREQ	CUM FREQ%	PERCENTILE
63	859	43	2.45	1209	86	0	0.0	168	100.0	100
64	892	52	1.72	1274	103	0	0.0	168	100.0	100
65	944	71	0.92	1378	140	0	0.0	168	100.0	100
66	1030	125	0.29	1549	249	0	0.0	168	100.0	100

Appendix I: Differential Item Functioning tables

This appendix contains the details of the Differential Item Functioning (DIF) tables for FRL, gender and survey scale from Winsteps.

Appendix Table I.1: Hawaiian Language Arts: DIF FRL

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Rasch-Welch Df	Rasch-Welch Prob	Mantel Chi-sq	Mantel Prob	Size Active ITEM CUMLOR	Size Active ITEM Slices	Size Active ITEM Number
HL	3	394	C	-0.03	-0.32	0.08	D	0.02	-0.34	0.07	0.02	0.11	0.22	296	0.83	0.11	0.74	0.08	35	1
HL	3	93	C	-0.01	-2.02	0.20	D	0.01	-2.14	0.21	0.12	0.29	0.42	306	0.68	0.18	0.67	0.19	35	2
HL	3	101	C	-0.03	0.17	0.20	D	0.02	-0.07	0.17	0.24	0.26	0.92	286	0.36	0.23	0.64	0.20	35	3
HL	3	381	C	0.02	-0.75	0.18	D	-0.02	-0.54	0.17	-0.20	0.25	-0.82	297	0.41	1.13	0.29	-0.39	35	4
HL	3	108	C	-0.02	0.17	0.20	D	0.02	-0.04	0.17	0.21	0.26	0.81	286	0.42	0.16	0.69	0.17	35	5
HL	3	94	C	-0.04	-1.74	0.19	D	0.03	-2.14	0.21	0.40	0.29	1.39	308	0.16	0.18	0.67	0.23	35	6
HL	3	99	C	0.05	-0.55	0.18	D	-0.04	-0.15	0.17	-0.39	0.25	-1.58	296	0.11	2.93	0.09	-0.54	35	7
HL	3	89	C	0.00	-0.25	0.19	D	0.00	-0.25	0.17	0.00	0.25	0.00	293	1.00	0.00	0.97	-0.03	35	8
HL	3	88	C	-0.01	0.02	0.19	D	0.01	-0.04	0.17	0.06	0.26	0.24	289	0.81	0.32	0.57	-0.23	35	11
HL	3	90	C	-0.03	-2.06	0.21	D	0.03	-2.51	0.23	0.45	0.31	1.45	307	0.15	1.73	0.19	0.58	35	12
HL	3	91	C	-0.01	-1.86	0.20	D	0.01	-1.99	0.20	0.14	0.28	0.48	305	0.63	1.15	0.28	0.47	35	13
HL	3	87	C	-0.02	1.15	0.25	D	0.02	0.85	0.19	0.29	0.31	0.93	265	0.35	0.03	0.87	0.14	35	14
HL	3	92	C	0.02	-0.17	0.19	D	-0.01	-0.02	0.17	-0.15	0.25	-0.59	293	0.55	0.72	0.40	-0.26	35	15
HL	3	1023	C	0.01	1.21	0.26	D	-0.01	1.31	0.21	-0.10	0.33	-0.31	277	0.75	0.33	0.56	-0.27	35	16
HL	3	1686	C	0.04	-0.06	0.19	D	-0.03	0.31	0.17	-0.36	0.26	-1.40	294	0.16	0.02	0.89	-0.08	35	17
HL	3	95	C	0.01	0.70	0.22	D	-0.01	0.82	0.19	-0.12	0.29	-0.41	284	0.68	1.12	0.29	-0.43	35	18
HL	3	97	C	-0.01	-0.09	0.19	D	0.01	-0.21	0.17	0.12	0.25	0.47	290	0.64	0.01	0.94	-0.02	35	19
HL	3	96	C	-0.02	0.60	0.22	D	0.01	0.43	0.18	0.17	0.28	0.62	278	0.53	0.38	0.54	0.24	35	20
HL	3	107	C	0.01	-0.81	0.18	D	-0.01	-0.72	0.17	-0.09	0.25	-0.38	297	0.70	0.01	0.93	-0.01	35	21
HL	3	104	C	0.02	0.64	0.22	D	-0.01	0.82	0.19	-0.18	0.29	-0.61	284	0.54	3.47	0.06	-0.82	35	22
HL	3	383	C	-0.02	-1.30	0.19	D	0.02	-1.48	0.18	0.18	0.26	0.69	301	0.49	1.32	0.25	0.35	35	23
HL	3	161	C	-0.01	-0.59	0.18	D	0.01	-0.72	0.17	0.12	0.25	0.50	295	0.62	0.28	0.60	0.18	35	24
HL	3	162	C	0.00	-1.26	0.18	D	0.00	-1.22	0.18	-0.04	0.26	-0.17	298	0.86	0.29	0.59	-0.20	35	25

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	3	1025	C	0.05	0.50	0.21	D	-0.04	1.03	0.19	-0.53	0.29	-1.85	294	0.07	2.50	0.11	-0.55	35	26
HL	3	110	C	0.03	0.24	0.20	D	-0.03	0.58	0.18	-0.34	0.27	-1.26	290	0.21	0.61	0.43	-0.26	35	27
HL	3	113	C	-0.01	1.97	0.34	D	0.00	1.85	0.24	0.12	0.41	0.29	254	0.77	0.01	0.93	0.07	35	28
HL	3	1024	C	-0.03	0.72	0.14	D	0.02	0.61	0.10	0.11	0.17	0.64	260	0.52	0.50	0.48	-0.22	35	29
HL	3	117	C	-0.05	-0.76	0.18	D	0.04	-1.16	0.17	0.40	0.25	1.57	299	0.12	1.92	0.17	0.45	35	30
HL	3	1020	C	-0.03	1.54	0.20	D	0.03	1.27	0.14	0.26	0.25	1.06	255	0.29	0.51	0.47	-0.25	35	31
HL	3	114	C	0.01	-0.63	0.18	D	0.00	-0.58	0.17	-0.05	0.25	-0.20	294	0.84	0.00	0.96	0.02	35	32
HL	3	112	C	0.00	2.23	0.37	D	0.00	2.23	0.27	0.00	0.46	0.00	258	1.00	0.97	0.33	-0.73	35	33
HL	3	119	C	0.00	0.03	0.20	D	0.00	0.03	0.17	0.00	0.26	0.00	287	1.00	0.50	0.48	0.22	35	35
HL	3	379	C	-0.04	1.84	0.25	D	0.03	1.41	0.15	0.43	0.29	1.48	229	0.14	1.04	0.31	0.41	35	36
HL	3	125	C	0.03	-0.89	0.18	D	-0.02	-0.66	0.17	-0.23	0.25	-0.94	295	0.35	1.42	0.23	-0.39	35	38
HL	3	143	C	0.04	0.16	0.20	D	-0.03	0.58	0.18	-0.43	0.27	-1.59	291	0.11	1.47	0.23	-0.42	35	39
HL	3	123	C	-0.01	-0.07	0.19	D	0.01	-0.13	0.17	0.06	0.26	0.23	287	0.82	0.28	0.60	0.20	35	40
HL	3	137	C	0.00	-0.32	0.19	D	0.00	-0.32	0.17	0.00	0.25	0.00	290	1.00	0.99	0.32	0.32	35	41
HL	3	127	C	0.00	2.97	0.51	D	0.00	3.26	0.40	-0.29	0.65	-0.44	268	0.66	0.05	0.83	-0.41	35	42
HL	3	158	C	0.00	-0.15	0.19	D	0.00	-0.15	0.17	0.00	0.25	0.00	288	1.00	0.25	0.62	0.19	35	43
HL	3	1664	C	0.07	-1.34	0.19	D	-0.05	-0.77	0.17	-0.57	0.25	-2.25	292	0.03	0.44	0.51	-0.20	35	44
HL	3	1021	C	-0.04	-0.46	0.19	D	0.03	-0.77	0.17	0.31	0.25	1.25	292	0.21	4.69	0.03	0.59	35	45
HL	3	384	C	-0.01	-0.90	0.18	D	0.00	-0.95	0.17	0.05	0.25	0.19	295	0.85	0.51	0.48	0.23	35	46
HL	3	156	C	0.01	0.41	0.21	D	-0.01	0.49	0.18	-0.08	0.27	-0.29	282	0.77	0.00	0.96	-0.06	35	47
HL	3	150	C	-0.05	-1.27	0.19	D	0.04	-1.79	0.19	0.52	0.27	1.94	304	0.05	1.18	0.28	0.40	35	48
HL	3	138	C	-0.05	1.54	0.21	D	0.04	1.13	0.14	0.41	0.25	1.66	246	0.10	0.36	0.55	0.20	35	49
HL	3	145	C	-0.01	-0.07	0.19	D	0.01	-0.16	0.17	0.09	0.26	0.33	287	0.74	0.03	0.86	-0.12	35	50
HL	3	1470	C	0.01	-0.07	0.19	D	0.00	-0.02	0.17	-0.06	0.26	-0.22	287	0.83	0.07	0.80	-0.12	35	51
HL	3	1286	C	0.01	1.66	0.30	D	-0.01	1.79	0.23	-0.13	0.38	-0.34	269	0.73	0.00	0.96	-0.08	35	52
HL	3	1471	C	0.02	-0.36	0.19	D	-0.02	-0.16	0.17	-0.20	0.25	-0.80	291	0.42	0.01	0.92	0.01	35	53
HL	3	1282	C	0.07	-0.56	0.18	D	-0.05	0.01	0.17	-0.58	0.25	-2.31	293	0.02	1.90	0.17	-0.41	35	54
HL	3	1285	C	0.01	1.86	0.32	D	-0.01	2.03	0.25	-0.17	0.41	-0.41	269	0.68	2.27	0.13	-1.15	35	55

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	3	1477	C	-0.04	-0.46	0.19	D	0.03	-0.80	0.17	0.34	0.25	1.36	293	0.18	1.88	0.17	0.41	35	56
HL	3	1281	C	-0.03	0.16	0.20	D	0.02	-0.07	0.17	0.23	0.26	0.89	282	0.38	1.41	0.24	0.37	35	58
HL	3	1283	C	-0.05	-0.63	0.18	D	0.04	-1.04	0.17	0.40	0.25	1.60	296	0.11	2.34	0.13	0.49	35	59
HL	3	1479	C	0.00	0.42	0.21	D	0.00	0.42	0.18	0.00	0.27	0.00	281	1.00	0.00	0.97	0.04	35	60
HL	3	1284	C	-0.06	0.47	0.15	D	0.05	0.21	0.11	0.26	0.19	1.40	268	0.16	0.43	0.51	0.22	35	61
HL	3	1478	C	0.03	-0.67	0.18	D	-0.03	-0.38	0.17	-0.28	0.25	-1.15	292	0.25	2.01	0.16	-0.44	35	63
HL	4	395	C	0.08	0.31	0.09	D	-0.08	0.49	0.09	-0.18	0.12	-1.45	279	0.15	1.02	0.31	-0.26	38	1
HL	4	18	C	-0.02	-1.06	0.18	D	0.02	-1.29	0.21	0.23	0.28	0.84	272	0.40	1.34	0.25	0.41	38	2
HL	4	389	C	-0.04	-1.46	0.19	D	0.05	-2.06	0.25	0.60	0.31	1.90	257	0.06	0.25	0.62	0.25	38	3
HL	4	21	C	-0.05	0.24	0.19	D	0.05	-0.26	0.19	0.51	0.27	1.90	279	0.06	0.47	0.49	0.24	38	4
HL	4	7	C	-0.03	-1.89	0.20	D	0.03	-2.41	0.28	0.53	0.35	1.52	253	0.13	0.87	0.35	0.49	38	5
HL	4	12	C	-0.01	-1.02	0.18	D	0.01	-1.08	0.20	0.05	0.27	0.20	275	0.84	0.32	0.57	-0.21	38	6
HL	4	64	C	-0.02	-1.39	0.19	D	0.02	-1.67	0.23	0.27	0.29	0.93	268	0.35	0.08	0.78	-0.16	38	7
HL	4	8	C	-0.05	-0.86	0.18	D	0.05	-1.38	0.21	0.51	0.28	1.85	269	0.07	1.69	0.19	0.51	38	8
HL	4	9	C	0.02	0.04	0.18	D	-0.02	0.26	0.19	-0.23	0.26	-0.86	279	0.39	1.93	0.16	-0.50	38	9
HL	4	13	C	-0.02	-1.69	0.20	D	0.02	-2.00	0.25	0.31	0.32	1.00	263	0.32	2.04	0.15	0.67	38	10
HL	4	11	C	0.01	1.36	0.25	D	-0.01	1.47	0.22	-0.10	0.33	-0.31	278	0.75	0.04	0.84	0.01	38	11
HL	4	1019	C	-0.02	0.32	0.19	D	0.02	0.16	0.19	0.16	0.27	0.60	279	0.55	0.01	0.91	0.08	38	12
HL	4	14	C	0.01	-1.69	0.20	D	-0.01	-1.52	0.22	-0.17	0.29	-0.57	275	0.57	0.34	0.56	-0.27	38	13
HL	4	16	C	-0.07	-0.45	0.18	D	0.07	-1.16	0.20	0.71	0.27	2.61	273	0.01	7.17	0.01	0.80	38	14
HL	4	15	C	-0.04	-0.52	0.18	D	0.04	-0.88	0.20	0.36	0.26	1.38	275	0.17	0.00	0.99	0.05	38	15
HL	4	17	C	0.02	-0.61	0.18	D	-0.02	-0.44	0.19	-0.17	0.26	-0.66	278	0.51	0.40	0.53	-0.21	38	16
HL	4	65	C	-0.01	-1.50	0.19	D	0.01	-1.57	0.22	0.07	0.29	0.22	271	0.82	0.00	0.97	-0.04	38	17
HL	4	20	C	0.00	-1.61	0.19	D	0.00	-1.67	0.23	0.06	0.30	0.19	271	0.85	0.54	0.46	-0.34	38	18
HL	4	1482	C	0.02	0.47	0.20	D	-0.03	0.74	0.20	-0.27	0.28	-0.97	279	0.33	2.43	0.12	-0.54	38	19
HL	4	22	C	-0.04	0.39	0.19	D	0.04	-0.02	0.19	0.41	0.27	1.52	279	0.13	0.78	0.38	0.30	38	20
HL	4	23	C	0.07	-0.07	0.18	D	-0.08	0.70	0.20	-0.77	0.27	-2.87	277	0.00	0.45	0.50	-0.21	38	21
HL	4	30	C	-0.02	0.24	0.19	D	0.02	0.02	0.19	0.23	0.27	0.86	279	0.39	1.86	0.17	0.42	38	22

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	4	1484	C	0.00	0.47	0.20	D	0.00	0.47	0.19	0.00	0.27	0.00	279	1.00	0.00	0.95	-0.07	38	23
HL	4	34	C	-0.03	-0.26	0.18	D	0.03	-0.58	0.19	0.32	0.26	1.23	278	0.22	1.47	0.23	0.40	38	24
HL	4	35	C	-0.03	1.93	0.25	D	0.03	1.55	0.16	0.37	0.30	1.25	239	0.21	0.74	0.39	0.42	38	25
HL	4	24	C	-0.02	0.63	0.20	D	0.02	0.44	0.19	0.19	0.28	0.67	279	0.50	0.34	0.56	-0.25	38	26
HL	4	36	C	0.09	-0.39	0.18	D	-0.09	0.48	0.19	-0.87	0.26	-3.32	277	0.00	1.31	0.25	-0.37	38	27
HL	4	1486	C	-0.02	-1.29	0.18	D	0.02	-1.47	0.22	0.18	0.28	0.63	271	0.53	0.01	0.91	0.09	38	28
HL	4	1291	C	0.01	0.94	0.22	D	-0.01	1.02	0.20	-0.08	0.30	-0.27	279	0.79	0.55	0.46	-0.36	38	29
HL	4	26	C	0.04	-0.23	0.18	D	-0.04	0.16	0.19	-0.39	0.26	-1.48	278	0.14	0.02	0.89	-0.08	38	30
HL	4	27	C	0.03	-0.96	0.18	D	-0.04	-0.62	0.19	-0.34	0.26	-1.30	278	0.19	0.62	0.43	-0.28	38	31
HL	4	37	C	0.03	-0.07	0.18	D	-0.03	0.19	0.19	-0.26	0.26	-0.98	279	0.33	1.06	0.30	-0.35	38	32
HL	4	1485	C	-0.02	0.75	0.21	D	0.02	0.51	0.19	0.24	0.28	0.85	278	0.40	0.79	0.37	0.35	38	33
HL	4	38	C	0.00	-0.98	0.18	D	0.00	-0.98	0.20	0.00	0.27	0.00	276	1.00	0.00	0.98	0.04	38	34
HL	4	31	C	-0.01	0.00	0.18	D	0.01	-0.05	0.19	0.05	0.26	0.21	279	0.83	0.26	0.61	-0.20	38	35
HL	4	25	C	0.03	0.71	0.21	D	-0.03	1.02	0.20	-0.31	0.29	-1.05	279	0.29	0.26	0.61	0.21	38	36
HL	4	54	C	-0.02	0.01	0.18	D	0.03	-0.23	0.19	0.24	0.26	0.90	278	0.37	2.40	0.12	0.47	38	37
HL	4	40	C	0.05	-0.29	0.18	D	-0.05	0.19	0.19	-0.48	0.26	-1.84	277	0.07	0.02	0.89	-0.08	38	38
HL	4	55	C	0.04	0.29	0.19	D	-0.04	0.70	0.20	-0.41	0.27	-1.50	278	0.14	0.30	0.58	0.21	38	39
HL	4	41	C	0.03	0.86	0.22	D	-0.04	1.32	0.22	-0.46	0.30	-1.51	278	0.13	0.58	0.45	-0.32	38	40
HL	4	56	C	0.03	0.60	0.20	D	-0.04	1.02	0.20	-0.42	0.29	-1.45	278	0.15	0.09	0.76	0.15	38	41
HL	4	57	C	0.07	0.52	0.20	D	-0.07	1.42	0.22	-0.90	0.30	-3.03	275	0.00	3.67	0.06	-0.71	38	42
HL	4	42	C	-0.03	1.08	0.14	D	0.03	0.94	0.11	0.13	0.18	0.75	270	0.45	0.09	0.77	0.10	38	43
HL	4	387	C	0.01	-0.22	0.18	D	-0.01	-0.16	0.19	-0.07	0.26	-0.25	278	0.80	0.00	0.97	0.03	38	44
HL	4	46	C	0.09	-0.16	0.18	D	-0.10	0.82	0.20	-0.97	0.27	-3.63	275	0.00	6.11	0.01	-0.80	38	45
HL	4	47	C	0.02	-0.12	0.18	D	-0.02	0.09	0.19	-0.21	0.26	-0.81	278	0.42	0.83	0.36	-0.32	38	46
HL	4	1487	C	0.02	0.56	0.20	D	-0.02	0.78	0.20	-0.22	0.28	-0.77	278	0.44	4.51	0.03	-0.91	38	47
HL	4	48	C	-0.01	-1.15	0.18	D	0.01	-1.25	0.21	0.09	0.28	0.34	273	0.74	0.26	0.61	-0.23	38	48
HL	4	50	C	0.04	0.04	0.19	D	-0.04	0.40	0.19	-0.36	0.27	-1.36	278	0.17	4.62	0.03	-0.77	38	49
HL	4	1705	C	-0.02	0.45	0.11	D	0.02	0.39	0.10	0.05	0.15	0.34	278	0.73	0.29	0.59	-0.15	38	50

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Rasch-Welch Df	Rasch-Welch Prob	Mantel Chi-sq	Mantel Prob	Size Active ITEM CUMLOR	Size Active ITEM Slices	Size Active ITEM Number
HL	4	49	C	-0.07	-0.64	0.18	D	0.07	-1.38	0.21	0.74	0.28	2.67	268	0.01	1.49	0.22	0.41	38	51
HL	4	51	C	0.04	-0.26	0.18	D	-0.04	0.12	0.19	-0.38	0.26	-1.45	278	0.15	0.02	0.89	0.00	38	52
HL	4	62	C	-0.01	0.22	0.19	D	0.01	0.09	0.19	0.13	0.27	0.50	278	0.62	0.41	0.52	0.25	38	53
HL	4	60	C	-0.05	-0.73	0.18	D	0.05	-1.29	0.21	0.56	0.27	2.03	270	0.04	0.21	0.64	0.21	38	54
HL	4	61	C	0.00	0.11	0.19	D	0.00	0.16	0.19	-0.04	0.26	-0.16	278	0.87	0.61	0.43	0.29	38	55
HL	4	63	C	0.00	1.23	0.24	D	0.00	1.23	0.21	0.00	0.32	0.00	276	1.00	3.96	0.05	0.74	38	56
HL	4	1016	C	-0.01	1.16	0.23	D	0.01	0.98	0.20	0.19	0.31	0.61	274	0.55	1.47	0.23	0.52	38	57
HL	4	1017	C	-0.02	5.85		D	0.02	3.28	0.40	2.58	1.88	1.37	155	0.17	0.00	0.97		38	58
HL	4	1015	C	0.01	-0.38	0.18	D	-0.01	-0.30	0.19	-0.09	0.26	-0.33	277	0.74	0.16	0.69	0.15	38	59
HL	4	1014	C	-0.02	1.28	0.24	D	0.03	0.93	0.20	0.34	0.31	1.08	271	0.28	0.00	0.95	-0.05	38	60
HL	4	1011	C	0.00	0.82	0.21	D	0.00	0.82	0.20	0.00	0.29	0.00	278	1.00	0.00	0.97	-0.04	38	61
HL	4	1012	C	-0.01	1.16	0.23	D	0.01	1.06	0.21	0.10	0.31	0.34	275	0.74	0.64	0.42	-0.45	38	62
HL	4	1013	C	-0.08	0.90	0.12	D	0.08	0.61	0.10	0.29	0.16	1.80	273	0.07	1.47	0.23	0.37	38	63
HL	5	642	C	-0.01	0.09	0.21	D	0.01	-0.04	0.20	0.13	0.29	0.46	242	0.65	0.01	0.94	0.07	40	1
HL	5	644	C	-0.01	-2.42	0.25	D	0.01	-2.58	0.28	0.17	0.38	0.44	239	0.66	0.04	0.85	0.04	40	2
HL	5	636	C	0.00	-0.75	0.20	D	0.00	-0.75	0.20	0.00	0.28	0.00	242	1.00	0.00	0.98	0.07	40	3
HL	5	716	C	0.02	0.14	0.21	D	-0.02	0.37	0.20	-0.23	0.29	-0.79	242	0.43	0.02	0.88	-0.08	40	4
HL	5	1646	C	-0.07	0.18	0.11	D	0.07	-0.03	0.11	0.20	0.16	1.31	241	0.19	4.44	0.04	0.64	40	5
HL	5	633	C	-0.01	-0.08	0.20	D	0.01	-0.20	0.20	0.12	0.28	0.42	242	0.68	0.50	0.48	0.25	40	6
HL	5	723	C	0.00	0.94	0.24	D	0.00	1.00	0.22	-0.06	0.33	-0.18	240	0.86	0.09	0.77	0.18	40	7
HL	5	1072	C	0.02	0.66	0.23	D	-0.02	0.90	0.22	-0.24	0.32	-0.76	242	0.45	0.01	0.93	-0.03	40	8
HL	5	1565	C	-0.03	0.36	0.22	D	0.03	0.00	0.20	0.36	0.29	1.23	240	0.22	1.95	0.16	0.50	40	9
HL	5	711	C	0.03	0.22	0.21	D	-0.03	0.58	0.21	-0.35	0.30	-1.19	242	0.24	0.08	0.78	-0.13	40	10
HL	5	690	C	-0.03	-0.08	0.20	D	0.03	-0.39	0.20	0.32	0.28	1.11	242	0.27	1.25	0.26	0.45	40	11
HL	5	1074	C	0.01	-2.30	0.24	D	-0.01	-2.22	0.26	-0.08	0.35	-0.22	242	0.83	0.12	0.73	0.21	40	12
HL	5	1495	C	0.03	-2.03	0.23	D	-0.03	-1.70	0.23	-0.33	0.32	-1.03	242	0.30	0.65	0.42	-0.37	40	13
HL	5	713	C	0.02	0.32	0.22	D	-0.02	0.54	0.21	-0.22	0.30	-0.73	242	0.46	1.27	0.26	-0.51	40	14
HL	5	721	C	0.02	-1.39	0.20	D	-0.02	-1.22	0.21	-0.17	0.29	-0.59	242	0.56	0.35	0.56	-0.27	40	15

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	726	C	0.06	-0.52	0.20	D	-0.06	0.08	0.20	-0.60	0.28	-2.13	242	0.03	1.53	0.22	-0.43	40	16
HL	5	724	C	-0.02	0.05	0.21	D	0.02	-0.20	0.20	0.25	0.29	0.86	242	0.39	0.00	0.99	0.05	40	17
HL	5	725	C	0.05	-0.48	0.20	D	-0.05	0.04	0.20	-0.52	0.28	-1.85	242	0.07	2.24	0.13	-0.53	40	18
HL	5	627	C	-0.02	-0.60	0.20	D	0.02	-0.79	0.20	0.20	0.28	0.69	242	0.49	0.68	0.41	0.31	40	19
HL	5	722	C	-0.07	0.71	0.13	D	0.07	0.47	0.12	0.24	0.18	1.39	239	0.17	4.34	0.04	0.68	40	20
HL	5	1215	C	0.00	0.46	0.22	D	0.00	0.41	0.21	0.05	0.30	0.17	241	0.87	3.68	0.06	0.58	40	21
HL	5	672	C	0.00	-0.48	0.20	D	0.00	-0.48	0.20	0.00	0.28	0.00	242	1.00	0.18	0.67	0.17	40	22
HL	5	1183	C	-0.01	0.61	0.23	D	0.01	0.49	0.21	0.12	0.31	0.38	240	0.71	0.16	0.69	0.18	40	23
HL	5	681	C	0.03	0.88	0.24	D	-0.03	1.38	0.24	-0.50	0.34	-1.45	242	0.15	0.08	0.78	-0.19	40	24
HL	5	673	C	-0.02	2.32	0.38	D	0.02	1.92	0.28	0.41	0.47	0.87	222	0.39	0.45	0.50	0.59	40	25
HL	5	1186	C	0.03	-0.60	0.20	D	-0.03	-0.35	0.20	-0.24	0.28	-0.87	242	0.39	0.40	0.53	-0.23	40	26
HL	5	729	C	0.04	-1.19	0.20	D	-0.04	-0.79	0.20	-0.39	0.28	-1.38	242	0.17	0.42	0.51	-0.22	40	27
HL	5	640	C	-0.01	1.41	0.28	D	0.01	1.26	0.24	0.15	0.36	0.40	236	0.69	0.45	0.50	0.40	40	28
HL	5	718	C	-0.01	1.49	0.28	D	0.01	1.38	0.24	0.11	0.37	0.30	236	0.77	0.36	0.55	0.31	40	29
HL	5	1193	C	0.02	-0.04	0.21	D	-0.02	0.12	0.20	-0.16	0.29	-0.54	242	0.59	0.38	0.54	-0.27	40	30
HL	5	689	C	0.03	-1.27	0.20	D	-0.03	-0.96	0.21	-0.31	0.29	-1.07	242	0.29	1.67	0.20	-0.46	40	31
HL	5	631	C	0.06	-0.52	0.20	D	-0.06	0.04	0.20	-0.56	0.28	-1.99	242	0.05	3.45	0.06	-0.66	40	32
HL	5	648	C	0.03	-0.91	0.20	D	-0.03	-0.59	0.20	-0.32	0.28	-1.13	242	0.26	1.86	0.17	-0.51	40	33
HL	5	1492	C	0.03	-0.83	0.20	D	-0.03	-0.55	0.20	-0.28	0.28	-1.00	242	0.32	2.58	0.11	-0.67	40	34
HL	5	1222	C	0.01	-1.56	0.21	D	-0.01	-1.40	0.22	-0.16	0.30	-0.53	242	0.60	1.25	0.26	-0.50	40	35
HL	5	629	C	-0.05	0.46	0.22	D	0.05	-0.08	0.20	0.54	0.30	1.81	239	0.07	0.47	0.49	0.30	40	36
HL	5	728	C	0.03	-0.72	0.20	D	-0.03	-0.43	0.20	-0.28	0.28	-1.01	242	0.32	0.78	0.38	-0.34	40	37
HL	5	1493	C	-0.01	0.61	0.23	D	0.01	0.49	0.21	0.12	0.31	0.38	240	0.71	0.60	0.44	0.30	40	38
HL	5	693	C	0.02	0.82	0.24	D	-0.02	1.15	0.23	-0.33	0.33	-1.00	242	0.32	0.07	0.80	-0.18	40	39
HL	5	677	C	0.01	1.26	0.27	D	-0.01	1.50	0.25	-0.24	0.36	-0.65	241	0.52	0.08	0.77	-0.23	40	40
HL	5	1494	C	-0.01	0.88	0.24	D	0.01	0.81	0.22	0.07	0.32	0.23	239	0.82	0.04	0.84	0.16	40	41
HL	5	625	C	0.02	-0.78	0.20	D	-0.01	-0.63	0.20	-0.15	0.28	-0.52	241	0.60	0.00	0.96	-0.06	40	42
HL	5	1552	C	-0.01	0.12	0.21	D	0.01	0.04	0.20	0.08	0.29	0.27	240	0.79	0.18	0.67	-0.21	40	43

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Rasch-Welch Df	Rasch-Welch Prob	Mantel Chi-sq	Mantel Prob	Size Active ITEM CUMLOR	Size Active ITEM Slices	Size Active ITEM Number
HL	5	702	C	-0.01	0.35	0.22	D	0.01	0.28	0.20	0.06	0.30	0.21	240	0.83	0.08	0.77	0.14	40	44
HL	5	730	C	0.01	0.16	0.21	D	-0.01	0.28	0.20	-0.12	0.29	-0.41	241	0.68	0.26	0.61	-0.22	40	45
HL	5	709	C	-0.03	-0.62	0.20	D	0.03	-0.88	0.20	0.26	0.28	0.90	241	0.37	0.12	0.73	0.16	40	46
HL	5	646	C	0.00	-0.49	0.20	D	0.00	-0.49	0.20	0.00	0.28	0.00	241	1.00	0.72	0.40	-0.31	40	47
HL	5	696	C	-0.03	-0.74	0.20	D	0.03	-1.00	0.21	0.26	0.29	0.92	241	0.36	0.02	0.88	0.00	40	48
HL	5	637	C	-0.04	1.48	0.28	D	0.04	0.85	0.22	0.62	0.36	1.74	224	0.08	0.02	0.89	-0.07	40	49
HL	5	708	C	-0.04	1.74	0.31	D	0.04	1.05	0.23	0.69	0.38	1.80	219	0.07	3.67	0.06	1.12	40	50
HL	5	712	C	0.01	0.69	0.11	D	-0.01	0.69	0.09	0.00	0.15	0.00	235	1.00	0.52	0.47	-0.26	40	51
HL	5	720	C	-0.02	0.16	0.21	D	0.02	0.00	0.20	0.16	0.29	0.56	240	0.57	0.01	0.91	-0.09	40	52
HL	5	714	C	-0.02	0.03	0.21	D	0.01	-0.12	0.20	0.15	0.29	0.52	241	0.60	0.04	0.84	0.12	40	53
HL	5	630	C	0.06	-0.46	0.20	D	-0.06	0.12	0.20	-0.58	0.28	-2.06	241	0.04	1.21	0.27	-0.37	40	54
HL	5	727	C	-0.02	0.81	0.24	D	0.02	0.58	0.21	0.23	0.32	0.73	237	0.47	0.03	0.86	-0.01	40	55
HL	5	684	C	0.01	-0.30	0.20	D	-0.01	-0.24	0.20	-0.07	0.28	-0.23	241	0.82	1.58	0.21	-0.52	40	56
HL	5	699	C	-0.02	-1.42	0.21	D	0.02	-1.60	0.22	0.17	0.30	0.57	240	0.57	0.07	0.79	0.12	40	57
HL	5	707	C	0.01	1.25	0.27	D	-0.01	1.44	0.25	-0.19	0.36	-0.51	239	0.61	0.04	0.85	-0.02	40	58
HL	5	706	C	-0.05	3.46	0.57	D	0.05	2.04	0.22	1.42	0.61	2.33	154	0.02	3.96	0.05	1.57	40	59
HL	5	626	C	-0.05	-0.90	0.20	D	0.05	-1.40	0.22	0.51	0.29	1.72	240	0.09	0.31	0.58	0.23	40	60
HL	5	634	C	-0.04	-0.62	0.20	D	0.04	-1.00	0.21	0.38	0.29	1.33	241	0.18	1.59	0.21	0.44	40	61
HL	5	719	C	-0.05	0.59	0.23	D	0.05	0.04	0.20	0.55	0.30	1.83	237	0.07	0.14	0.71	0.21	40	62
HL	5	1208	C	0.03	0.87	0.24	D	-0.03	1.32	0.24	-0.45	0.34	-1.33	241	0.18	0.04	0.85	-0.16	40	63
HL	5	1030	C	0.04	-0.48	0.07	D	-0.04	-0.42	0.07	-0.05	0.10	-0.51	242	0.61	0.33	0.56	-0.17	40	64
HL	6	645	C	-0.02	-1.13	0.20	D	0.02	-1.32	0.19	0.19	0.28	0.69	246	0.49	0.06	0.81	-0.14	39	1
HL	6	1567	C	-0.04	0.16	0.22	D	0.04	-0.26	0.19	0.42	0.29	1.44	237	0.15	2.46	0.12	0.59	39	2
HL	6	660	C	-0.01	2.64	0.51	D	0.01	2.36	0.37	0.28	0.64	0.45	217	0.66	0.06	0.81	-0.07	39	3
HL	6	1171	C	0.00	-0.03	0.21	D	0.00	-0.07	0.19	0.05	0.29	0.16	241	0.87	0.01	0.91	-0.01	39	4
HL	6	1661	C	-0.01	-0.55	0.11	D	0.01	-0.55	0.11	0.00	0.16	0.00	243	1.00	0.02	0.88	-0.04	39	5
HL	6	661	C	0.00	-0.50	0.20	D	0.00	-0.50	0.19	0.00	0.28	0.00	243	1.00	0.02	0.87	-0.10	39	6
HL	6	659	C	0.05	-1.06	0.20	D	-0.04	-0.65	0.19	-0.41	0.27	-1.51	245	0.13	1.73	0.19	-0.50	39	7

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Rasch-Welch Df	Rasch-Welch Prob	Mantel Chi-sq	Mantel Prob	Size Active ITEM CUMLOR	Size Active ITEM Slices	Size Active ITEM Number
HL	6	643	C	0.12	-0.93	0.10	D	-0.10	-0.67	0.09	-0.26	0.14	-1.88	245	0.06	1.76	0.18	-0.38	39	8
HL	6	1983	C	0.06	-0.66	0.20	D	-0.05	-0.11	0.19	-0.55	0.28	-1.99	246	0.05	0.53	0.47	-0.25	39	9
HL	6	1986	C	0.02	-1.79	0.21	D	-0.01	-1.63	0.20	-0.15	0.29	-0.52	246	0.60	0.18	0.67	0.21	39	10
HL	6	1985	C	0.07	-0.25	0.21	D	-0.06	0.49	0.21	-0.74	0.30	-2.50	248	0.01	3.17	0.07	-0.62	39	11
HL	6	665	C	-0.03	-0.20	0.21	D	0.03	-0.47	0.19	0.27	0.28	0.94	241	0.35	0.10	0.76	-0.14	39	12
HL	6	678	C	0.00	-1.16	0.20	D	0.00	-1.16	0.19	0.00	0.27	0.00	246	1.00	0.04	0.83	-0.12	39	13
HL	6	652	C	0.00	-1.04	0.20	D	0.00	-1.04	0.19	0.00	0.27	0.00	245	1.00	0.72	0.39	-0.33	39	14
HL	6	639	C	-0.01	0.60	0.24	D	0.01	0.45	0.21	0.15	0.32	0.47	236	0.64	0.00	1.00	-0.09	39	15
HL	6	1075	C	-0.01	0.16	0.22	D	0.01	0.08	0.20	0.09	0.30	0.29	240	0.77	0.01	0.93	0.08	39	16
HL	6	662	C	0.03	-0.62	0.20	D	-0.03	-0.33	0.19	-0.29	0.28	-1.07	245	0.29	0.73	0.39	-0.31	39	17
HL	6	664	C	0.06	-0.08	0.11	D	-0.05	0.07	0.10	-0.14	0.15	-0.95	241	0.34	2.49	0.11	-0.54	39	18
HL	6	647	C	0.00	0.37	0.23	D	0.00	0.39	0.21	-0.02	0.31	-0.07	239	0.94	0.05	0.82	0.13	39	19
HL	6	691	C	-0.02	3.36	0.72	D	0.02	2.22	0.35	1.14	0.80	1.42	168	0.16	0.19	0.67	0.69	39	20
HL	6	688	C	-0.02	0.02	0.22	D	0.02	-0.22	0.19	0.24	0.29	0.82	238	0.42	0.02	0.90	0.11	39	21
HL	6	687	C	-0.01	1.52	0.33	D	0.01	1.34	0.26	0.18	0.42	0.44	227	0.66	0.00	0.96	-0.09	39	22
HL	6	1309	C	0.00	0.53	0.24	D	0.00	0.49	0.21	0.04	0.32	0.14	237	0.89	0.02	0.90	-0.02	39	23
HL	6	651	C	0.00	0.99	0.27	D	0.00	0.92	0.23	0.07	0.36	0.19	234	0.85	0.00	0.98	-0.07	39	24
HL	6	683	C	-0.02	-1.85	0.21	D	0.02	-2.07	0.22	0.22	0.30	0.72	247	0.47	0.34	0.56	0.26	39	25
HL	6	649	C	0.01	-0.59	0.20	D	-0.01	-0.51	0.19	-0.08	0.28	-0.30	242	0.76	0.01	0.94	-0.07	39	26
HL	6	1173	C	0.06	-0.06	0.12	D	-0.05	0.10	0.11	-0.16	0.16	-1.01	241	0.31	0.84	0.36	-0.27	39	27
HL	6	1083	C	0.00	-0.30	0.21	D	0.00	-0.27	0.19	-0.02	0.28	-0.08	241	0.93	0.04	0.84	-0.11	39	28
HL	6	653	C	0.00	-1.89	0.21	D	0.00	-1.89	0.21	0.00	0.30	0.00	246	1.00	0.03	0.87	0.00	39	29
HL	6	1497	C	-0.01	0.72	0.25	D	0.01	0.53	0.21	0.18	0.33	0.55	233	0.58	0.21	0.65	0.24	39	30
HL	6	682	C	0.03	-0.34	0.21	D	-0.02	-0.07	0.19	-0.27	0.28	-0.95	243	0.34	0.02	0.89	0.09	39	31
HL	6	1766	C	-0.04	-0.17	0.21	D	0.04	-0.54	0.19	0.37	0.28	1.33	239	0.19	2.15	0.14	0.54	39	32
HL	6	698	C	-0.01	2.20	0.43	D	0.01	2.00	0.32	0.21	0.54	0.39	222	0.70	0.20	0.66	0.56	39	33
HL	6	1172	C	-0.03	-2.18	0.22	D	0.02	-2.54	0.24	0.36	0.33	1.10	247	0.27	0.53	0.47	0.37	39	34
HL	6	632	C	-0.01	-0.08	0.21	D	0.01	-0.18	0.19	0.11	0.29	0.37	239	0.71	0.53	0.47	0.28	39	35

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Rasch-Welch Df	Rasch-Welch Prob	Mantel Chi-sq	Mantel Prob	Size Active ITEM CUMLOR	Size Active ITEM Slices	Size Active ITEM Number
HL	6	657	C	0.01	-0.51	0.20	D	-0.01	-0.43	0.19	-0.07	0.28	-0.26	242	0.79	0.00	0.99	-0.05	39	36
HL	6	1755	C	-0.02	-0.51	0.20	D	0.01	-0.65	0.19	0.14	0.28	0.50	242	0.62	0.03	0.86	0.12	39	37
HL	6	680	C	0.04	-0.66	0.10	D	-0.03	-0.58	0.09	-0.08	0.13	-0.58	244	0.56	0.29	0.59	-0.15	39	38
HL	6	1566	C	0.05	-1.39	0.20	D	-0.05	-0.93	0.19	-0.46	0.28	-1.67	243	0.10	0.13	0.72	-0.16	39	39
HL	6	675	C	-0.04	0.48	0.24	D	0.04	0.04	0.20	0.44	0.31	1.41	231	0.16	3.34	0.07	0.65	39	40
HL	6	674	C	-0.02	2.64	0.51	D	0.01	2.00	0.32	0.64	0.61	1.06	197	0.29	1.43	0.23	0.86	39	41
HL	6	667	C	-0.03	-1.19	0.20	D	0.03	-1.48	0.20	0.29	0.28	1.04	246	0.30	0.94	0.33	0.36	39	42
HL	6	1170	C	0.00	2.20	0.43	D	0.00	2.36	0.37	-0.15	0.57	-0.27	237	0.79	0.04	0.85	-0.08	39	43
HL	6	692	C	0.02	0.41	0.24	D	-0.02	0.62	0.22	-0.22	0.32	-0.68	240	0.50	0.01	0.94	0.08	39	44
HL	6	679	C	-0.03	0.64	0.25	D	0.03	0.28	0.20	0.36	0.32	1.14	228	0.26	0.56	0.45	0.31	39	45
HL	6	666	C	0.00	0.21	0.11	D	0.00	0.21	0.09	0.00	0.14	0.00	234	1.00	0.30	0.59	0.16	39	46
HL	6	701	C	-0.01	2.39	0.46	D	0.01	1.89	0.31	0.50	0.56	0.89	204	0.37	0.26	0.61	0.54	39	47
HL	6	700	C	-0.04	-1.33	0.20	D	0.04	-1.72	0.20	0.39	0.29	1.35	245	0.18	0.59	0.44	0.34	39	48
HL	6	697	C	0.02	-0.18	0.21	D	-0.01	-0.04	0.19	-0.15	0.29	-0.51	240	0.61	0.98	0.32	-0.37	39	49
HL	6	694	C	-0.09	1.44	0.24	D	0.08	0.70	0.15	0.74	0.28	2.63	198	0.01	3.59	0.06	0.79	39	50
HL	6	676	C	0.06	-0.81	0.20	D	-0.05	-0.26	0.19	-0.55	0.28	-2.00	242	0.05	2.05	0.15	-0.48	39	51
HL	6	668	C	-0.03	1.51	0.33	D	0.03	0.97	0.23	0.54	0.40	1.34	212	0.18	0.94	0.33	0.70	39	52
HL	6	650	C	0.05	0.05	0.22	D	-0.04	0.58	0.21	-0.53	0.31	-1.73	244	0.09	2.05	0.15	-0.52	39	53
HL	6	1169	C	-0.01	1.06	0.28	D	0.01	0.87	0.23	0.19	0.36	0.52	228	0.60	1.05	0.31	0.48	39	54
HL	6	669	C	-0.06	0.35	0.23	D	0.05	-0.26	0.19	0.61	0.30	2.03	229	0.04	3.34	0.07	0.66	39	55
HL	6	663	C	-0.04	2.63	0.52	D	0.04	1.40	0.26	1.23	0.58	2.12	171	0.04	1.40	0.24	0.93	39	56
HL	6	656	C	0.00	-0.38	0.21	D	0.00	-0.38	0.19	0.00	0.28	0.00	240	1.00	0.14	0.71	0.16	39	57
HL	6	655	C	-0.03	-1.62	0.21	D	0.02	-1.89	0.21	0.27	0.29	0.91	246	0.36	0.76	0.38	0.35	39	58
HL	6	1496	C	-0.04	2.03	0.40	D	0.03	1.15	0.24	0.88	0.47	1.88	192	0.06	2.26	0.13	0.99	39	59
HL	6	1031	C	0.06	-1.04	0.08	D	-0.05	-0.96	0.07	-0.08	0.11	-0.73	246	0.46	0.67	0.41	-0.22	39	60
HL	7	1118	C	0.07	-2.58	0.28	D	-0.09	-1.62	0.30	-0.96	0.41	-2.34	137	0.02	2.33	0.13	-0.78	28	1
HL	7	784	C	-0.07	-0.83	0.24	D	0.10	-1.71	0.30	0.88	0.38	2.29	123	0.02	2.29	0.13	0.80	28	2
HL	7	888	C	0.04	-2.66	0.29	D	-0.06	-2.00	0.32	-0.66	0.43	-1.55	135	0.12	1.06	0.30	-0.62	28	3

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	7	883	C	0.00	0.68	0.30	D	0.00	0.68	0.32	0.00	0.44	0.00	137	1.00	0.02	0.89	-0.09	28	4
HL	7	885	C	-0.02	-1.96	0.25	D	0.02	-2.21	0.33	0.25	0.41	0.60	121	0.55	0.01	0.93	0.08	28	5
HL	7	886	C	0.05	0.87	0.32	D	-0.07	2.14	0.49	-1.28	0.58	-2.20	109	0.03	2.60	0.11	-1.41	28	6
HL	7	882	C	0.00	-1.98	0.25	D	0.00	-2.00	0.32	0.02	0.40	0.06	124	0.96	0.02	0.89	0.18	28	7
HL	7	763	C	0.00	-1.34	0.24	D	0.00	-1.34	0.29	0.00	0.37	0.00	127	1.00	0.10	0.75	0.22	28	8
HL	7	762	C	0.00	-0.62	0.24	D	0.00	-0.62	0.28	0.00	0.37	0.00	130	1.00	0.56	0.46	0.47	28	9
HL	7	1098	C	0.04	-0.20	0.25	D	-0.05	0.29	0.30	-0.49	0.39	-1.25	128	0.21	0.34	0.56	-0.41	28	10
HL	7	1175	C	0.02	-0.50	0.24	D	-0.02	-0.31	0.29	-0.19	0.37	-0.51	130	0.61	0.00	1.00	-0.19	28	11
HL	7	871	C	0.00	-2.29	0.26	D	-0.01	-2.21	0.33	-0.08	0.42	-0.19	125	0.85	0.47	0.49	-0.52	28	12
HL	7	1548	C	0.01	-1.05	0.23	D	-0.01	-0.95	0.28	-0.10	0.37	-0.29	128	0.78	0.01	0.92	-0.16	28	13
HL	7	790	C	-0.04	-1.90	0.25	D	0.05	-2.44	0.35	0.54	0.43	1.27	116	0.21	1.95	0.16	1.19	28	14
HL	7	774	C	0.01	1.47	0.38	D	-0.01	1.74	0.42	-0.27	0.57	-0.47	136	0.64	0.00	0.95	0.25	28	15
HL	7	1097	C	0.01	-0.52	0.14	D	-0.01	-0.49	0.16	-0.02	0.21	-0.11	132	0.91	0.11	0.74	0.14	28	16
HL	7	1099	C	-0.03	-0.32	0.25	D	0.04	-0.63	0.28	0.31	0.37	0.83	132	0.41	0.00	0.96	0.11	28	17
HL	7	1089	C	0.02	1.20	0.35	D	-0.02	1.57	0.40	-0.37	0.53	-0.69	133	0.49	0.05	0.83	-0.33	28	18
HL	7	892	C	0.01	0.13	0.26	D	-0.02	0.29	0.30	-0.16	0.40	-0.40	133	0.69	0.24	0.63	0.40	28	19
HL	7	843	C	0.00	2.01	0.47	D	0.00	1.93	0.45	0.08	0.65	0.12	143	0.90	0.02	0.88	0.59	28	20
HL	7	1178	C	0.03	1.20	0.35	D	-0.05	2.15	0.49	-0.95	0.60	-1.58	117	0.12	0.69	0.40	-1.01	28	21
HL	7	806	C	0.05	-0.32	0.25	D	-0.07	0.39	0.31	-0.71	0.39	-1.79	126	0.08	0.01	0.90	-0.05	28	22
HL	7	878	C	-0.07	0.73	0.18	D	0.09	0.40	0.17	0.33	0.25	1.36	144	0.18	1.06	0.30	0.53	28	23
HL	7	1502	C	-0.03	0.34	0.28	D	0.04	-0.06	0.29	0.40	0.40	0.99	138	0.33	0.83	0.36	0.52	28	24
HL	7	808	C	0.07	-0.17	0.12	D	-0.09	0.03	0.14	-0.20	0.19	-1.05	131	0.29	0.05	0.83	0.10	28	25
HL	7	1088	C	0.01	0.50	0.29	D	-0.02	0.68	0.32	-0.18	0.43	-0.43	134	0.67	0.09	0.77	-0.33	28	26
HL	7	769	C	0.00	-2.01	0.25	D	0.00	-2.01	0.32	0.00	0.41	0.00	125	1.00	0.01	0.91	-0.07	28	27
HL	7	803	C	-0.07	0.42	0.28	D	0.09	-0.47	0.28	0.89	0.40	2.22	140	0.03	2.03	0.15	0.87	28	28
HL	7	877	C	-0.04	-0.45	0.24	D	0.06	-0.95	0.28	0.49	0.37	1.32	131	0.19	3.71	0.05	0.99	28	29
HL	7	1185	C	0.02	-0.74	0.24	D	-0.03	-0.47	0.28	-0.27	0.37	-0.74	129	0.46	0.00	0.96	-0.10	28	30
HL	7	777	C	-0.03	-0.15	0.25	D	0.05	-0.55	0.28	0.40	0.38	1.06	134	0.29	1.56	0.21	0.80	28	31

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	7	903	C	-0.03	2.99	0.72	D	0.04	1.57	0.40	1.42	0.83	1.72	125	0.09	0.94	0.33	1.47	28	32
HL	7	887	C	0.02	-1.58	0.24	D	-0.03	-1.36	0.29	-0.22	0.38	-0.58	128	0.56	0.86	0.35	-0.70	28	33
HL	7	930	C	0.04	-0.74	0.24	D	-0.05	-0.31	0.29	-0.44	0.37	-1.17	129	0.24	0.27	0.61	-0.34	28	34
HL	7	880	C	0.02	0.67	0.30	D	-0.03	1.02	0.35	-0.35	0.46	-0.76	132	0.45	0.42	0.52	-0.52	28	35
HL	7	1096	C	0.08	-0.29	0.14	D	-0.10	-0.01	0.16	-0.29	0.21	-1.35	130	0.18	0.05	0.82	-0.09	28	36
HL	7	875	C	-0.01	-0.57	0.24	D	0.01	-0.63	0.28	0.06	0.37	0.16	130	0.88	0.02	0.89	0.16	28	37
HL	7	811	C	0.02	0.19	0.27	D	-0.03	0.48	0.31	-0.29	0.41	-0.71	131	0.48	0.16	0.69	-0.32	28	38
HL	7	869	C	-0.03	2.00	0.47	D	0.04	1.14	0.36	0.86	0.59	1.45	141	0.15	0.06	0.81	0.80	28	39
HL	7	1500	C	-0.01	-0.85	0.24	D	0.01	-0.95	0.28	0.09	0.37	0.26	129	0.80	0.04	0.85	-0.01	28	40
HL	7	879	C	0.08	-0.27	0.25	D	-0.11	0.79	0.33	-1.06	0.41	-2.58	121	0.01	0.62	0.43	-0.48	28	41
HL	7	897	C	0.02	-0.63	0.24	D	-0.03	-0.39	0.28	-0.24	0.37	-0.65	130	0.52	1.63	0.20	-0.65	28	42
HL	7	1182	C	0.00	0.04	0.26	D	0.00	0.04	0.29	0.00	0.39	0.00	134	1.00	0.20	0.66	-0.38	28	43
HL	7	891	C	-0.03	0.19	0.27	D	0.04	-0.22	0.29	0.42	0.39	1.06	137	0.29	0.05	0.83	0.24	28	44
HL	7	874	C	0.00	2.25	0.52	D	0.00	2.14	0.49	0.10	0.71	0.14	143	0.89	0.00	0.95	-0.47	28	45
HL	7	1179	C	-0.01	1.62	0.41	D	0.01	1.41	0.38	0.20	0.56	0.37	142	0.72	0.07	0.79	-0.06	28	46
HL	7	870	C	-0.01	2.99	0.72	D	0.02	2.14	0.49	0.84	0.87	0.97	136	0.34	0.06	0.80	0.69	28	47
HL	7	872	C	0.02	0.84	0.20	D	-0.03	0.97	0.20	-0.14	0.28	-0.48	140	0.63	4.24	0.04	-1.40	28	48
HL	7	889	C	0.06	0.43	0.16	D	-0.08	0.73	0.18	-0.30	0.24	-1.26	133	0.21	1.88	0.17	-0.75	28	49
HL	7	829	C	0.03	-1.35	0.24	D	-0.04	-1.03	0.29	-0.32	0.37	-0.88	129	0.38	1.19	0.28	-0.62	28	50
HL	7	839	C	-0.02	0.96	0.33	D	0.03	0.58	0.32	0.38	0.45	0.84	141	0.40	0.04	0.84	0.15	28	51
HL	7	1499	C	-0.04	-0.45	0.24	D	0.06	-0.95	0.28	0.49	0.37	1.32	131	0.19	0.63	0.43	0.56	28	52
HL	7	899	C	-0.03	-0.21	0.25	D	0.04	-0.55	0.28	0.34	0.38	0.89	133	0.37	0.01	0.91	-0.09	28	53
HL	7	1501	C	0.00	0.44	0.16	D	0.01	0.44	0.17	0.00	0.23	0.00	136	1.00	0.15	0.70	-0.19	28	54
HL	7	876	C	0.05	0.76	0.31	D	-0.07	1.93	0.45	-1.16	0.55	-2.14	113	0.03	0.23	0.63	-0.51	28	55
HL	7	770	C	-0.07	0.68	0.21	D	0.10	0.15	0.20	0.53	0.29	1.80	142	0.07	0.91	0.34	0.48	28	56
HL	7	1773	C	-0.01	0.76	0.31	D	0.02	0.58	0.32	0.18	0.44	0.41	139	0.68	0.03	0.86	0.06	28	57
HL	7	834	C	-0.05	0.12	0.26	D	0.07	-0.55	0.28	0.67	0.39	1.73	137	0.09	0.00	0.98	-0.16	28	58
HL	7	884	C	-0.02	2.00	0.47	D	0.03	1.41	0.38	0.59	0.61	0.97	143	0.34	0.32	0.57	0.95	28	59

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
HL	7	902	C	-0.04	0.67	0.30	D	0.06	0.03	0.29	0.64	0.42	1.53	141	0.13	0.01	0.91	-0.23	28	60
HL	7	1104	C	-0.06	-0.08	0.26	D	0.08	-0.79	0.28	0.71	0.38	1.85	135	0.07	2.02	0.16	0.81	28	61
HL	7	822	C	-0.02	2.56	0.60	D	0.03	1.74	0.42	0.82	0.73	1.12	139	0.26	0.01	0.93	0.63	28	62
HL	7	1032	C	0.02	-1.07	0.09	D	-0.03	-1.04	0.11	-0.03	0.15	-0.17	126	0.86	0.23	0.63	0.19	28	63
HL	8	909	C	0.02	-2.76	0.30	D	-0.03	-2.34	0.31	-0.42	0.44	-0.96	161	0.34	0.04	0.84	0.03	30	1
HL	8	917	C	-0.01	-3.45	0.38	D	0.01	-3.74	0.48	0.29	0.61	0.47	148	0.64	0.32	0.57	0.87	30	2
HL	8	1544	C	0.01	-0.39	0.23	D	-0.01	-0.32	0.26	-0.07	0.34	-0.20	156	0.84	0.00	1.00	0.09	30	3
HL	8	894	C	0.00	-0.18	0.23	D	0.00	-0.18	0.26	0.00	0.35	0.00	157	1.00	0.16	0.69	0.24	30	4
HL	8	867	C	-0.04	0.29	0.25	D	0.05	-0.18	0.26	0.48	0.36	1.33	161	0.19	1.96	0.16	0.78	30	5
HL	8	1676	C	-0.09	0.34	0.14	D	0.11	-0.04	0.16	0.37	0.21	1.77	158	0.08	3.14	0.08	0.71	30	6
HL	8	913	C	0.01	1.02	0.30	D	-0.02	1.28	0.33	-0.26	0.45	-0.59	156	0.56	0.25	0.61	-0.42	30	7
HL	8	929	C	0.03	-2.50	0.28	D	-0.04	-1.98	0.29	-0.52	0.40	-1.28	161	0.20	0.79	0.38	-0.57	30	8
HL	8	904	C	0.05	-2.20	0.26	D	-0.06	-1.59	0.27	-0.61	0.38	-1.61	161	0.11	2.86	0.09	-0.90	30	9
HL	8	927	C	-0.01	-1.64	0.24	D	0.02	-1.82	0.28	0.18	0.37	0.48	153	0.63	0.18	0.67	0.25	30	10
HL	8	1127	C	-0.02	0.56	0.26	D	0.03	0.24	0.27	0.32	0.38	0.85	161	0.40	0.14	0.71	0.29	30	11
HL	8	855	C	0.00	-0.99	0.23	D	0.00	-0.99	0.26	0.00	0.34	0.00	156	1.00	0.02	0.89	-0.17	30	12
HL	8	1126	C	-0.01	-2.85	0.31	D	0.02	-3.18	0.39	0.32	0.50	0.64	148	0.52	2.38	0.12	1.10	30	13
HL	8	848	C	0.02	-2.42	0.28	D	-0.03	-2.07	0.29	-0.35	0.40	-0.88	160	0.38	0.05	0.83	-0.01	30	14
HL	8	802	C	-0.01	2.88	0.60	D	0.01	2.35	0.48	0.53	0.76	0.69	161	0.49	0.30	0.58	1.28	30	15
HL	8	771	C	0.00	0.85	0.28	D	0.00	0.79	0.30	0.06	0.41	0.15	160	0.88	0.04	0.84	-0.32	30	16
HL	8	785	C	-0.07	-0.17	0.23	D	0.08	-0.91	0.26	0.74	0.35	2.12	158	0.04	5.91	0.02	1.20	30	17
HL	8	767	C	-0.03	-0.30	0.15	D	0.03	-0.41	0.16	0.11	0.22	0.50	157	0.62	0.25	0.62	0.19	30	18
HL	8	914	C	-0.05	0.29	0.25	D	0.06	-0.25	0.26	0.54	0.36	1.51	161	0.13	2.79	0.09	0.75	30	19
HL	8	921	C	0.01	-0.85	0.23	D	-0.02	-0.71	0.26	-0.14	0.34	-0.41	156	0.68	0.29	0.59	-0.38	30	20
HL	8	911	C	0.05	0.48	0.17	D	-0.06	0.80	0.19	-0.32	0.26	-1.23	156	0.22	0.61	0.43	-0.36	30	21
HL	8	833	C	-0.01	-0.64	0.23	D	0.01	-0.71	0.26	0.06	0.34	0.19	156	0.85	0.00	0.96	0.11	30	22
HL	8	912	C	0.04	-0.33	0.23	D	-0.05	0.16	0.27	-0.50	0.35	-1.40	154	0.16	0.06	0.80	-0.20	30	23
HL	8	916	C	0.00	0.10	0.24	D	0.00	0.10	0.27	0.00	0.36	0.00	158	1.00	0.00	0.95	-0.15	30	24

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HL	8	796	C	0.04	-0.33	0.23	D	-0.05	0.09	0.27	-0.42	0.35	-1.21	155	0.23	0.08	0.78	-0.20	30	25
HL	8	793	C	-0.02	4.02	1.01	D	0.02	2.60	0.53	1.42	1.14	1.24	133	0.22	0.24	0.63		30	26
HL	8	772	C	0.01	0.94	0.29	D	-0.02	1.18	0.32	-0.24	0.43	-0.55	156	0.58	0.00	0.96	-0.17	30	27
HL	8	810	C	0.02	1.80	0.38	D	-0.03	2.61	0.53	-0.81	0.65	-1.24	140	0.22	0.99	0.32	-1.04	30	28
HL	8	1079	C	-0.04	-0.44	0.23	D	0.05	-0.84	0.26	0.40	0.34	1.17	157	0.24	1.12	0.29	0.54	30	29
HL	8	1543	C	0.00	0.41	0.26	D	0.00	0.38	0.28	0.02	0.38	0.05	159	0.96	0.05	0.82	-0.21	30	30
HL	8	761	C	-0.02	0.36	0.25	D	0.03	0.09	0.27	0.27	0.37	0.72	160	0.47	0.49	0.48	0.46	30	31
HL	8	910	C	0.05	-1.48	0.23	D	-0.06	-0.97	0.26	-0.50	0.35	-1.45	158	0.15	2.88	0.09	-0.92	30	32
HL	8	906	C	0.06	-0.28	0.23	D	-0.07	0.38	0.28	-0.66	0.36	-1.84	152	0.07	1.01	0.31	-0.56	30	33
HL	8	922	C	0.02	-0.39	0.23	D	-0.02	-0.18	0.26	-0.20	0.35	-0.58	156	0.56	0.70	0.40	-0.44	30	34
HL	8	1190	C	0.01	-0.70	0.23	D	-0.01	-0.58	0.26	-0.12	0.34	-0.34	156	0.73	0.31	0.58	-0.34	30	35
HL	8	1105	C	0.01	0.17	0.24	D	-0.01	0.31	0.27	-0.14	0.37	-0.38	157	0.71	0.90	0.34	-0.52	30	36
HL	8	1546	C	0.01	2.88	0.59	D	-0.01	4.07	1.01	-1.19	1.18	-1.02	121	0.31	1.29	0.26		30	37
HL	8	893	C	0.00	0.78	0.28	D	0.01	0.71	0.29	0.07	0.40	0.18	160	0.86	0.09	0.76	0.29	30	38
HL	8	1078	C	-0.02	0.29	0.25	D	0.03	0.02	0.26	0.27	0.36	0.75	160	0.45	0.31	0.58	0.31	30	39
HL	8	926	C	0.00	0.04	0.24	D	0.00	0.04	0.26	0.00	0.36	0.00	158	1.00	0.61	0.44	0.38	30	40
HL	8	1210	C	0.04	-0.12	0.24	D	-0.04	0.31	0.27	-0.43	0.36	-1.18	154	0.24	1.00	0.32	-0.57	30	41
HL	8	820	C	-0.07	0.86	0.14	D	0.09	0.63	0.13	0.23	0.19	1.22	162	0.22	0.45	0.50	0.28	30	42
HL	8	780	C	-0.06	0.49	0.13	D	0.08	0.30	0.13	0.19	0.18	1.05	159	0.29	0.24	0.62	0.18	30	43
HL	8	1212	C	0.05	-1.16	0.23	D	-0.06	-0.64	0.26	-0.51	0.34	-1.50	156	0.14	2.44	0.12	-0.74	30	44
HL	8	925	C	0.04	-0.70	0.23	D	-0.05	-0.25	0.26	-0.45	0.34	-1.30	155	0.20	0.31	0.58	-0.30	30	45
HL	8	905	C	-0.06	0.86	0.28	D	0.08	0.02	0.26	0.83	0.39	2.15	163	0.03	3.80	0.05	1.03	30	46
HL	8	1547	C	-0.02	4.02	1.01	D	0.02	2.60	0.53	1.42	1.14	1.24	133	0.22	0.01	0.92	0.81	30	47
HL	8	1214	C	0.04	0.32	0.12	D	-0.05	0.44	0.13	-0.12	0.17	-0.67	157	0.50	1.21	0.27	-0.49	30	48
HL	8	1192	C	0.00	-1.05	0.23	D	0.01	-1.10	0.26	0.05	0.34	0.15	155	0.88	0.15	0.70	0.24	30	49
HL	8	1199	C	-0.01	-0.70	0.23	D	0.01	-0.77	0.26	0.08	0.34	0.23	156	0.82	0.01	0.92	0.11	30	50
HL	8	1201	C	-0.01	0.42	0.26	D	0.02	0.24	0.27	0.19	0.37	0.50	160	0.62	0.01	0.92	-0.16	30	51
HL	8	901	C	-0.05	1.31	0.32	D	0.06	0.46	0.28	0.85	0.43	1.99	163	0.05	0.17	0.68	0.45	30	52

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	8	764	C	0.03	0.85	0.28	D	-0.04	1.40	0.35	-0.55	0.45	-1.22	150	0.22	0.81	0.37	-0.65	30	53
HL	8	1545	C	0.03	-0.70	0.23	D	-0.04	-0.38	0.26	-0.31	0.34	-0.91	156	0.36	0.12	0.73	-0.24	30	54
HL	8	924	C	-0.03	0.85	0.28	D	0.04	0.38	0.28	0.47	0.40	1.19	163	0.24	0.02	0.89	0.05	30	55
HL	8	805	C	0.05	-0.80	0.23	D	-0.06	-0.25	0.26	-0.55	0.34	-1.60	155	0.11	2.62	0.11	-0.68	30	56
HL	8	1092	C	-0.01	1.42	0.33	D	0.01	1.18	0.32	0.24	0.47	0.52	163	0.61	0.01	0.94	0.24	30	57
HL	8	920	C	0.00	0.00	0.24	D	0.00	-0.05	0.26	0.04	0.35	0.12	158	0.90	0.03	0.85	-0.18	30	58
HL	8	766	C	-0.01	2.57	0.52	D	0.01	2.14	0.44	0.43	0.68	0.63	163	0.53	1.52	0.22		30	59
HL	8	826	C	-0.03	0.05	0.24	D	0.03	-0.25	0.26	0.30	0.35	0.86	159	0.39	0.24	0.62	0.29	30	60
HL	8	778	C	0.04	-0.39	0.23	D	-0.05	0.09	0.27	-0.48	0.35	-1.36	154	0.18	0.74	0.39	-0.45	30	61
HL	8	1034	C	0.03	-0.29	0.09	D	-0.04	-0.23	0.10	-0.06	0.14	-0.40	156	0.69	0.02	0.89	0.05	30	62

Appendix Table I.2:Hawaiian Language Arts: DIF Gender

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	394	F	0.08	-0.41	0.07	M	-0.09	-0.26	0.08	-0.14	0.11	-1.37	307	0.17	2.25	0.13	-0.36	39	1
HL	3	93	F	0.02	-2.22	0.22	M	-0.02	-1.95	0.20	-0.26	0.29	-0.90	307	0.37	0.64	0.42	-0.29	39	2
HL	3	101	F	-0.01	0.09	0.18	M	0.01	-0.03	0.18	0.12	0.26	0.47	307	0.64	0.49	0.49	0.24	39	3
HL	3	381	F	0.01	-0.68	0.17	M	-0.01	-0.58	0.18	-0.10	0.25	-0.40	307	0.69	0.02	0.87	0.09	39	4
HL	3	108	F	0.00	0.03	0.18	M	0.00	0.07	0.19	-0.05	0.26	-0.18	306	0.86	0.01	0.92	0.02	39	5
HL	3	94	F	0.05	-2.26	0.22	M	-0.05	-1.66	0.19	-0.61	0.29	-2.10	304	0.04	1.34	0.25	-0.50	39	6
HL	3	99	F	0.01	-0.39	0.17	M	-0.01	-0.26	0.18	-0.13	0.25	-0.51	306	0.61	0.20	0.66	-0.16	39	7
HL	3	89	F	-0.03	-0.12	0.17	M	0.03	-0.39	0.18	0.27	0.25	1.08	307	0.28	0.03	0.86	0.08	39	8
HL	3	1026	F	0.00	0.57	0.19	M	0.00	0.57	0.20	0.00	0.28	0.00	305	1.00	0.23	0.63	-0.21	39	9
HL	3	84	F	0.02	-1.61	0.19	M	-0.02	-1.41	0.18	-0.19	0.26	-0.72	308	0.47	0.00	0.97	-0.06	39	10
HL	3	88	F	0.02	-0.09	0.17	M	-0.02	0.07	0.19	-0.16	0.26	-0.64	304	0.52	0.25	0.62	-0.19	39	11
HL	3	90	F	0.01	-2.36	0.23	M	-0.01	-2.18	0.21	-0.18	0.31	-0.60	307	0.55	0.13	0.71	-0.20	39	12
HL	3	91	F	0.02	-2.04	0.21	M	-0.02	-1.82	0.19	-0.22	0.28	-0.77	307	0.44	0.11	0.74	0.17	39	13

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	87	F	0.01	0.92	0.20	M	-0.01	1.01	0.22	-0.10	0.30	-0.32	301	0.75	0.54	0.46	-0.31	39	14
HL	3	92	F	0.00	-0.08	0.17	M	0.00	-0.10	0.18	0.02	0.25	0.08	305	0.93	0.01	0.91	-0.07	39	15
HL	3	1023	F	0.02	1.13	0.21	M	-0.02	1.47	0.25	-0.34	0.33	-1.03	293	0.30	0.83	0.36	-0.43	39	16
HL	3	1686	F	-0.01	0.18	0.18	M	0.01	0.10	0.19	0.08	0.26	0.30	305	0.76	0.67	0.41	-0.26	39	17
HL	3	95	F	-0.01	0.80	0.20	M	0.01	0.73	0.21	0.07	0.29	0.24	304	0.81	0.15	0.70	0.18	39	18
HL	3	97	F	-0.01	-0.12	0.17	M	0.01	-0.20	0.18	0.08	0.25	0.32	305	0.75	0.04	0.85	0.09	39	19
HL	3	96	F	-0.02	0.58	0.19	M	0.02	0.40	0.20	0.18	0.27	0.66	305	0.51	0.46	0.50	0.26	39	20
HL	3	107	F	-0.05	-0.54	0.17	M	0.05	-1.00	0.18	0.47	0.25	1.88	306	0.06	1.83	0.18	0.41	39	21
HL	3	104	F	0.03	0.58	0.19	M	-0.03	0.96	0.22	-0.39	0.29	-1.34	295	0.18	0.09	0.76	-0.17	39	22
HL	3	383	F	-0.06	-1.06	0.18	M	0.07	-1.74	0.19	0.68	0.26	2.62	303	0.01	4.90	0.03	0.61	39	23
HL	3	161	F	0.05	-0.91	0.17	M	-0.05	-0.40	0.18	-0.51	0.25	-2.03	305	0.04	3.13	0.08	-0.45	39	24
HL	3	162	F	0.00	-1.24	0.18	M	0.00	-1.24	0.18	0.00	0.26	0.00	306	1.00	0.01	0.91	-0.07	39	25
HL	3	1025	F	0.02	0.68	0.19	M	-0.02	0.96	0.22	-0.28	0.29	-0.96	297	0.34	0.88	0.35	-0.31	39	26
HL	3	110	F	-0.01	0.51	0.19	M	0.01	0.36	0.20	0.14	0.27	0.53	304	0.59	0.08	0.77	0.12	39	27
HL	3	113	F	-0.02	2.09	0.28	M	0.02	1.68	0.27	0.41	0.39	1.05	306	0.29	0.12	0.72	0.26	39	28
HL	3	1024	F	0.00	0.65	0.11	M	0.00	0.65	0.12	0.00	0.16	0.00	301	1.00	0.40	0.53	0.18	39	29
HL	3	117	F	0.01	-1.00	0.18	M	-0.01	-0.94	0.18	-0.06	0.25	-0.24	306	0.81	0.02	0.90	-0.01	39	30
HL	3	1020	F	0.02	1.28	0.15	M	-0.02	1.47	0.18	-0.19	0.24	-0.78	297	0.44	0.91	0.34	-0.31	39	31
HL	3	114	F	0.00	-0.58	0.17	M	0.00	-0.62	0.18	0.05	0.25	0.18	305	0.86	0.04	0.85	0.08	39	32
HL	3	112	F	0.00	2.23	0.29	M	0.00	2.20	0.33	0.02	0.44	0.06	301	0.96	0.03	0.86	0.23	39	33
HL	3	1022	F	0.01	0.18	0.18	M	-0.01	0.25	0.19	-0.07	0.26	-0.28	303	0.78	0.13	0.72	0.13	39	34
HL	3	119	F	0.00	0.05	0.18	M	0.01	0.00	0.19	0.05	0.26	0.20	304	0.84	0.77	0.38	-0.27	39	35
HL	3	379	F	0.01	1.49	0.17	M	-0.01	1.62	0.20	-0.13	0.26	-0.50	295	0.62	0.28	0.60	0.20	39	36
HL	3	130	F	0.01	-0.01	0.18	M	-0.01	0.10	0.19	-0.12	0.26	-0.45	303	0.65	0.20	0.65	-0.15	39	37
HL	3	125	F	-0.01	-0.73	0.17	M	0.01	-0.81	0.18	0.09	0.25	0.35	305	0.73	0.09	0.76	0.12	39	38
HL	3	143	F	0.00	0.40	0.18	M	0.00	0.40	0.20	0.00	0.27	0.00	302	1.00	0.00	0.97	-0.05	39	39
HL	3	123	F	0.00	-0.10	0.17	M	0.00	-0.10	0.18	0.00	0.25	0.00	303	1.00	0.01	0.91	-0.07	39	40
HL	3	137	F	0.00	-0.32	0.17	M	0.00	-0.32	0.18	0.00	0.25	0.00	304	1.00	0.01	0.91	0.01	39	41
HL	3	127	F	0.00	3.04	0.40	M	0.00	3.33	0.52	-0.28	0.65	-0.43	282	0.67	0.16	0.69	0.11	39	42

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	158	F	-0.04	0.02	0.18	M	0.04	-0.34	0.18	0.36	0.25	1.43	304	0.15	2.56	0.11	0.48	39	43
HL	3	1664	F	-0.03	-0.88	0.17	M	0.03	-1.20	0.18	0.33	0.25	1.31	304	0.19	0.10	0.75	0.11	39	44
HL	3	1021	F	0.01	-0.67	0.17	M	-0.01	-0.60	0.18	-0.07	0.25	-0.28	304	0.78	0.32	0.57	-0.17	39	45
HL	3	384	F	-0.02	-0.82	0.17	M	0.02	-1.04	0.18	0.23	0.25	0.91	304	0.37	0.06	0.81	0.09	39	46
HL	3	156	F	-0.04	0.68	0.19	M	0.04	0.21	0.19	0.47	0.27	1.75	305	0.08	0.85	0.36	0.31	39	47
HL	3	150	F	-0.03	-1.38	0.18	M	0.03	-1.68	0.19	0.30	0.26	1.14	304	0.26	1.99	0.16	0.47	39	48
HL	3	138	F	0.04	1.12	0.15	M	-0.04	1.47	0.18	-0.35	0.23	-1.48	290	0.14	2.15	0.14	-0.53	39	49
HL	3	145	F	0.03	-0.25	0.17	M	-0.03	0.03	0.19	-0.28	0.25	-1.11	302	0.27	0.00	0.99	0.05	39	50
HL	3	1470	F	0.02	-0.13	0.17	M	-0.02	0.07	0.19	-0.20	0.26	-0.78	302	0.44	1.08	0.30	-0.34	39	51
HL	3	1286	F	0.01	1.68	0.24	M	-0.01	1.83	0.29	-0.15	0.38	-0.40	295	0.69	1.00	0.32	-0.58	39	52
HL	3	1471	F	-0.02	-0.16	0.17	M	0.02	-0.34	0.18	0.18	0.25	0.71	304	0.48	0.01	0.94	0.05	39	53
HL	3	1282	F	0.02	-0.34	0.17	M	-0.02	-0.14	0.18	-0.20	0.25	-0.80	303	0.43	0.33	0.57	-0.20	39	54
HL	3	1285	F	0.01	1.87	0.26	M	-0.01	2.10	0.31	-0.23	0.41	-0.56	291	0.57	0.12	0.73	0.44	39	55
HL	3	1477	F	-0.01	-0.61	0.17	M	0.01	-0.69	0.18	0.08	0.25	0.34	304	0.73	0.02	0.88	-0.07	39	56
HL	3	1277	F	-0.02	0.80	0.20	M	0.02	0.52	0.20	0.28	0.28	0.99	304	0.32	0.89	0.35	0.30	39	57
HL	3	1281	F	0.00	0.03	0.18	M	0.00	0.03	0.19	0.00	0.26	0.00	303	1.00	0.08	0.78	-0.12	39	58
HL	3	1283	F	-0.03	-0.73	0.17	M	0.03	-0.98	0.18	0.25	0.25	1.01	304	0.31	0.22	0.64	0.17	39	59
HL	3	1479	F	0.00	0.42	0.18	M	0.00	0.42	0.20	0.00	0.27	0.00	302	1.00	0.02	0.89	-0.08	39	60
HL	3	1284	F	-0.03	0.38	0.12	M	0.03	0.24	0.13	0.14	0.18	0.78	303	0.43	1.73	0.19	0.37	39	61
HL	3	1469	F	0.01	0.54	0.19	M	-0.01	0.64	0.21	-0.10	0.28	-0.36	300	0.72	0.01	0.93	0.01	39	62
HL	3	1478	F	-0.07	-0.19	0.17	M	0.07	-0.85	0.18	0.66	0.25	2.65	304	0.01	8.57	0.00	0.94	39	63
HL	4	395	F	-0.06	0.47	0.08	M	0.09	0.30	0.10	0.17	0.13	1.32	245	0.19	0.93	0.33	0.24	40	1
HL	4	18	F	0.00	-1.18	0.18	M	-0.01	-1.12	0.21	-0.06	0.27	-0.23	254	0.82	0.10	0.75	-0.14	40	2
HL	4	389	F	0.00	-1.72	0.20	M	0.00	-1.67	0.22	-0.05	0.30	-0.16	259	0.87	1.57	0.21	0.55	40	3
HL	4	21	F	-0.02	0.10	0.17	M	0.03	-0.17	0.21	0.26	0.27	0.99	246	0.32	0.42	0.52	0.23	40	4
HL	4	7	F	0.02	-2.22	0.23	M	-0.02	-1.93	0.23	-0.29	0.33	-0.89	270	0.38	0.14	0.71	-0.24	40	5
HL	4	12	F	-0.01	-1.00	0.18	M	0.01	-1.12	0.21	0.13	0.27	0.47	250	0.64	0.99	0.32	0.37	40	6
HL	4	64	F	0.00	-1.51	0.19	M	0.00	-1.51	0.22	0.00	0.29	0.00	255	1.00	0.36	0.55	0.28	40	7
HL	4	8	F	0.03	-1.25	0.18	M	-0.04	-0.87	0.20	-0.38	0.27	-1.39	258	0.16	0.57	0.45	-0.31	40	8

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	4	9	F	0.03	0.01	0.17	M	-0.04	0.36	0.22	-0.35	0.27	-1.28	237	0.20	0.40	0.53	-0.24	40	9
HL	4	13	F	0.02	-1.98	0.21	M	-0.03	-1.62	0.22	-0.36	0.31	-1.15	268	0.25	0.51	0.47	-0.30	40	10
HL	4	11	F	0.01	1.37	0.21	M	-0.01	1.51	0.27	-0.14	0.34	-0.41	232	0.68	0.01	0.93	0.05	40	11
HL	4	1019	F	0.03	0.10	0.17	M	-0.04	0.46	0.22	-0.36	0.28	-1.30	236	0.19	1.88	0.17	-0.48	40	12
HL	4	14	F	-0.01	-1.57	0.19	M	0.01	-1.67	0.22	0.11	0.30	0.36	254	0.72	0.26	0.61	0.25	40	13
HL	4	16	F	-0.01	-0.73	0.17	M	0.01	-0.83	0.20	0.10	0.27	0.38	249	0.70	0.01	0.91	-0.08	40	14
HL	4	15	F	0.04	-0.87	0.17	M	-0.06	-0.42	0.20	-0.46	0.27	-1.72	251	0.09	4.20	0.04	-0.77	40	15
HL	4	17	F	-0.03	-0.41	0.17	M	0.04	-0.70	0.20	0.29	0.26	1.11	247	0.27	3.32	0.07	0.63	40	16
HL	4	65	F	0.02	-1.68	0.20	M	-0.03	-1.34	0.21	-0.34	0.29	-1.17	264	0.24	0.10	0.75	-0.16	40	17
HL	4	20	F	0.03	-1.80	0.20	M	-0.04	-1.43	0.21	-0.37	0.30	-1.25	266	0.21	0.01	0.90	-0.04	40	18
HL	4	1482	F	0.00	0.61	0.18	M	0.00	0.61	0.22	0.00	0.29	0.00	240	1.00	0.15	0.70	-0.16	40	19
HL	4	22	F	-0.02	0.30	0.17	M	0.03	0.00	0.21	0.30	0.27	1.10	247	0.27	0.60	0.44	0.28	40	20
HL	4	23	F	-0.03	0.45	0.17	M	0.04	0.09	0.21	0.36	0.27	1.32	248	0.19	0.05	0.83	0.10	40	21
HL	4	30	F	-0.02	0.21	0.17	M	0.02	0.00	0.21	0.21	0.27	0.78	246	0.44	0.00	0.94	-0.02	40	22
HL	4	1484	F	0.00	0.45	0.17	M	-0.01	0.51	0.22	-0.05	0.28	-0.19	240	0.85	0.00	0.96	-0.04	40	23
HL	4	34	F	-0.01	-0.35	0.17	M	0.02	-0.50	0.20	0.14	0.26	0.54	247	0.59	0.27	0.60	0.18	40	24
HL	4	35	F	0.02	1.60	0.16	M	-0.02	1.82	0.23	-0.22	0.28	-0.79	218	0.43	0.12	0.73	0.16	40	25
HL	4	24	F	0.02	0.45	0.17	M	-0.02	0.66	0.23	-0.20	0.29	-0.71	236	0.48	0.14	0.71	-0.20	40	26
HL	4	36	F	-0.04	0.21	0.17	M	0.06	-0.25	0.20	0.46	0.27	1.74	248	0.08	0.68	0.41	0.24	40	27
HL	4	1486	F	0.02	-1.46	0.19	M	-0.02	-1.25	0.21	-0.20	0.28	-0.72	259	0.47	0.06	0.81	0.14	40	28
HL	4	1291	F	0.02	0.87	0.19	M	-0.03	1.16	0.25	-0.29	0.31	-0.93	229	0.35	0.03	0.86	-0.12	40	29
HL	4	26	F	-0.04	0.15	0.17	M	0.06	-0.33	0.20	0.49	0.27	1.84	248	0.07	2.11	0.15	0.47	40	30
HL	4	27	F	0.06	-1.09	0.18	M	-0.08	-0.42	0.20	-0.67	0.27	-2.49	255	0.01	6.05	0.01	-0.75	40	31
HL	4	37	F	-0.01	0.10	0.17	M	0.01	0.00	0.21	0.09	0.27	0.35	244	0.73	0.57	0.45	0.26	40	32
HL	4	1485	F	0.03	0.48	0.18	M	-0.04	0.87	0.24	-0.39	0.29	-1.32	230	0.19	3.41	0.06	-0.69	40	33
HL	4	38	F	0.01	-1.03	0.18	M	-0.01	-0.91	0.20	-0.12	0.27	-0.43	253	0.67	0.00	0.95	0.03	40	34
HL	4	31	F	-0.02	0.07	0.17	M	0.03	-0.17	0.21	0.23	0.27	0.88	246	0.38	0.88	0.35	0.32	40	35
HL	4	25	F	-0.05	1.20	0.20	M	0.08	0.41	0.22	0.79	0.29	2.69	261	0.01	2.04	0.15	0.48	40	36
HL	4	54	F	-0.01	-0.07	0.17	M	0.01	-0.17	0.21	0.10	0.27	0.37	245	0.71	0.00	0.96	-0.03	40	37

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	4	40	F	0.00	-0.06	0.17	M	0.01	-0.08	0.21	0.03	0.27	0.10	245	0.92	0.01	0.92	-0.01	40	38
HL	4	55	F	0.01	0.43	0.18	M	-0.02	0.60	0.22	-0.17	0.28	-0.61	237	0.54	1.00	0.32	-0.34	40	39
HL	4	41	F	-0.04	1.35	0.21	M	0.05	0.76	0.23	0.59	0.31	1.90	258	0.06	1.70	0.19	0.55	40	40
HL	4	56	F	-0.05	1.11	0.20	M	0.07	0.41	0.22	0.70	0.29	2.38	258	0.02	0.52	0.47	0.28	40	41
HL	4	57	F	0.01	0.92	0.19	M	-0.01	1.04	0.24	-0.12	0.31	-0.39	235	0.70	0.33	0.57	-0.25	40	42
HL	4	42	F	0.07	0.87	0.11	M	-0.10	1.24	0.15	-0.37	0.18	-2.01	220	0.05	7.21	0.01	-0.83	40	43
HL	4	387	F	-0.04	-0.01	0.17	M	0.05	-0.46	0.20	0.45	0.26	1.69	247	0.09	0.32	0.57	0.21	40	44
HL	4	46	F	0.02	0.22	0.17	M	-0.03	0.46	0.22	-0.24	0.28	-0.85	237	0.40	0.85	0.36	-0.31	40	45
HL	4	47	F	-0.02	0.08	0.17	M	0.03	-0.17	0.21	0.24	0.27	0.91	246	0.36	0.03	0.87	0.10	40	46
HL	4	1487	F	0.01	0.62	0.18	M	-0.01	0.76	0.23	-0.14	0.29	-0.48	236	0.63	0.17	0.68	-0.23	40	47
HL	4	48	F	0.02	-1.31	0.18	M	-0.03	-1.04	0.21	-0.28	0.28	-1.00	258	0.32	0.24	0.62	-0.21	40	48
HL	4	50	F	0.00	0.22	0.17	M	0.00	0.22	0.21	0.00	0.27	0.00	242	1.00	0.04	0.83	0.12	40	49
HL	4	1705	F	0.00	0.42	0.10	M	0.00	0.42	0.12	0.00	0.16	0.00	239	1.00	0.44	0.51	0.19	40	50
HL	4	49	F	0.01	-1.02	0.18	M	-0.02	-0.87	0.20	-0.15	0.27	-0.57	253	0.57	0.02	0.89	0.10	40	51
HL	4	51	F	-0.04	0.10	0.17	M	0.05	-0.33	0.20	0.44	0.27	1.65	248	0.10	0.00	0.95	-0.06	40	52
HL	4	62	F	0.00	0.15	0.17	M	0.00	0.15	0.21	0.00	0.27	0.00	243	1.00	0.13	0.72	0.14	40	53
HL	4	60	F	0.00	-0.98	0.18	M	0.00	-0.98	0.21	0.00	0.27	0.00	251	1.00	0.43	0.51	0.26	40	54
HL	4	61	F	-0.03	0.28	0.17	M	0.04	-0.08	0.21	0.36	0.27	1.34	248	0.18	1.86	0.17	0.49	40	55
HL	4	63	F	-0.04	1.53	0.22	M	0.06	0.81	0.23	0.71	0.32	2.25	263	0.03	1.82	0.18	0.49	40	56
HL	4	1016	F	0.00	1.03	0.19	M	-0.01	1.10	0.25	-0.07	0.31	-0.22	236	0.82	0.13	0.72	-0.16	40	57
HL	4	1017	F	0.00	3.82	0.51	M	0.00	3.61	0.60	0.21	0.79	0.27	252	0.79	0.24	0.63	0.05	40	58
HL	4	1015	F	0.00	-0.34	0.17	M	0.00	-0.34	0.20	0.00	0.26	0.00	246	1.00	0.00	0.96	-0.05	40	59
HL	4	1014	F	0.01	0.99	0.19	M	-0.02	1.23	0.26	-0.23	0.32	-0.73	230	0.46	0.04	0.83	-0.16	40	60
HL	4	1011	F	0.02	0.68	0.18	M	-0.03	1.04	0.24	-0.36	0.30	-1.18	229	0.24	2.04	0.15	-0.55	40	61
HL	4	1012	F	0.01	1.07	0.19	M	-0.01	1.16	0.25	-0.10	0.32	-0.30	235	0.76	0.03	0.86	-0.18	40	62
HL	4	1013	F	0.06	0.64	0.10	M	-0.08	0.90	0.13	-0.26	0.16	-1.60	226	0.11	1.84	0.17	-0.43	40	63
HL	5	642	F	0.02	-0.08	0.19	M	-0.02	0.15	0.22	-0.22	0.29	-0.77	237	0.44	0.10	0.75	-0.15	38	1
HL	5	644	F	0.08	-3.61	0.43	M	-0.08	-1.94	0.22	-1.67	0.48	-3.47	190	0.00	8.45	0.00	-2.76	38	2
HL	5	636	F	0.00	-0.75	0.20	M	0.00	-0.75	0.20	0.00	0.28	0.00	241	1.00	0.02	0.88	0.12	38	3

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	716	F	0.01	0.23	0.20	M	-0.01	0.29	0.22	-0.06	0.30	-0.22	236	0.83	0.52	0.47	-0.28	38	4
HL	5	1646	F	0.02	0.05	0.10	M	-0.02	0.09	0.12	-0.05	0.15	-0.29	236	0.77	0.04	0.83	0.06	38	5
HL	5	633	F	-0.03	0.00	0.19	M	0.03	-0.30	0.21	0.30	0.28	1.05	240	0.30	0.17	0.68	0.18	38	6
HL	5	723	F	-0.04	1.23	0.23	M	0.05	0.65	0.24	0.58	0.33	1.76	241	0.08	2.36	0.12	0.63	38	7
HL	5	1072	F	-0.03	0.99	0.22	M	0.04	0.55	0.23	0.44	0.32	1.38	240	0.17	0.22	0.64	0.25	38	8
HL	5	1565	F	0.01	0.11	0.20	M	-0.01	0.24	0.22	-0.13	0.29	-0.45	236	0.66	0.07	0.79	-0.13	38	9
HL	5	711	F	-0.03	0.59	0.20	M	0.04	0.19	0.22	0.39	0.30	1.31	240	0.19	0.13	0.72	0.16	38	10
HL	5	690	F	0.05	-0.49	0.19	M	-0.06	0.05	0.21	-0.54	0.29	-1.87	237	0.06	0.61	0.43	-0.37	38	11
HL	5	1074	F	-0.02	-2.07	0.25	M	0.03	-2.43	0.25	0.36	0.35	1.03	242	0.30	1.01	0.31	0.60	38	12
HL	5	1495	F	0.04	-2.14	0.25	M	-0.04	-1.65	0.21	-0.48	0.33	-1.46	240	0.15	1.81	0.18	-0.74	38	13
HL	5	713	F	0.05	0.19	0.20	M	-0.05	0.77	0.24	-0.58	0.31	-1.87	228	0.06	1.31	0.25	-0.48	38	14
HL	5	721	F	0.07	-1.74	0.23	M	-0.08	-0.92	0.20	-0.82	0.30	-2.69	242	0.01	4.44	0.04	-0.83	38	15
HL	5	726	F	0.03	-0.37	0.19	M	-0.04	-0.04	0.21	-0.34	0.29	-1.18	238	0.24	0.62	0.43	-0.35	38	16
HL	5	724	F	0.03	-0.23	0.19	M	-0.03	0.10	0.22	-0.33	0.29	-1.13	237	0.26	3.24	0.07	-0.59	38	17
HL	5	725	F	-0.01	-0.19	0.19	M	0.01	-0.26	0.21	0.07	0.28	0.24	239	0.81	0.01	0.94	-0.08	38	18
HL	5	627	F	-0.04	-0.52	0.19	M	0.04	-0.88	0.20	0.36	0.28	1.28	240	0.20	0.00	0.95	0.07	38	19
HL	5	722	F	0.03	0.53	0.11	M	-0.03	0.64	0.13	-0.11	0.18	-0.63	234	0.53	0.00	0.99	0.00	38	20
HL	5	1215	F	-0.07	0.80	0.21	M	0.08	0.01	0.21	0.79	0.30	2.65	242	0.01	0.53	0.47	0.30	38	21
HL	5	672	F	0.03	-0.60	0.19	M	-0.03	-0.34	0.21	-0.26	0.28	-0.91	240	0.36	1.21	0.27	-0.38	38	22
HL	5	1183	F	0.02	0.46	0.20	M	-0.02	0.66	0.24	-0.19	0.31	-0.62	233	0.54	1.10	0.29	-0.39	38	23
HL	5	681	F	0.01	1.08	0.22	M	-0.01	1.23	0.27	-0.14	0.35	-0.41	229	0.68	1.20	0.27	-0.64	38	24
HL	5	673	F	0.01	1.99	0.28	M	-0.01	2.22	0.38	-0.22	0.47	-0.48	218	0.63	1.24	0.26	-0.92	38	25
HL	5	1186	F	0.00	-0.48	0.19	M	0.00	-0.48	0.20	0.00	0.28	0.00	240	1.00	0.07	0.78	-0.14	38	26
HL	5	729	F	0.00	-0.99	0.20	M	0.00	-0.99	0.20	0.00	0.29	0.00	241	1.00	0.00	0.99	-0.05	38	27
HL	5	640	F	-0.01	1.40	0.24	M	0.01	1.23	0.27	0.17	0.36	0.48	235	0.63	0.22	0.64	0.34	38	28
HL	5	718	F	0.00	1.45	0.24	M	0.00	1.38	0.28	0.08	0.37	0.20	233	0.84	1.09	0.30	-0.49	38	29
HL	5	1193	F	0.05	-0.19	0.19	M	-0.05	0.34	0.22	-0.53	0.29	-1.79	234	0.07	4.55	0.03	-0.83	38	30
HL	5	689	F	0.04	-1.36	0.21	M	-0.05	-0.88	0.20	-0.48	0.29	-1.64	242	0.10	0.04	0.83	-0.13	38	31
HL	5	631	F	-0.04	-0.04	0.19	M	0.05	-0.47	0.20	0.43	0.28	1.52	240	0.13	0.91	0.34	0.38	38	32

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	648	F	0.03	-0.90	0.20	M	-0.03	-0.59	0.20	-0.31	0.28	-1.10	241	0.27	2.31	0.13	-0.51	38	33
HL	5	1492	F	0.00	-0.69	0.20	M	0.00	-0.69	0.20	0.00	0.28	0.00	241	1.00	0.01	0.91	0.10	38	34
HL	5	1222	F	0.04	-1.74	0.23	M	-0.04	-1.26	0.21	-0.48	0.31	-1.57	242	0.12	0.05	0.82	-0.15	38	35
HL	5	629	F	-0.01	0.23	0.20	M	0.01	0.10	0.22	0.13	0.29	0.43	238	0.67	0.00	0.96	0.05	38	36
HL	5	728	F	-0.03	-0.41	0.19	M	0.04	-0.76	0.20	0.35	0.28	1.24	240	0.22	3.74	0.05	0.66	38	37
HL	5	1493	F	-0.02	0.63	0.21	M	0.02	0.44	0.23	0.19	0.31	0.61	238	0.54	0.01	0.92	0.09	38	38
HL	5	693	F	0.03	0.85	0.21	M	-0.03	1.23	0.27	-0.38	0.34	-1.10	224	0.27	0.28	0.60	-0.31	38	39
HL	5	677	F	0.01	1.29	0.23	M	-0.02	1.55	0.30	-0.26	0.38	-0.69	223	0.49	0.48	0.49	-0.42	38	40
HL	5	1494	F	-0.03	1.03	0.22	M	0.04	0.60	0.23	0.43	0.32	1.35	240	0.18	0.54	0.46	0.35	38	41
HL	5	625	F	-0.01	-0.67	0.19	M	0.01	-0.74	0.20	0.07	0.28	0.24	239	0.81	0.01	0.92	0.09	38	42
HL	5	1552	F	0.02	0.00	0.19	M	-0.02	0.18	0.22	-0.18	0.29	-0.61	235	0.54	0.17	0.68	-0.23	38	43
HL	5	702	F	-0.01	0.34	0.20	M	0.01	0.27	0.22	0.07	0.30	0.24	236	0.81	0.94	0.33	0.38	38	44
HL	5	730	F	-0.09	0.67	0.21	M	0.10	-0.28	0.21	0.95	0.29	3.23	241	0.00	2.27	0.13	0.62	38	45
HL	5	709	F	-0.01	-0.67	0.19	M	0.02	-0.82	0.20	0.15	0.28	0.54	239	0.59	0.29	0.59	0.24	38	46
HL	5	646	F	-0.06	-0.23	0.19	M	0.06	-0.78	0.20	0.56	0.28	1.99	239	0.05	3.10	0.08	0.64	38	47
HL	5	696	F	0.01	-0.90	0.20	M	-0.01	-0.82	0.20	-0.08	0.28	-0.28	240	0.78	0.02	0.90	0.02	38	48
HL	5	637	F	-0.02	1.23	0.23	M	0.02	0.94	0.25	0.30	0.34	0.87	236	0.39	2.30	0.13	0.94	38	49
HL	5	708	F	-0.01	1.40	0.24	M	0.01	1.21	0.27	0.18	0.36	0.51	234	0.61	0.89	0.35	0.57	38	50
HL	5	712	F	-0.04	0.73	0.09	M	0.05	0.62	0.11	0.11	0.15	0.76	233	0.45	1.56	0.21	0.43	38	51
HL	5	720	F	-0.03	0.23	0.20	M	0.03	-0.10	0.21	0.33	0.29	1.13	238	0.26	3.06	0.08	0.69	38	52
HL	5	714	F	-0.02	0.07	0.19	M	0.03	-0.19	0.21	0.26	0.29	0.92	238	0.36	0.25	0.62	0.21	38	53
HL	5	630	F	-0.04	0.04	0.19	M	0.05	-0.41	0.21	0.44	0.28	1.56	239	0.12	0.78	0.38	0.33	38	54
HL	5	727	F	0.03	0.55	0.20	M	-0.03	0.88	0.25	-0.33	0.32	-1.03	227	0.31	0.15	0.70	0.24	38	55
HL	5	684	F	0.01	-0.34	0.19	M	-0.02	-0.19	0.21	-0.15	0.28	-0.52	237	0.60	0.06	0.81	0.15	38	56
HL	5	699	F	0.02	-1.64	0.22	M	-0.02	-1.38	0.21	-0.26	0.30	-0.87	241	0.39	0.00	0.96	-0.07	38	57
HL	5	707	F	0.02	1.18	0.23	M	-0.03	1.63	0.31	-0.45	0.38	-1.17	215	0.24	1.66	0.20	-0.76	38	58
HL	5	706	F	0.00	2.40	0.25	M	0.00	2.40	0.34	0.00	0.43	0.00	215	1.00	0.13	0.72	0.22	38	59
HL	5	626	F	0.04	-1.36	0.21	M	-0.05	-0.91	0.20	-0.45	0.29	-1.54	241	0.12	3.51	0.06	-0.76	38	60
HL	5	634	F	0.00	-0.83	0.20	M	0.00	-0.78	0.20	-0.04	0.28	-0.15	240	0.88	0.90	0.34	-0.36	38	61

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	719	F	0.03	0.15	0.20	M	-0.03	0.48	0.23	-0.33	0.30	-1.09	231	0.28	0.32	0.57	-0.27	38	62
HL	5	1208	F	-0.02	1.23	0.23	M	0.02	0.94	0.25	0.30	0.34	0.87	236	0.39	0.01	0.94	0.06	38	63
HL	5	1030	F	-0.10	-0.38	0.07	M	0.11	-0.53	0.08	0.14	0.10	1.38	240	0.17	1.87	0.17	0.40	38	64
HL	6	645	F	0.01	-1.29	0.18	M	-0.02	-1.16	0.21	-0.13	0.28	-0.45	220	0.65	0.04	0.84	-0.11	40	1
HL	6	1567	F	0.06	-0.34	0.18	M	-0.08	0.42	0.26	-0.76	0.31	-2.45	191	0.02	4.04	0.04	-0.73	40	2
HL	6	660	F	0.00	2.46	0.37	M	0.00	2.46	0.52	0.00	0.64	0.00	195	1.00	0.01	0.92	-0.31	40	3
HL	6	1171	F	0.03	-0.18	0.18	M	-0.04	0.17	0.24	-0.36	0.30	-1.18	201	0.24	0.45	0.50	-0.27	40	4
HL	6	1661	F	-0.01	-0.55	0.10	M	0.02	-0.57	0.12	0.03	0.16	0.16	213	0.87	0.42	0.52	0.17	40	5
HL	6	661	F	-0.03	-0.37	0.18	M	0.04	-0.70	0.22	0.32	0.28	1.16	215	0.25	0.68	0.41	0.31	40	6
HL	6	659	F	-0.01	-0.81	0.18	M	0.01	-0.88	0.21	0.07	0.28	0.27	216	0.79	0.07	0.79	0.14	40	7
HL	6	643	F	-0.03	-0.76	0.09	M	0.04	-0.84	0.11	0.09	0.14	0.62	215	0.54	0.90	0.34	0.26	40	8
HL	6	1983	F	-0.07	-0.05	0.18	M	0.10	-0.84	0.21	0.79	0.28	2.79	220	0.01	1.98	0.16	0.46	40	9
HL	6	1986	F	0.01	-1.77	0.19	M	-0.02	-1.62	0.22	-0.15	0.29	-0.52	226	0.61	0.31	0.58	-0.22	40	10
HL	6	1985	F	-0.02	0.22	0.19	M	0.02	0.00	0.24	0.22	0.30	0.73	212	0.47	0.01	0.94	0.07	40	11
HL	6	665	F	0.05	-0.56	0.18	M	-0.07	0.00	0.24	-0.56	0.29	-1.92	202	0.06	2.49	0.11	-0.55	40	12
HL	6	678	F	0.01	-1.19	0.18	M	-0.01	-1.11	0.21	-0.08	0.28	-0.27	219	0.79	0.14	0.71	-0.18	40	13
HL	6	652	F	0.02	-1.12	0.18	M	-0.02	-0.93	0.21	-0.19	0.28	-0.69	218	0.49	0.34	0.56	-0.24	40	14
HL	6	639	F	-0.02	0.60	0.20	M	0.02	0.36	0.25	0.25	0.32	0.76	212	0.45	1.05	0.30	0.49	40	15
HL	6	1075	F	-0.02	0.22	0.19	M	0.03	-0.05	0.23	0.27	0.30	0.92	214	0.36	0.16	0.69	0.18	40	16
HL	6	662	F	-0.01	-0.41	0.18	M	0.02	-0.56	0.22	0.15	0.28	0.54	214	0.59	0.02	0.88	0.09	40	17
HL	6	664	F	-0.03	0.04	0.09	M	0.04	-0.06	0.12	0.10	0.15	0.66	205	0.51	0.57	0.45	0.25	40	18
HL	6	647	F	0.00	0.39	0.19	M	0.01	0.35	0.25	0.04	0.32	0.11	205	0.91	0.00	0.99	0.07	40	19
HL	6	691	F	0.00	2.60	0.39	M	0.00	2.47	0.52	0.13	0.65	0.20	202	0.84	0.01	0.91	-0.35	40	20
HL	6	688	F	-0.02	-0.02	0.18	M	0.03	-0.27	0.23	0.25	0.29	0.86	212	0.39	1.60	0.21	0.61	40	21
HL	6	687	F	0.03	1.16	0.23	M	-0.04	2.03	0.43	-0.87	0.49	-1.77	157	0.08	1.45	0.23	-0.82	40	22
HL	6	1309	F	-0.01	0.56	0.20	M	0.01	0.42	0.26	0.15	0.33	0.45	207	0.65	0.00	0.99	0.06	40	23
HL	6	651	F	-0.01	1.01	0.22	M	0.01	0.85	0.29	0.15	0.36	0.42	206	0.67	0.04	0.84	0.19	40	24
HL	6	683	F	-0.05	-1.66	0.19	M	0.08	-2.39	0.25	0.73	0.31	2.34	204	0.02	7.35	0.01	1.10	40	25
HL	6	649	F	-0.01	-0.50	0.18	M	0.01	-0.61	0.22	0.11	0.28	0.41	212	0.68	0.01	0.94	0.02	40	26

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	6	1173	F	0.06	-0.05	0.10	M	-0.08	0.16	0.13	-0.21	0.16	-1.31	198	0.19	1.46	0.23	-0.35	40	27
HL	6	1083	F	-0.01	-0.21	0.18	M	0.02	-0.37	0.22	0.15	0.29	0.54	211	0.59	0.03	0.86	0.11	40	28
HL	6	653	F	-0.02	-1.77	0.19	M	0.03	-2.05	0.23	0.28	0.30	0.91	216	0.36	2.25	0.13	0.62	40	29
HL	6	1497	F	-0.01	0.69	0.21	M	0.02	0.48	0.26	0.20	0.33	0.61	209	0.54	0.19	0.67	0.23	40	30
HL	6	682	F	-0.05	0.05	0.18	M	0.07	-0.57	0.22	0.61	0.29	2.15	217	0.03	2.29	0.13	0.50	40	31
HL	6	1766	F	-0.05	-0.15	0.18	M	0.07	-0.71	0.22	0.56	0.28	1.98	216	0.05	1.96	0.16	0.48	40	32
HL	6	698	F	0.01	1.91	0.30	M	-0.02	2.47	0.52	-0.56	0.60	-0.94	164	0.35	0.08	0.78	0.03	40	33
HL	6	1172	F	0.00	-2.35	0.22	M	0.00	-2.33	0.24	-0.02	0.33	-0.06	227	0.95	0.07	0.80	0.15	40	34
HL	6	632	F	-0.04	0.08	0.19	M	0.06	-0.47	0.22	0.55	0.29	1.91	217	0.06	0.75	0.39	0.33	40	35
HL	6	657	F	-0.01	-0.44	0.18	M	0.01	-0.52	0.22	0.08	0.28	0.29	211	0.77	0.28	0.60	0.22	40	36
HL	6	1755	F	0.00	-0.58	0.18	M	0.00	-0.58	0.22	0.00	0.28	0.00	211	1.00	0.00	0.95	0.07	40	37
HL	6	680	F	0.08	-0.71	0.09	M	-0.11	-0.50	0.10	-0.20	0.14	-1.50	218	0.13	1.88	0.17	-0.37	40	38
HL	6	1566	F	0.02	-1.25	0.18	M	-0.03	-0.99	0.21	-0.27	0.28	-0.95	217	0.35	2.61	0.11	-0.54	40	39
HL	6	675	F	0.01	0.15	0.19	M	-0.02	0.35	0.25	-0.20	0.31	-0.64	199	0.53	0.15	0.70	-0.17	40	40
HL	6	674	F	0.02	1.91	0.30	M	-0.03	3.20	0.72	-1.29	0.78	-1.66	134	0.10	0.48	0.49	-0.83	40	41
HL	6	667	F	0.03	-1.49	0.19	M	-0.04	-1.13	0.21	-0.36	0.28	-1.27	221	0.20	0.88	0.35	-0.33	40	42
HL	6	1170	F	-0.01	2.46	0.37	M	0.01	2.03	0.43	0.43	0.57	0.76	220	0.45	0.50	0.48	0.83	40	43
HL	6	692	F	0.00	0.56	0.20	M	0.01	0.48	0.26	0.07	0.33	0.22	205	0.83	0.00	0.98	-0.05	40	44
HL	6	679	F	0.01	0.40	0.19	M	-0.01	0.48	0.26	-0.08	0.32	-0.26	200	0.80	0.00	0.98	0.08	40	45
HL	6	666	F	0.05	0.16	0.08	M	-0.06	0.30	0.12	-0.14	0.15	-0.95	192	0.34	1.73	0.19	-0.38	40	46
HL	6	701	F	0.01	2.00	0.31	M	-0.01	2.23	0.47	-0.23	0.56	-0.41	182	0.68	0.01	0.94	-0.23	40	47
HL	6	700	F	0.00	-1.53	0.19	M	-0.01	-1.50	0.22	-0.03	0.29	-0.09	220	0.93	1.17	0.28	0.45	40	48
HL	6	697	F	-0.01	-0.06	0.18	M	0.01	-0.16	0.23	0.10	0.29	0.35	209	0.72	0.02	0.90	-0.01	40	49
HL	6	694	F	0.04	0.84	0.15	M	-0.05	1.22	0.23	-0.38	0.28	-1.36	178	0.17	2.97	0.08	-0.77	40	50
HL	6	676	F	-0.03	-0.35	0.18	M	0.05	-0.76	0.22	0.40	0.28	1.43	214	0.15	0.02	0.89	0.08	40	51
HL	6	668	F	0.02	1.05	0.23	M	-0.02	1.44	0.35	-0.39	0.41	-0.94	181	0.35	0.01	0.93	-0.19	40	52
HL	6	650	F	0.00	0.33	0.19	M	0.00	0.33	0.25	0.00	0.32	0.00	203	1.00	0.16	0.69	0.20	40	53
HL	6	1169	F	0.01	0.86	0.21	M	-0.02	1.12	0.31	-0.26	0.38	-0.70	189	0.49	0.19	0.66	-0.29	40	54
HL	6	669	F	-0.02	0.11	0.19	M	0.03	-0.16	0.23	0.27	0.30	0.93	212	0.36	0.50	0.48	0.30	40	55

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	6	663	F	0.01	1.66	0.27	M	-0.01	2.03	0.43	-0.37	0.51	-0.72	177	0.48	0.62	0.43	-0.58	40	56
HL	6	656	F	-0.01	-0.35	0.18	M	0.01	-0.42	0.22	0.07	0.29	0.23	210	0.82	0.06	0.81	-0.12	40	57
HL	6	655	F	0.00	-1.75	0.19	M	0.00	-1.75	0.22	0.00	0.30	0.00	222	1.00	0.03	0.86	0.12	40	58
HL	6	1496	F	0.03	1.21	0.24	M	-0.04	2.03	0.43	-0.82	0.49	-1.66	159	0.10	1.12	0.29	-0.71	40	59
HL	6	1031	F	0.01	-1.00	0.07	M	-0.02	-1.00	0.08	0.00	0.11	0.00	220	1.00	0.38	0.54	-0.17	40	60
HL	7	1118	F	-0.04	-1.91	0.28	M	0.04	-2.43	0.29	0.51	0.40	1.27	144	0.21	0.05	0.83	0.00	29	1
HL	7	784	F	-0.06	-0.87	0.25	M	0.07	-1.48	0.26	0.61	0.36	1.69	144	0.09	1.10	0.29	0.58	29	2
HL	7	888	F	0.02	-2.55	0.32	M	-0.02	-2.27	0.28	-0.28	0.43	-0.66	143	0.51	0.93	0.34	-0.73	29	3
HL	7	883	F	-0.01	0.72	0.29	M	0.01	0.63	0.33	0.08	0.44	0.19	140	0.85	2.33	0.13	1.70	29	4
HL	7	885	F	0.02	-2.17	0.30	M	-0.02	-1.96	0.27	-0.20	0.40	-0.50	144	0.62	0.08	0.78	0.28	29	5
HL	7	886	F	0.00	1.41	0.34	M	0.00	1.31	0.41	0.10	0.54	0.18	138	0.86	0.01	0.94	-0.29	29	6
HL	7	882	F	0.03	-2.17	0.30	M	-0.03	-1.82	0.26	-0.34	0.40	-0.86	144	0.39	0.97	0.32	-0.51	29	7
HL	7	763	F	0.01	-1.40	0.26	M	-0.01	-1.29	0.26	-0.11	0.37	-0.31	144	0.76	0.02	0.88	-0.03	29	8
HL	7	762	F	0.01	-0.68	0.25	M	-0.01	-0.55	0.26	-0.13	0.37	-0.35	144	0.72	0.16	0.69	-0.30	29	9
HL	7	1098	F	0.02	-0.10	0.26	M	-0.02	0.15	0.30	-0.24	0.39	-0.62	141	0.54	0.40	0.53	-0.42	29	10
HL	7	1175	F	-0.01	-0.36	0.25	M	0.01	-0.48	0.27	0.12	0.37	0.32	144	0.75	1.22	0.27	0.75	29	11
HL	7	871	F	0.01	-2.35	0.31	M	-0.01	-2.19	0.28	-0.16	0.42	-0.39	144	0.70	0.00	0.98	0.11	29	12
HL	7	1548	F	-0.02	-0.94	0.25	M	0.02	-1.09	0.26	0.15	0.36	0.42	144	0.67	0.02	0.88	0.17	29	13
HL	7	790	F	-0.03	-1.91	0.28	M	0.03	-2.27	0.28	0.35	0.40	0.88	144	0.38	2.30	0.13	1.21	29	14
HL	7	774	F	-0.09	2.93	0.60	M	0.09	0.63	0.33	2.30	0.69	3.34	116	0.00	3.18	0.07	1.68	29	15
HL	7	1097	F	-0.03	-0.47	0.14	M	0.04	-0.57	0.15	0.11	0.21	0.52	143	0.60	0.46	0.50	0.29	29	16
HL	7	1099	F	0.01	-0.49	0.25	M	-0.01	-0.41	0.27	-0.08	0.37	-0.22	143	0.83	0.14	0.71	0.25	29	17
HL	7	1089	F	0.02	1.19	0.32	M	-0.02	1.70	0.48	-0.52	0.58	-0.90	124	0.37	0.00	0.95	-0.26	29	18
HL	7	892	F	-0.02	0.32	0.27	M	0.02	0.06	0.29	0.26	0.40	0.66	143	0.51	0.58	0.45	0.74	29	19
HL	7	843	F	0.01	1.81	0.39	M	-0.01	2.27	0.60	-0.46	0.72	-0.64	121	0.52	0.13	0.72	-0.07	29	20
HL	7	1178	F	-0.02	1.81	0.39	M	0.02	1.31	0.41	0.50	0.57	0.88	143	0.38	0.01	0.93	-0.28	29	21
HL	7	806	F	0.03	-0.16	0.26	M	-0.03	0.15	0.30	-0.31	0.39	-0.79	140	0.43	0.74	0.39	-0.52	29	22
HL	7	878	F	-0.02	0.59	0.16	M	0.02	0.51	0.19	0.08	0.25	0.34	138	0.74	1.56	0.21	0.76	29	23
HL	7	1502	F	-0.06	0.47	0.28	M	0.06	-0.20	0.28	0.68	0.39	1.71	143	0.09	0.23	0.63	0.33	29	24

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	7	808	F	0.15	-0.26	0.12	M	-0.16	0.15	0.15	-0.41	0.19	-2.15	137	0.03	10.31	0.00	-1.40	29	25
HL	7	1088	F	-0.03	0.80	0.30	M	0.04	0.31	0.31	0.49	0.43	1.15	142	0.25	0.29	0.59	0.43	29	26
HL	7	769	F	0.01	-2.08	0.29	M	-0.01	-1.94	0.27	-0.14	0.40	-0.36	143	0.72	0.01	0.91	0.15	29	27
HL	7	803	F	-0.02	0.11	0.26	M	0.02	-0.12	0.28	0.23	0.39	0.59	142	0.55	0.26	0.61	0.43	29	28
HL	7	877	F	-0.01	-0.62	0.25	M	0.01	-0.71	0.26	0.09	0.36	0.26	143	0.80	0.22	0.64	-0.33	29	29
HL	7	1185	F	0.05	-0.87	0.25	M	-0.05	-0.35	0.27	-0.52	0.37	-1.39	142	0.17	1.93	0.17	-0.72	29	30
HL	7	777	F	-0.08	0.11	0.26	M	0.09	-0.78	0.26	0.89	0.37	2.39	143	0.02	0.28	0.60	0.36	29	31
HL	7	903	F	0.01	1.97	0.41	M	-0.01	2.26	0.60	-0.29	0.73	-0.40	124	0.69	0.19	0.66	1.32	29	32
HL	7	887	F	0.06	-1.84	0.28	M	-0.07	-1.18	0.26	-0.65	0.38	-1.72	143	0.09	2.78	0.10	-0.89	29	33
HL	7	930	F	0.05	-0.81	0.25	M	-0.06	-0.28	0.28	-0.53	0.37	-1.42	141	0.16	0.87	0.35	-0.44	29	34
HL	7	880	F	-0.02	0.99	0.31	M	0.02	0.62	0.33	0.36	0.45	0.80	141	0.42	0.42	0.52	0.59	29	35
HL	7	1096	F	-0.02	-0.13	0.14	M	0.03	-0.21	0.15	0.08	0.21	0.40	141	0.69	0.02	0.90	-0.05	29	36
HL	7	875	F	0.03	-0.74	0.25	M	-0.03	-0.43	0.27	-0.32	0.37	-0.86	142	0.39	0.09	0.77	-0.25	29	37
HL	7	811	F	0.03	0.18	0.27	M	-0.03	0.51	0.32	-0.33	0.42	-0.80	136	0.43	0.31	0.58	-0.37	29	38
HL	7	869	F	0.02	1.29	0.33	M	-0.03	1.95	0.53	-0.65	0.62	-1.04	117	0.30	0.03	0.87	0.38	29	39
HL	7	1500	F	0.00	-0.87	0.25	M	0.00	-0.92	0.26	0.04	0.36	0.12	143	0.90	0.02	0.90	0.16	29	40
HL	7	879	F	-0.02	0.25	0.27	M	0.02	0.04	0.29	0.21	0.40	0.52	141	0.60	0.15	0.70	-0.28	29	41
HL	7	897	F	-0.01	-0.49	0.25	M	0.01	-0.57	0.27	0.08	0.37	0.23	142	0.82	0.00	0.95	-0.13	29	42
HL	7	1182	F	-0.03	0.18	0.27	M	0.03	-0.12	0.28	0.30	0.39	0.77	142	0.44	0.27	0.60	0.36	29	43
HL	7	891	F	-0.06	0.32	0.27	M	0.06	-0.35	0.27	0.68	0.39	1.76	143	0.08	1.62	0.20	0.92	29	44
HL	7	874	F	0.00	2.15	0.44	M	0.00	2.26	0.60	-0.11	0.75	-0.14	128	0.89	0.00	0.97	0.59	29	45
HL	7	1179	F	0.00	1.51	0.36	M	0.00	1.48	0.44	0.03	0.57	0.05	135	0.96	0.17	0.68	-0.58	29	46
HL	7	870	F	0.02	2.15	0.44	M	-0.02	3.42	1.02	-1.27	1.11	-1.14	94	0.26	0.94	0.33		29	47
HL	7	872	F	0.01	0.88	0.17	M	-0.01	0.97	0.25	-0.09	0.30	-0.30	124	0.77	2.00	0.16	-0.91	29	48
HL	7	889	F	0.08	0.44	0.15	M	-0.08	0.80	0.21	-0.36	0.26	-1.40	125	0.16	1.40	0.24	-0.65	29	49
HL	7	829	F	0.06	-1.54	0.27	M	-0.07	-0.92	0.26	-0.62	0.37	-1.68	143	0.10	3.07	0.08	-1.02	29	50
HL	7	839	F	0.02	0.63	0.29	M	-0.02	0.99	0.37	-0.36	0.47	-0.77	132	0.45	0.14	0.71	0.62	29	51
HL	7	1499	F	0.03	-0.81	0.25	M	-0.03	-0.50	0.27	-0.31	0.37	-0.84	142	0.40	0.00	0.96	0.14	29	52
HL	7	899	F	0.01	-0.42	0.25	M	-0.01	-0.28	0.28	-0.15	0.37	-0.39	141	0.70	0.01	0.93	0.19	29	53

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	7	1501	F	-0.06	0.54	0.16	M	0.06	0.31	0.17	0.24	0.23	1.01	141	0.31	5.43	0.02	1.34	29	54
HL	7	876	F	-0.01	1.29	0.33	M	0.01	1.14	0.39	0.15	0.51	0.30	138	0.77	0.04	0.85	0.05	29	55
HL	7	770	F	-0.04	0.53	0.19	M	0.04	0.27	0.21	0.26	0.29	0.91	141	0.37	1.70	0.19	0.57	29	56
HL	7	1773	F	-0.05	0.99	0.31	M	0.05	0.31	0.31	0.67	0.44	1.54	143	0.13	2.10	0.15	1.04	29	57
HL	7	834	F	0.01	-0.23	0.26	M	-0.01	-0.12	0.28	-0.11	0.38	-0.28	141	0.78	0.01	0.90	0.07	29	58
HL	7	884	F	0.03	1.41	0.34	M	-0.03	2.26	0.60	-0.85	0.69	-1.23	110	0.22	0.04	0.83	-0.55	29	59
HL	7	902	F	0.02	0.25	0.27	M	-0.02	0.51	0.32	-0.26	0.42	-0.62	136	0.53	0.42	0.52	-0.63	29	60
HL	7	1104	F	-0.06	-0.10	0.26	M	0.06	-0.71	0.26	0.61	0.37	1.66	143	0.10	0.19	0.67	0.32	29	61
HL	7	822	F	0.02	1.81	0.39	M	-0.02	2.70	0.73	-0.89	0.83	-1.07	106	0.29	0.12	0.73	0.27	29	62
HL	7	1032	F	0.00	-1.07	0.10	M	0.00	-1.07	0.10	0.00	0.14	0.00	144	1.00	0.13	0.71	0.14	29	63
HL	8	909	F	-0.07	-2.04	0.29	M	0.07	-3.08	0.33	1.04	0.43	2.40	160	0.02	4.62	0.03	1.39	28	1
HL	8	917	F	0.03	-4.56	0.73	M	-0.04	-3.19	0.34	-1.38	0.81	-1.71	118	0.09	1.06	0.30	-1.38	28	2
HL	8	1544	F	-0.04	-0.15	0.24	M	0.05	-0.59	0.25	0.44	0.34	1.30	163	0.20	0.41	0.52	-0.34	28	3
HL	8	894	F	-0.01	-0.15	0.24	M	0.01	-0.21	0.26	0.07	0.35	0.19	162	0.85	0.27	0.60	0.28	28	4
HL	8	867	F	-0.03	0.19	0.24	M	0.03	-0.08	0.26	0.27	0.36	0.76	162	0.45	0.01	0.92	-0.12	28	5
HL	8	1676	F	0.05	0.08	0.14	M	-0.05	0.27	0.16	-0.18	0.21	-0.87	161	0.38	0.16	0.69	-0.15	28	6
HL	8	913	F	0.00	1.14	0.29	M	0.00	1.14	0.35	0.00	0.45	0.00	155	1.00	0.48	0.49	-0.55	28	7
HL	8	929	F	0.04	-2.61	0.34	M	-0.04	-2.03	0.26	-0.59	0.43	-1.38	154	0.17	0.28	0.60	-0.47	28	8
HL	8	904	F	-0.04	-1.66	0.26	M	0.04	-2.16	0.26	0.50	0.37	1.35	163	0.18	0.77	0.38	0.56	28	9
HL	8	927	F	0.03	-1.88	0.28	M	-0.03	-1.59	0.24	-0.29	0.37	-0.79	162	0.43	0.10	0.75	-0.20	28	10
HL	8	1127	F	0.01	0.37	0.25	M	-0.01	0.45	0.29	-0.08	0.38	-0.20	158	0.84	0.03	0.85	0.02	28	11
HL	8	855	F	0.01	-1.03	0.24	M	-0.01	-0.94	0.24	-0.09	0.34	-0.26	163	0.80	0.08	0.78	0.22	28	12
HL	8	1126	F	0.00	-2.99	0.39	M	0.00	-2.99	0.32	0.00	0.50	0.00	159	1.00	0.07	0.79	0.05	28	13
HL	8	848	F	0.02	-2.40	0.32	M	-0.02	-2.16	0.26	-0.24	0.41	-0.58	159	0.56	0.00	0.95	0.09	28	14
HL	8	802	F	0.00	2.63	0.47	M	0.00	2.52	0.60	0.11	0.76	0.14	153	0.89	0.06	0.80	0.56	28	15
HL	8	771	F	0.01	0.76	0.26	M	-0.01	0.92	0.33	-0.16	0.42	-0.38	154	0.70	0.20	0.65	0.62	28	16
HL	8	785	F	-0.01	-0.48	0.23	M	0.01	-0.53	0.25	0.05	0.34	0.16	162	0.88	0.03	0.87	-0.01	28	17
HL	8	767	F	0.01	-0.35	0.14	M	-0.01	-0.35	0.16	0.00	0.22	0.00	160	1.00	0.51	0.47	0.31	28	18
HL	8	914	F	-0.08	0.43	0.25	M	0.08	-0.40	0.25	0.84	0.35	2.38	163	0.02	0.46	0.50	0.36	28	19

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	8	921	F	0.05	-1.03	0.24	M	-0.05	-0.53	0.25	-0.50	0.35	-1.46	163	0.15	0.16	0.69	-0.28	28	20
HL	8	911	F	0.01	0.59	0.17	M	-0.01	0.67	0.20	-0.07	0.26	-0.29	159	0.77	0.40	0.52	0.30	28	21
HL	8	833	F	0.04	-0.86	0.24	M	-0.04	-0.47	0.25	-0.40	0.34	-1.15	163	0.25	0.08	0.78	-0.23	28	22
HL	8	912	F	-0.05	0.14	0.24	M	0.05	-0.40	0.25	0.54	0.35	1.56	163	0.12	0.83	0.36	0.47	28	23
HL	8	916	F	-0.01	0.14	0.24	M	0.01	0.06	0.27	0.07	0.36	0.20	161	0.84	0.01	0.94	-0.06	28	24
HL	8	796	F	-0.04	0.02	0.24	M	0.04	-0.34	0.25	0.36	0.35	1.05	162	0.30	0.12	0.73	0.23	28	25
HL	8	793	F	-0.01	3.61	0.72	M	0.02	2.52	0.60	1.09	0.94	1.16	159	0.25	0.24	0.63	0.29	28	26
HL	8	772	F	-0.01	1.14	0.29	M	0.01	0.92	0.33	0.21	0.44	0.49	159	0.62	2.31	0.13	0.86	28	27
HL	8	810	F	-0.01	2.25	0.41	M	0.01	1.97	0.47	0.28	0.62	0.45	159	0.65	0.09	0.76	0.89	28	28
HL	8	1079	F	0.02	-0.69	0.23	M	-0.02	-0.53	0.25	-0.17	0.34	-0.49	163	0.63	1.09	0.30	-0.43	28	29
HL	8	1543	F	-0.02	0.50	0.25	M	0.02	0.29	0.28	0.21	0.38	0.56	161	0.58	0.06	0.80	-0.23	28	30
HL	8	761	F	0.01	0.19	0.24	M	-0.01	0.29	0.28	-0.09	0.37	-0.25	159	0.80	0.02	0.87	-0.05	28	31
HL	8	910	F	-0.03	-1.09	0.24	M	0.03	-1.41	0.24	0.32	0.34	0.93	163	0.35	1.21	0.27	0.61	28	32
HL	8	906	F	0.03	-0.15	0.24	M	-0.03	0.21	0.28	-0.36	0.36	-0.98	158	0.33	1.57	0.21	-0.62	28	33
HL	8	922	F	0.07	-0.64	0.23	M	-0.08	0.14	0.27	-0.78	0.36	-2.16	159	0.03	1.88	0.17	-0.78	28	34
HL	8	1190	F	0.01	-0.69	0.23	M	-0.01	-0.59	0.25	-0.11	0.34	-0.31	163	0.76	0.04	0.85	0.00	28	35
HL	8	1105	F	-0.07	0.63	0.26	M	0.08	-0.21	0.26	0.84	0.36	2.31	163	0.02	0.02	0.90	0.03	28	36
HL	8	1546	F	-0.02	4.33	1.01	M	0.02	2.52	0.60	1.80	1.18	1.53	135	0.13	0.50	0.48		28	37
HL	8	893	F	-0.06	1.14	0.29	M	0.06	0.29	0.28	0.85	0.40	2.13	163	0.04	1.27	0.26	0.70	28	38
HL	8	1078	F	-0.03	0.31	0.25	M	0.03	-0.01	0.26	0.32	0.36	0.89	162	0.37	0.04	0.84	0.00	28	39
HL	8	926	F	0.00	0.04	0.24	M	0.00	0.06	0.27	-0.02	0.36	-0.06	160	0.95	1.02	0.31	-0.49	28	40
HL	8	1210	F	-0.05	0.31	0.25	M	0.05	-0.21	0.26	0.52	0.35	1.48	163	0.14	1.84	0.17	0.73	28	41
HL	8	820	F	0.02	0.72	0.12	M	-0.02	0.79	0.15	-0.07	0.20	-0.35	153	0.72	0.13	0.72	0.16	28	42
HL	8	780	F	0.11	0.27	0.12	M	-0.11	0.59	0.15	-0.33	0.19	-1.73	157	0.09	0.75	0.39	-0.34	28	43
HL	8	1212	F	0.00	-0.93	0.24	M	0.00	-0.93	0.24	0.00	0.34	0.00	163	1.00	0.18	0.67	0.26	28	44
HL	8	925	F	-0.04	-0.31	0.23	M	0.04	-0.71	0.24	0.40	0.34	1.18	163	0.24	0.07	0.80	0.20	28	45
HL	8	905	F	0.02	0.31	0.25	M	-0.03	0.62	0.30	-0.31	0.39	-0.80	155	0.42	0.88	0.35	-0.46	28	46
HL	8	1547	F	0.00	3.18	0.60	M	0.00	2.95	0.72	0.23	0.94	0.24	156	0.81	0.01	0.92	0.61	28	47
HL	8	1214	F	0.19	0.18	0.11	M	-0.20	0.71	0.15	-0.53	0.19	-2.83	145	0.01	6.72	0.01	-1.15	28	48

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	8	1192	F	0.06	-1.39	0.25	M	-0.07	-0.77	0.24	-0.63	0.35	-1.79	163	0.08	0.97	0.32	-0.44	28	49
HL	8	1199	F	-0.04	-0.53	0.23	M	0.04	-0.94	0.24	0.41	0.34	1.23	163	0.22	1.58	0.21	0.60	28	50
HL	8	1201	F	0.03	0.19	0.24	M	-0.03	0.53	0.30	-0.34	0.38	-0.89	156	0.37	0.02	0.89	-0.19	28	51
HL	8	901	F	0.01	0.83	0.27	M	-0.01	0.92	0.33	-0.09	0.42	-0.21	155	0.83	2.37	0.12	1.48	28	52
HL	8	764	F	-0.04	1.40	0.31	M	0.04	0.72	0.31	0.68	0.44	1.56	163	0.12	1.98	0.16	1.02	28	53
HL	8	1545	F	-0.03	-0.42	0.23	M	0.03	-0.71	0.24	0.29	0.34	0.85	163	0.39	0.14	0.71	0.28	28	54
HL	8	924	F	-0.05	0.90	0.27	M	0.05	0.29	0.28	0.62	0.39	1.59	163	0.11	0.14	0.71	0.31	28	55
HL	8	805	F	-0.04	-0.37	0.23	M	0.04	-0.77	0.24	0.40	0.34	1.19	163	0.23	0.36	0.55	0.30	28	56
HL	8	1092	F	-0.05	1.71	0.34	M	0.05	0.82	0.32	0.89	0.46	1.92	163	0.06	0.42	0.52	0.65	28	57
HL	8	920	F	-0.03	0.14	0.24	M	0.03	-0.21	0.26	0.35	0.35	0.99	162	0.32	2.86	0.09	0.90	28	58
HL	8	766	F	-0.03	2.87	0.52	M	0.03	1.76	0.44	1.12	0.68	1.64	160	0.10	0.34	0.56	1.76	28	59
HL	8	826	F	-0.02	0.02	0.24	M	0.02	-0.21	0.26	0.23	0.35	0.67	162	0.51	0.03	0.87	-0.02	28	60
HL	8	778	F	-0.01	-0.15	0.24	M	0.01	-0.21	0.26	0.07	0.35	0.19	162	0.85	0.01	0.91	0.12	28	61
HL	8	1034	F	0.17	-0.38	0.09	M	-0.17	-0.12	0.10	-0.27	0.14	-1.93	161	0.06	4.41	0.04	-0.79	28	62

Appendix Table I.3:Hawaiian Language Arts: DIF Survey

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	394	0	-0.12	-0.25	0.12	1	0.03	-0.39	0.06	0.14	0.13	1.03	97	0.30	2.40	0.12	0.45	32	1
HL	3	93	0	0.00	-2.09	0.31	1	0.00	-2.06	0.17	-0.03	0.35	-0.08	101	0.94	0.02	0.88	-0.01	32	2
HL	3	101	0	0.06	-0.26	0.28	1	-0.02	0.14	0.15	-0.40	0.32	-1.27	99	0.21	3.61	0.06	-0.83	32	3
HL	3	381	0	0.06	-0.94	0.27	1	-0.02	-0.56	0.14	-0.38	0.31	-1.24	98	0.22	3.20	0.07	-0.90	32	4
HL	3	108	0	0.01	-0.02	0.29	1	0.00	0.04	0.14	-0.06	0.32	-0.19	97	0.85	0.11	0.74	-0.19	32	5
HL	3	94	0	-0.08	-1.48	0.28	1	0.02	-2.08	0.17	0.60	0.33	1.83	111	0.07	2.40	0.12	0.75	32	6
HL	3	99	0	-0.04	-0.10	0.28	1	0.01	-0.38	0.14	0.28	0.32	0.90	95	0.37	0.04	0.84	0.13	32	7
HL	3	89	0	0.01	-0.34	0.28	1	0.00	-0.26	0.14	-0.07	0.31	-0.23	97	0.82	0.00	0.99	0.05	32	8
HL	3	1026	0	0.04	0.32	0.30	1	-0.01	0.64	0.16	-0.31	0.34	-0.92	99	0.36	1.41	0.23	-0.59	32	9
HL	3	84	0	-0.01	-1.48	0.28	1	0.00	-1.52	0.15	0.04	0.32	0.14	101	0.89	0.04	0.83	-0.15	32	10
HL	3	88	0	-0.02	0.05	0.29	1	0.00	-0.03	0.14	0.08	0.32	0.25	94	0.81	0.10	0.75	0.21	32	11

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	90	0	-0.03	-2.05	0.31	1	0.01	-2.32	0.18	0.27	0.36	0.76	105	0.45	0.38	0.54	0.35	32	12
HL	3	91	0	0.00	-1.95	0.31	1	0.00	-1.93	0.16	-0.02	0.35	-0.07	98	0.95	0.29	0.59	-0.40	32	13
HL	3	87	0	0.05	0.60	0.32	1	-0.01	1.06	0.17	-0.46	0.36	-1.28	101	0.20	0.43	0.51	-0.34	32	14
HL	3	92	0	-0.02	0.05	0.29	1	0.01	-0.11	0.14	0.16	0.32	0.50	93	0.62	0.10	0.75	0.18	32	15
HL	3	1023	0	0.03	1.04	0.35	1	-0.01	1.38	0.19	-0.34	0.40	-0.86	100	0.39	0.16	0.69	-0.28	32	16
HL	3	1686	0	0.00	0.14	0.29	1	0.00	0.14	0.15	0.00	0.33	0.00	94	1.00	0.02	0.90	0.10	32	17
HL	3	95	0	0.03	0.60	0.32	1	-0.01	0.81	0.16	-0.21	0.36	-0.60	96	0.55	0.03	0.86	-0.16	32	18
HL	3	97	0	0.01	-0.19	0.28	1	0.00	-0.16	0.14	-0.04	0.32	-0.11	95	0.91	0.00	0.95	-0.04	32	19
HL	3	96	0	0.00	0.51	0.31	1	0.00	0.51	0.15	0.00	0.35	0.00	94	1.00	0.07	0.79	0.20	32	20
HL	3	107	0	0.11	-1.27	0.28	1	-0.03	-0.62	0.14	-0.65	0.31	-2.09	94	0.04	1.05	0.31	-0.36	32	21
HL	3	104	0	0.04	0.50	0.31	1	-0.01	0.79	0.16	-0.28	0.35	-0.81	97	0.42	0.41	0.52	-0.41	32	22
HL	3	383	0	0.02	-1.51	0.29	1	-0.01	-1.36	0.15	-0.15	0.32	-0.47	96	0.64	0.01	0.93	-0.09	32	23
HL	3	161	0	-0.02	-0.58	0.28	1	0.00	-0.66	0.14	0.07	0.31	0.24	95	0.81	0.17	0.68	0.19	32	24
HL	3	162	0	0.07	-1.60	0.29	1	-0.02	-1.17	0.14	-0.43	0.32	-1.31	94	0.19	0.97	0.32	-0.38	32	25
HL	3	1025	0	0.04	0.50	0.31	1	-0.01	0.87	0.16	-0.36	0.35	-1.03	99	0.30	0.18	0.67	-0.23	32	26
HL	3	110	0	-0.07	0.92	0.34	1	0.02	0.33	0.15	0.59	0.37	1.59	87	0.12	3.47	0.06	0.84	32	27
HL	3	113	0	0.01	1.78	0.43	1	0.00	1.90	0.22	-0.13	0.48	-0.26	96	0.80	0.06	0.80	0.29	32	28
HL	3	1024	0	-0.10	0.87	0.20	1	0.03	0.59	0.09	0.28	0.22	1.30	87	0.20	0.56	0.46	0.31	32	29
HL	3	117	0	-0.06	-0.66	0.28	1	0.02	-1.05	0.14	0.39	0.31	1.26	97	0.21	0.83	0.36	0.42	32	30
HL	3	1020	0	-0.03	1.51	0.28	1	0.01	1.33	0.13	0.18	0.31	0.57	90	0.57	0.06	0.81	-0.10	32	31
HL	3	114	0	-0.02	-0.50	0.28	1	0.00	-0.62	0.14	0.11	0.31	0.36	95	0.72	0.01	0.93	0.02	32	32
HL	3	112	0	0.05	1.60	0.41	1	-0.01	2.48	0.27	-0.88	0.49	-1.80	121	0.07	2.58	0.11	-1.45	32	33
HL	3	1022	0	0.04	-0.03	0.29	1	-0.01	0.25	0.15	-0.28	0.32	-0.86	96	0.39	1.04	0.31	-0.40	32	34
HL	3	119	0	0.02	-0.11	0.29	1	-0.01	0.04	0.14	-0.15	0.32	-0.46	95	0.65	0.08	0.77	-0.14	32	35
HL	3	379	0	0.00	1.53	0.29	1	0.00	1.53	0.14	0.00	0.32	0.00	93	1.00	0.07	0.79	-0.15	32	36
HL	3	130	0	0.01	-0.03	0.29	1	0.00	0.04	0.14	-0.07	0.32	-0.22	95	0.83	0.00	0.99	0.05	32	37
HL	3	125	0	-0.06	-0.50	0.28	1	0.01	-0.85	0.14	0.35	0.31	1.11	96	0.27	1.19	0.27	0.44	32	38
HL	3	143	0	0.01	0.32	0.30	1	0.00	0.38	0.15	-0.07	0.34	-0.21	95	0.84	0.00	1.00	-0.07	32	39
HL	3	123	0	0.02	-0.19	0.28	1	-0.01	-0.07	0.14	-0.13	0.32	-0.40	95	0.69	0.01	0.91	-0.09	32	40
HL	3	137	0	-0.09	0.14	0.29	1	0.02	-0.44	0.14	0.58	0.32	1.79	91	0.08	2.04	0.15	0.58	32	41

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	3	127	0	-0.02	4.00	1.03	1	0.00	3.12	0.35	0.88	1.08	0.81	76	0.42	0.27	0.60	0.18	32	42
HL	3	158	0	-0.08	0.32	0.30	1	0.02	-0.25	0.14	0.56	0.33	1.69	90	0.09	0.24	0.62	0.19	32	43
HL	3	1664	0	0.05	-1.27	0.28	1	-0.01	-0.99	0.14	-0.28	0.31	-0.90	95	0.37	0.02	0.90	-0.01	32	44
HL	3	1021	0	-0.03	-0.50	0.28	1	0.01	-0.67	0.14	0.17	0.31	0.55	95	0.59	0.27	0.60	0.22	32	45
HL	3	384	0	-0.04	-0.73	0.28	1	0.01	-0.97	0.14	0.24	0.31	0.76	97	0.45	1.02	0.31	0.36	32	46
HL	3	156	0	-0.06	0.81	0.33	1	0.01	0.38	0.15	0.43	0.36	1.19	89	0.24	1.98	0.16	0.70	32	47
HL	3	150	0	0.02	-1.68	0.29	1	-0.01	-1.51	0.15	-0.17	0.33	-0.51	96	0.61	0.51	0.47	-0.34	32	48
HL	3	138	0	-0.10	1.74	0.30	1	0.03	1.17	0.12	0.57	0.33	1.75	84	0.08	1.05	0.31	0.44	32	49
HL	3	145	0	-0.07	0.23	0.30	1	0.02	-0.23	0.14	0.45	0.33	1.38	91	0.17	0.01	0.93	0.11	32	50
HL	3	1470	0	-0.03	0.14	0.29	1	0.01	-0.05	0.14	0.19	0.33	0.57	93	0.57	0.07	0.79	0.15	32	51
HL	3	1286	0	-0.05	2.47	0.54	1	0.01	1.64	0.20	0.83	0.58	1.43	79	0.16	3.02	0.08	1.31	32	52
HL	3	1471	0	0.16	-1.04	0.28	1	-0.04	-0.05	0.14	-0.99	0.31	-3.18	97	0.00	4.09	0.04	-0.67	32	53
HL	3	1282	0	0.02	-0.35	0.28	1	-0.01	-0.23	0.14	-0.12	0.31	-0.40	95	0.69	0.23	0.63	-0.24	32	54
HL	3	1285	0	0.00	1.95	0.46	1	0.00	1.95	0.22	0.00	0.51	0.00	93	1.00	0.05	0.83	-0.66	32	55
HL	3	1477	0	0.07	-0.96	0.28	1	-0.02	-0.56	0.14	-0.40	0.31	-1.30	95	0.20	1.15	0.28	-0.43	32	56
HL	3	1277	0	0.02	0.50	0.31	1	-0.01	0.69	0.16	-0.18	0.35	-0.52	96	0.60	0.02	0.90	-0.10	32	57
HL	3	1281	0	0.06	-0.27	0.28	1	-0.02	0.10	0.14	-0.37	0.32	-1.17	97	0.25	0.55	0.46	-0.30	32	58
HL	3	1283	0	-0.07	-0.50	0.28	1	0.02	-0.95	0.14	0.44	0.31	1.43	96	0.16	1.15	0.28	0.40	32	59
HL	3	1479	0	0.05	0.14	0.29	1	-0.01	0.49	0.15	-0.35	0.33	-1.07	98	0.29	0.49	0.49	-0.33	32	60
HL	3	1284	0	0.05	0.20	0.20	1	-0.01	0.35	0.10	-0.15	0.22	-0.68	95	0.50	1.60	0.21	-0.48	32	61
HL	3	1469	0	0.03	0.41	0.31	1	-0.01	0.64	0.16	-0.23	0.34	-0.66	96	0.51	0.00	0.97	0.08	32	62
HL	3	1478	0	0.03	-0.66	0.28	1	-0.01	-0.48	0.14	-0.18	0.31	-0.57	96	0.57	0.16	0.69	-0.19	32	63
HL	4	395	0	-0.23	0.68	0.14	1	0.07	0.33	0.07	0.35	0.16	2.26	99	0.03	3.55	0.06	0.61	33	1
HL	4	18	0	0.04	-1.34	0.28	1	-0.01	-1.11	0.16	-0.23	0.32	-0.73	110	0.47	0.01	0.93	-0.03	33	2
HL	4	389	0	0.04	-1.93	0.31	1	-0.01	-1.64	0.17	-0.29	0.35	-0.81	108	0.42	2.15	0.14	-0.70	33	3
HL	4	21	0	0.03	-0.13	0.27	1	-0.01	0.04	0.15	-0.16	0.31	-0.53	109	0.60	0.14	0.70	-0.19	33	4
HL	4	7	0	-0.01	-2.02	0.31	1	0.00	-2.13	0.19	0.11	0.37	0.30	118	0.76	0.12	0.73	0.27	33	5
HL	4	12	0	0.12	-1.66	0.29	1	-0.04	-0.84	0.15	-0.82	0.33	-2.48	103	0.01	6.36	0.01	-1.03	33	6
HL	4	64	0	0.06	-1.83	0.30	1	-0.02	-1.39	0.16	-0.45	0.34	-1.30	106	0.20	2.31	0.13	-0.73	33	7
HL	4	8	0	0.00	-1.11	0.27	1	0.00	-1.11	0.16	0.00	0.31	0.00	112	1.00	0.00	0.95	-0.10	33	8

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	4	9	0	0.03	0.02	0.27	1	-0.01	0.22	0.15	-0.20	0.31	-0.64	108	0.52	0.86	0.35	-0.45	33	9
HL	4	13	0	-0.01	-1.74	0.30	1	0.00	-1.82	0.18	0.08	0.35	0.23	116	0.82	0.04	0.84	0.00	33	10
HL	4	11	0	-0.04	1.87	0.42	1	0.01	1.32	0.18	0.55	0.46	1.20	91	0.23	0.55	0.46	0.54	33	11
HL	4	1019	0	-0.05	0.49	0.29	1	0.01	0.17	0.15	0.32	0.33	0.97	102	0.34	0.24	0.62	0.24	33	12
HL	4	14	0	-0.02	-1.49	0.28	1	0.01	-1.67	0.17	0.18	0.33	0.53	117	0.60	0.26	0.61	0.25	33	13
HL	4	16	0	0.09	-1.19	0.27	1	-0.03	-0.61	0.15	-0.57	0.31	-1.85	107	0.07	2.33	0.13	-0.58	33	14
HL	4	15	0	-0.09	-0.27	0.27	1	0.03	-0.82	0.15	0.55	0.31	1.79	111	0.08	2.03	0.15	0.52	33	15
HL	4	17	0	-0.01	-0.48	0.26	1	0.00	-0.51	0.15	0.03	0.30	0.11	110	0.91	0.29	0.59	0.22	33	16
HL	4	65	0	-0.02	-1.41	0.28	1	0.01	-1.55	0.17	0.14	0.33	0.42	116	0.67	0.01	0.92	-0.03	33	17
HL	4	20	0	-0.01	-1.57	0.29	1	0.00	-1.62	0.17	0.05	0.33	0.15	115	0.88	0.02	0.88	-0.04	33	18
HL	4	1482	0	-0.03	0.76	0.31	1	0.01	0.56	0.16	0.20	0.35	0.58	101	0.56	0.04	0.84	0.15	33	19
HL	4	22	0	0.03	0.02	0.27	1	-0.01	0.20	0.15	-0.18	0.31	-0.57	108	0.57	0.02	0.88	0.01	33	20
HL	4	23	0	0.07	-0.06	0.27	1	-0.02	0.41	0.16	-0.46	0.31	-1.49	111	0.14	0.06	0.80	-0.14	33	21
HL	4	30	0	0.15	-0.62	0.26	1	-0.05	0.34	0.15	-0.96	0.31	-3.13	113	0.00	6.86	0.01	-0.98	33	22
HL	4	1484	0	-0.02	0.58	0.30	1	0.01	0.43	0.16	0.14	0.33	0.43	103	0.67	0.01	0.94	0.10	33	23
HL	4	34	0	-0.02	-0.34	0.27	1	0.01	-0.46	0.15	0.11	0.30	0.38	109	0.71	0.02	0.89	-0.01	33	24
HL	4	35	0	0.00	1.71	0.31	1	0.00	1.71	0.15	0.00	0.35	0.00	96	1.00	0.00	0.95	-0.04	33	25
HL	4	24	0	-0.05	0.85	0.31	1	0.02	0.46	0.16	0.40	0.35	1.13	99	0.26	0.01	0.94	0.06	33	26
HL	4	36	0	-0.11	0.67	0.30	1	0.04	-0.12	0.15	0.79	0.34	2.34	99	0.02	5.08	0.02	0.84	33	27
HL	4	1486	0	-0.04	-1.19	0.27	1	0.01	-1.44	0.17	0.25	0.32	0.80	117	0.42	0.03	0.87	0.12	33	28
HL	4	1291	0	-0.03	1.17	0.34	1	0.01	0.90	0.17	0.27	0.38	0.72	98	0.47	0.07	0.79	0.21	33	29
HL	4	26	0	0.06	-0.34	0.27	1	-0.02	0.06	0.15	-0.40	0.31	-1.31	110	0.19	1.01	0.31	-0.38	33	30
HL	4	27	0	0.07	-1.11	0.27	1	-0.02	-0.68	0.15	-0.43	0.31	-1.40	108	0.16	0.42	0.52	-0.26	33	31
HL	4	37	0	0.08	-0.34	0.27	1	-0.03	0.17	0.15	-0.51	0.31	-1.68	111	0.10	2.92	0.09	-0.66	33	32
HL	4	1485	0	-0.06	0.96	0.32	1	0.02	0.51	0.16	0.45	0.36	1.25	98	0.21	3.62	0.06	0.82	33	33
HL	4	38	0	0.03	-1.11	0.27	1	-0.01	-0.94	0.15	-0.18	0.31	-0.57	110	0.57	0.17	0.68	-0.21	33	34
HL	4	31	0	-0.06	0.25	0.28	1	0.02	-0.12	0.15	0.37	0.32	1.16	104	0.25	0.06	0.81	0.14	33	35
HL	4	25	0	0.00	0.85	0.31	1	0.00	0.85	0.17	0.00	0.35	0.00	103	1.00	0.53	0.47	0.34	33	36
HL	4	54	0	0.02	-0.20	0.27	1	-0.01	-0.05	0.15	-0.15	0.31	-0.47	109	0.64	0.02	0.89	-0.10	33	37
HL	4	40	0	-0.09	0.41	0.29	1	0.03	-0.19	0.15	0.60	0.32	1.84	102	0.07	2.40	0.12	0.57	33	38

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	4	55	0	0.03	0.33	0.28	1	-0.01	0.56	0.16	-0.23	0.32	-0.71	108	0.48	0.01	0.90	-0.10	33	39
HL	4	41	0	0.08	0.58	0.30	1	-0.03	1.29	0.18	-0.71	0.35	-2.06	117	0.04	2.87	0.09	-0.69	33	40
HL	4	56	0	0.08	0.33	0.28	1	-0.03	0.96	0.17	-0.63	0.33	-1.91	114	0.06	1.28	0.26	-0.49	33	41
HL	4	57	0	-0.05	1.29	0.35	1	0.01	0.87	0.17	0.42	0.39	1.08	96	0.28	1.38	0.24	0.53	33	42
HL	4	42	0	-0.11	1.28	0.21	1	0.03	0.93	0.10	0.36	0.23	1.54	93	0.13	0.90	0.34	0.38	33	43
HL	4	387	0	0.08	-0.55	0.26	1	-0.02	-0.08	0.15	-0.47	0.30	-1.56	110	0.12	0.63	0.43	-0.31	33	44
HL	4	46	0	-0.03	0.49	0.29	1	0.01	0.27	0.15	0.22	0.33	0.68	103	0.50	1.66	0.20	0.51	33	45
HL	4	47	0	0.01	-0.06	0.27	1	0.00	-0.02	0.15	-0.03	0.31	-0.11	108	0.91	0.03	0.87	0.12	33	46
HL	4	1487	0	-0.03	0.85	0.31	1	0.01	0.63	0.16	0.22	0.35	0.63	101	0.53	0.00	0.96	0.06	33	47
HL	4	48	0	0.00	-1.20	0.27	1	0.00	-1.20	0.16	0.00	0.31	0.00	113	1.00	0.73	0.39	-0.39	33	48
HL	4	50	0	0.06	-0.06	0.27	1	-0.02	0.34	0.15	-0.39	0.31	-1.26	110	0.21	1.24	0.27	-0.50	33	49
HL	4	1705	0	-0.06	0.52	0.17	1	0.02	0.38	0.09	0.13	0.19	0.71	102	0.48	0.04	0.84	0.07	33	50
HL	4	49	0	-0.07	-0.62	0.26	1	0.02	-1.08	0.16	0.46	0.31	1.51	114	0.13	2.70	0.10	0.71	33	51
HL	4	51	0	0.06	-0.34	0.27	1	-0.02	0.01	0.15	-0.35	0.30	-1.16	110	0.25	0.15	0.70	-0.19	33	52
HL	4	62	0	0.12	-0.41	0.26	1	-0.04	0.34	0.15	-0.75	0.31	-2.44	112	0.02	4.32	0.04	-0.82	33	53
HL	4	60	0	-0.02	-0.90	0.27	1	0.01	-1.01	0.16	0.11	0.31	0.36	112	0.72	0.00	0.99	-0.07	33	54
HL	4	61	0	-0.01	0.17	0.28	1	0.00	0.14	0.15	0.03	0.32	0.10	106	0.92	0.00	0.99	0.05	33	55
HL	4	63	0	0.05	0.85	0.31	1	-0.02	1.32	0.18	-0.47	0.36	-1.29	112	0.20	0.03	0.86	0.00	33	56
HL	4	1016	0	0.03	0.85	0.31	1	-0.01	1.13	0.17	-0.28	0.36	-0.77	108	0.44	0.19	0.66	-0.24	33	57
HL	4	1017	0	0.01	3.29	0.73	1	0.00	3.86	0.46	-0.57	0.86	-0.66	120	0.51	0.23	0.64		33	58
HL	4	1015	0	0.04	-0.55	0.26	1	-0.01	-0.30	0.15	-0.25	0.30	-0.83	109	0.41	0.01	0.92	-0.01	33	59
HL	4	1014	0	-0.05	1.56	0.38	1	0.02	1.01	0.17	0.54	0.42	1.31	92	0.19	1.61	0.21	0.82	33	60
HL	4	1011	0	-0.02	0.95	0.32	1	0.01	0.79	0.16	0.17	0.36	0.46	101	0.65	0.13	0.71	0.21	33	61
HL	4	1012	0	-0.06	1.56	0.38	1	0.02	0.98	0.17	0.57	0.41	1.38	92	0.17	0.16	0.69	0.33	33	62
HL	4	1013	0	-0.08	0.91	0.18	1	0.02	0.71	0.09	0.20	0.20	0.99	98	0.33	0.94	0.33	0.38	33	63
HL	5	642	0	-0.01	0.11	0.26	1	0.00	0.04	0.18	0.07	0.31	0.21	156	0.83	0.03	0.87	0.12	42	1
HL	5	644	0	-0.05	-2.12	0.29	1	0.03	-2.74	0.25	0.63	0.38	1.63	194	0.11	0.71	0.40	0.65	42	2
HL	5	636	0	-0.01	-0.70	0.25	1	0.01	-0.80	0.17	0.10	0.30	0.35	159	0.73	0.18	0.67	0.19	42	3
HL	5	716	0	0.08	-0.15	0.25	1	-0.04	0.46	0.18	-0.61	0.31	-1.96	165	0.05	2.75	0.10	-0.53	42	4
HL	5	1646	0	-0.18	0.33	0.14	1	0.09	-0.07	0.09	0.40	0.17	2.36	149	0.02	7.50	0.01	0.84	42	5

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	633	0	0.02	-0.21	0.25	1	-0.01	-0.08	0.17	-0.13	0.30	-0.42	158	0.67	0.04	0.85	-0.10	42	6
HL	5	723	0	-0.01	0.99	0.29	1	0.00	0.95	0.20	0.04	0.36	0.10	154	0.92	0.01	0.94	0.05	42	7
HL	5	1072	0	0.00	0.74	0.28	1	0.00	0.77	0.19	-0.03	0.34	-0.08	157	0.94	0.21	0.65	-0.24	42	8
HL	5	1565	0	-0.01	0.24	0.26	1	0.00	0.17	0.18	0.07	0.31	0.23	155	0.82	0.00	0.96	0.06	42	9
HL	5	711	0	0.06	0.04	0.25	1	-0.03	0.56	0.19	-0.52	0.32	-1.65	165	0.10	0.56	0.45	-0.28	42	10
HL	5	690	0	-0.02	-0.15	0.25	1	0.01	-0.29	0.17	0.15	0.30	0.48	156	0.63	0.03	0.87	0.13	42	11
HL	5	1074	0	-0.06	-1.88	0.28	1	0.03	-2.50	0.24	0.62	0.36	1.72	189	0.09	0.16	0.69	0.25	42	12
HL	5	1495	0	0.02	-2.03	0.28	1	-0.01	-1.81	0.20	-0.23	0.35	-0.65	158	0.52	0.46	0.50	-0.35	42	13
HL	5	713	0	-0.04	0.67	0.28	1	0.02	0.33	0.18	0.34	0.33	1.03	149	0.31	0.10	0.75	0.21	42	14
HL	5	721	0	0.02	-1.45	0.26	1	-0.01	-1.27	0.18	-0.18	0.32	-0.57	158	0.57	0.47	0.49	-0.30	42	15
HL	5	726	0	0.00	-0.21	0.25	1	0.00	-0.21	0.17	0.00	0.30	0.00	157	1.00	0.11	0.75	-0.18	42	16
HL	5	724	0	-0.01	-0.02	0.25	1	0.01	-0.11	0.17	0.09	0.31	0.30	156	0.77	0.02	0.88	0.10	42	17
HL	5	725	0	0.06	-0.52	0.25	1	-0.03	-0.08	0.17	-0.43	0.30	-1.44	160	0.15	0.34	0.56	-0.22	42	18
HL	5	627	0	-0.01	-0.64	0.25	1	0.00	-0.67	0.17	0.03	0.30	0.10	159	0.92	0.01	0.93	0.07	42	19
HL	5	722	0	-0.11	0.79	0.16	1	0.05	0.48	0.10	0.30	0.19	1.60	149	0.11	2.42	0.12	0.48	42	20
HL	5	1215	0	0.06	0.11	0.26	1	-0.03	0.60	0.19	-0.49	0.32	-1.55	165	0.12	2.38	0.12	-0.56	42	21
HL	5	672	0	0.03	-0.58	0.25	1	-0.01	-0.38	0.17	-0.19	0.30	-0.64	158	0.52	0.01	0.93	-0.07	42	22
HL	5	1183	0	-0.04	0.82	0.28	1	0.02	0.46	0.18	0.36	0.34	1.07	148	0.29	0.51	0.47	0.31	42	23
HL	5	681	0	-0.01	1.27	0.31	1	0.01	1.10	0.21	0.17	0.38	0.44	150	0.66	0.00	0.98	-0.10	42	24
HL	5	673	0	0.02	1.85	0.37	1	-0.01	2.17	0.28	-0.33	0.47	-0.70	170	0.48	0.24	0.62	-0.47	42	25
HL	5	1186	0	-0.04	-0.27	0.25	1	0.02	-0.56	0.17	0.29	0.30	0.96	157	0.34	0.05	0.82	0.12	42	26
HL	5	729	0	-0.02	-0.88	0.25	1	0.01	-1.02	0.18	0.14	0.30	0.45	161	0.65	0.08	0.77	-0.13	42	27
HL	5	640	0	0.09	0.67	0.28	1	-0.05	1.70	0.24	-1.03	0.37	-2.81	193	0.01	8.72	0.00	-1.23	42	28
HL	5	718	0	0.06	0.99	0.29	1	-0.03	1.70	0.24	-0.71	0.38	-1.86	182	0.07	0.64	0.42	-0.40	42	29
HL	5	1193	0	0.02	-0.08	0.25	1	-0.01	0.10	0.18	-0.19	0.31	-0.61	159	0.54	0.00	0.97	0.05	42	30
HL	5	689	0	0.03	-1.26	0.25	1	-0.01	-1.05	0.18	-0.21	0.31	-0.67	158	0.50	0.41	0.52	-0.31	42	31
HL	5	631	0	-0.09	0.24	0.26	1	0.05	-0.44	0.17	0.68	0.31	2.19	151	0.03	5.83	0.02	0.87	42	32
HL	5	648	0	-0.01	-0.70	0.25	1	0.00	-0.77	0.17	0.07	0.30	0.25	159	0.81	1.05	0.31	0.35	42	33
HL	5	1492	0	0.04	-0.88	0.25	1	-0.02	-0.62	0.17	-0.26	0.30	-0.86	158	0.39	2.83	0.09	-0.70	42	34
HL	5	1222	0	0.00	-1.47	0.26	1	0.00	-1.47	0.19	0.00	0.32	0.00	162	1.00	0.01	0.92	0.04	42	35

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	5	629	0	0.00	0.17	0.26	1	0.00	0.17	0.18	0.00	0.31	0.00	156	1.00	0.01	0.91	-0.14	42	36
HL	5	728	0	0.01	-0.64	0.25	1	-0.01	-0.53	0.17	-0.11	0.30	-0.35	158	0.73	0.00	0.98	-0.04	42	37
HL	5	1493	0	0.04	0.31	0.26	1	-0.02	0.63	0.19	-0.33	0.32	-1.01	163	0.31	1.66	0.20	-0.52	42	38
HL	5	693	0	0.06	0.59	0.27	1	-0.03	1.24	0.21	-0.64	0.35	-1.86	175	0.06	3.66	0.06	-0.81	42	39
HL	5	677	0	-0.04	1.71	0.36	1	0.02	1.24	0.21	0.48	0.42	1.15	138	0.25	0.67	0.41	0.44	42	40
HL	5	1494	0	0.03	0.67	0.28	1	-0.01	0.94	0.20	-0.27	0.34	-0.79	163	0.43	0.00	0.96	-0.05	42	41
HL	5	625	0	0.05	-0.94	0.25	1	-0.03	-0.58	0.17	-0.36	0.30	-1.20	158	0.23	0.18	0.67	-0.21	42	42
HL	5	1552	0	0.03	-0.08	0.25	1	-0.02	0.15	0.18	-0.24	0.31	-0.77	160	0.44	0.62	0.43	-0.35	42	43
HL	5	702	0	-0.01	0.38	0.26	1	0.01	0.28	0.18	0.09	0.32	0.29	155	0.77	0.00	1.00	-0.06	42	44
HL	5	730	0	0.05	-0.08	0.25	1	-0.03	0.35	0.18	-0.43	0.31	-1.40	163	0.16	0.09	0.76	-0.13	42	45
HL	5	709	0	0.01	-0.82	0.25	1	-0.01	-0.73	0.17	-0.09	0.30	-0.30	159	0.77	0.05	0.82	-0.12	42	46
HL	5	646	0	-0.04	-0.27	0.25	1	0.02	-0.58	0.17	0.31	0.30	1.01	158	0.31	2.32	0.13	0.51	42	47
HL	5	696	0	-0.02	-0.76	0.25	1	0.01	-0.91	0.18	0.15	0.30	0.51	161	0.61	0.08	0.78	0.15	42	48
HL	5	637	0	0.03	0.91	0.29	1	-0.02	1.23	0.21	-0.32	0.36	-0.89	166	0.37	0.96	0.33	-0.63	42	49
HL	5	708	0	0.03	1.08	0.30	1	-0.01	1.42	0.22	-0.34	0.38	-0.91	167	0.37	0.65	0.42	-0.41	42	50
HL	5	712	0	0.01	0.68	0.13	1	0.00	0.68	0.09	0.00	0.15	0.00	156	1.00	0.04	0.85	-0.07	42	51
HL	5	720	0	-0.02	0.17	0.26	1	0.01	0.03	0.18	0.15	0.31	0.47	155	0.64	0.01	0.92	0.09	42	52
HL	5	714	0	0.02	-0.15	0.25	1	-0.01	0.00	0.18	-0.14	0.31	-0.47	159	0.64	0.01	0.91	-0.02	42	53
HL	5	630	0	0.01	-0.21	0.25	1	0.00	-0.17	0.17	-0.04	0.30	-0.12	158	0.91	0.07	0.80	-0.12	42	54
HL	5	727	0	0.02	0.59	0.27	1	-0.01	0.73	0.19	-0.14	0.33	-0.43	160	0.67	0.67	0.41	-0.37	42	55
HL	5	684	0	-0.03	-0.15	0.25	1	0.01	-0.34	0.17	0.19	0.30	0.63	157	0.53	0.21	0.65	0.25	42	56
HL	5	699	0	0.00	-1.51	0.26	1	0.00	-1.51	0.19	0.00	0.32	0.00	162	1.00	0.02	0.88	-0.11	42	57
HL	5	707	0	0.05	0.99	0.29	1	-0.02	1.52	0.23	-0.53	0.37	-1.42	175	0.16	0.63	0.43	-0.38	42	58
HL	5	706	0	0.00	2.41	0.37	1	0.00	2.39	0.25	0.02	0.44	0.05	151	0.96	0.03	0.86	0.12	42	59
HL	5	626	0	0.00	-1.13	0.25	1	0.00	-1.15	0.18	0.03	0.31	0.08	161	0.93	0.01	0.93	0.09	42	60
HL	5	634	0	-0.05	-0.58	0.25	1	0.02	-0.91	0.18	0.34	0.30	1.11	161	0.27	1.99	0.16	0.49	42	61
HL	5	719	0	0.06	-0.02	0.25	1	-0.03	0.45	0.18	-0.47	0.31	-1.51	164	0.13	1.93	0.17	-0.62	42	62
HL	5	1208	0	-0.01	1.17	0.31	1	0.00	1.09	0.21	0.08	0.37	0.21	153	0.83	0.40	0.53	0.30	42	63
HL	5	1030	0	-0.18	-0.34	0.09	1	0.09	-0.52	0.06	0.18	0.11	1.62	157	0.11	2.61	0.11	0.44	42	64
HL	6	645	0	0.03	-1.40	0.22	1	-0.02	-1.14	0.19	-0.26	0.29	-0.90	220	0.37	0.01	0.92	-0.09	39	1

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	6	1567	0	-0.04	0.11	0.23	1	0.03	-0.25	0.19	0.36	0.30	1.22	218	0.22	0.70	0.40	0.34	39	2
HL	6	660	0	0.03	2.09	0.40	1	-0.02	3.71	0.72	-1.63	0.82	-1.98	202	0.05	1.00	0.32	-1.04	39	3
HL	6	1171	0	0.05	-0.27	0.22	1	-0.04	0.14	0.20	-0.42	0.30	-1.40	227	0.16	3.12	0.08	-0.59	39	4
HL	6	1661	0	-0.01	-0.56	0.12	1	0.01	-0.56	0.11	0.00	0.16	0.00	223	1.00	0.03	0.86	0.05	39	5
HL	6	661	0	-0.02	-0.41	0.21	1	0.02	-0.58	0.19	0.17	0.28	0.58	222	0.56	1.06	0.30	0.35	39	6
HL	6	659	0	0.02	-0.99	0.21	1	-0.01	-0.86	0.19	-0.13	0.28	-0.46	222	0.64	0.22	0.64	-0.20	39	7
HL	6	643	0	-0.04	-0.76	0.10	1	0.03	-0.84	0.10	0.08	0.14	0.55	225	0.58	0.35	0.55	0.16	39	8
HL	6	1983	0	-0.01	-0.37	0.21	1	0.01	-0.47	0.19	0.10	0.29	0.36	222	0.72	0.01	0.93	-0.02	39	9
HL	6	1986	0	-0.05	-1.50	0.22	1	0.04	-1.94	0.20	0.44	0.30	1.47	227	0.14	1.21	0.27	0.42	39	10
HL	6	1985	0	0.03	-0.04	0.22	1	-0.02	0.22	0.21	-0.26	0.30	-0.87	226	0.39	0.16	0.69	-0.16	39	11
HL	6	665	0	0.06	-0.68	0.21	1	-0.05	-0.17	0.19	-0.51	0.29	-1.77	226	0.08	2.08	0.15	-0.50	39	12
HL	6	678	0	0.02	-1.31	0.22	1	-0.02	-1.14	0.19	-0.17	0.29	-0.58	221	0.56	0.05	0.83	-0.13	39	13
HL	6	652	0	0.07	-1.35	0.22	1	-0.05	-0.79	0.19	-0.56	0.29	-1.97	220	0.05	6.77	0.01	-0.96	39	14
HL	6	639	0	0.03	0.32	0.23	1	-0.02	0.64	0.22	-0.31	0.32	-0.96	228	0.34	0.67	0.41	-0.40	39	15
HL	6	1075	0	0.05	-0.13	0.22	1	-0.04	0.35	0.21	-0.49	0.30	-1.61	229	0.11	1.14	0.29	-0.42	39	16
HL	6	662	0	-0.04	-0.27	0.22	1	0.03	-0.61	0.19	0.34	0.29	1.18	220	0.24	1.59	0.21	0.43	39	17
HL	6	664	0	-0.02	0.03	0.12	1	0.02	-0.02	0.10	0.05	0.16	0.33	223	0.74	0.15	0.70	-0.12	39	18
HL	6	647	0	-0.04	0.61	0.25	1	0.03	0.22	0.21	0.39	0.32	1.21	214	0.23	1.85	0.17	0.61	39	19
HL	6	691	0	-0.01	3.00	0.59	1	0.01	2.38	0.40	0.62	0.71	0.87	187	0.39	0.08	0.78	0.58	39	20
HL	6	688	0	0.03	-0.27	0.22	1	-0.03	0.02	0.20	-0.29	0.29	-1.00	226	0.32	0.55	0.46	-0.36	39	21
HL	6	687	0	0.00	1.36	0.31	1	0.00	1.42	0.28	-0.06	0.41	-0.15	224	0.88	0.03	0.86	0.23	39	22
HL	6	1309	0	-0.02	0.61	0.25	1	0.02	0.35	0.21	0.26	0.33	0.80	217	0.43	0.00	1.00	0.06	39	23
HL	6	651	0	0.03	0.74	0.26	1	-0.02	1.08	0.25	-0.34	0.36	-0.94	230	0.35	0.00	0.99	-0.11	39	24
HL	6	683	0	-0.02	-1.85	0.23	1	0.02	-2.07	0.21	0.22	0.31	0.70	224	0.49	0.00	0.98	-0.05	39	25
HL	6	649	0	0.02	-0.64	0.21	1	-0.02	-0.47	0.19	-0.17	0.28	-0.59	223	0.56	0.12	0.73	-0.16	39	26
HL	6	1173	0	-0.02	0.04	0.12	1	0.02	-0.03	0.11	0.07	0.16	0.43	223	0.66	1.70	0.19	0.42	39	27
HL	6	1083	0	-0.03	-0.13	0.22	1	0.02	-0.40	0.19	0.26	0.29	0.91	220	0.36	0.66	0.42	0.30	39	28
HL	6	653	0	-0.02	-1.80	0.23	1	0.01	-1.98	0.21	0.18	0.31	0.60	223	0.55	1.28	0.26	0.50	39	29
HL	6	1497	0	0.02	0.49	0.24	1	-0.02	0.74	0.23	-0.24	0.33	-0.73	228	0.47	0.59	0.44	-0.36	39	30
HL	6	682	0	0.06	-0.50	0.21	1	-0.04	-0.02	0.20	-0.48	0.29	-1.66	227	0.10	1.16	0.28	-0.38	39	31

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	6	1766	0	-0.02	-0.27	0.22	1	0.02	-0.47	0.19	0.20	0.29	0.68	221	0.50	0.83	0.36	0.36	39	32
HL	6	698	0	0.01	1.93	0.38	1	-0.01	2.38	0.40	-0.45	0.55	-0.82	234	0.41	0.56	0.45	-0.69	39	33
HL	6	1172	0	0.02	-2.45	0.26	1	-0.01	-2.25	0.22	-0.20	0.34	-0.60	213	0.55	0.01	0.91	-0.13	39	34
HL	6	632	0	0.02	-0.27	0.22	1	-0.02	-0.06	0.20	-0.22	0.29	-0.74	225	0.46	1.10	0.30	-0.40	39	35
HL	6	657	0	0.01	-0.55	0.21	1	-0.01	-0.43	0.19	-0.11	0.28	-0.40	223	0.69	0.97	0.33	-0.37	39	36
HL	6	1755	0	0.05	-0.81	0.21	1	-0.04	-0.40	0.19	-0.42	0.28	-1.47	224	0.14	1.43	0.23	-0.46	39	37
HL	6	680	0	0.00	-0.61	0.10	1	0.00	-0.61	0.09	0.00	0.14	0.00	222	1.00	0.27	0.60	0.14	39	38
HL	6	1566	0	-0.01	-1.08	0.21	1	0.01	-1.14	0.19	0.06	0.28	0.22	222	0.83	0.02	0.90	-0.01	39	39
HL	6	675	0	0.02	0.16	0.23	1	-0.01	0.35	0.21	-0.19	0.31	-0.61	226	0.54	0.02	0.89	0.01	39	40
HL	6	674	0	0.01	2.09	0.40	1	-0.01	2.38	0.40	-0.30	0.56	-0.53	231	0.60	0.07	0.79	0.04	39	41
HL	6	667	0	-0.03	-1.17	0.21	1	0.02	-1.43	0.19	0.26	0.29	0.91	223	0.36	0.22	0.64	0.21	39	42
HL	6	1170	0	0.04	1.68	0.34	1	-0.03	3.29	0.59	-1.61	0.68	-2.36	207	0.02	2.45	0.12	-1.55	39	43
HL	6	692	0	0.03	0.32	0.23	1	-0.03	0.69	0.23	-0.36	0.33	-1.11	229	0.27	0.72	0.39	-0.34	39	44
HL	6	679	0	0.01	0.38	0.24	1	-0.01	0.49	0.22	-0.11	0.32	-0.35	225	0.73	0.00	0.98	-0.07	39	45
HL	6	666	0	-0.03	0.26	0.11	1	0.03	0.19	0.09	0.07	0.14	0.50	221	0.62	0.01	0.91	0.03	39	46
HL	6	701	0	0.03	1.68	0.34	1	-0.02	2.55	0.43	-0.88	0.55	-1.60	234	0.11	0.31	0.58	-0.50	39	47
HL	6	700	0	-0.03	-1.40	0.22	1	0.02	-1.66	0.20	0.26	0.29	0.87	224	0.38	0.26	0.61	0.29	39	48
HL	6	697	0	0.01	-0.18	0.22	1	-0.01	-0.06	0.20	-0.12	0.29	-0.41	224	0.68	0.22	0.64	-0.20	39	49
HL	6	694	0	-0.02	1.03	0.20	1	0.02	0.87	0.17	0.16	0.26	0.61	216	0.54	0.03	0.86	0.06	39	50
HL	6	676	0	0.00	-0.56	0.21	1	0.00	-0.56	0.19	0.00	0.28	0.00	222	1.00	0.00	0.97	-0.03	39	51
HL	6	668	0	-0.03	1.46	0.32	1	0.02	1.02	0.25	0.44	0.40	1.10	206	0.27	0.84	0.36	0.75	39	52
HL	6	650	0	0.00	0.34	0.23	1	0.00	0.34	0.21	0.00	0.31	0.00	223	1.00	0.44	0.51	-0.28	39	53
HL	6	1169	0	-0.03	1.19	0.29	1	0.02	0.79	0.23	0.39	0.37	1.06	209	0.29	0.02	0.88	0.02	39	54
HL	6	669	0	-0.04	0.22	0.23	1	0.03	-0.14	0.20	0.35	0.30	1.17	217	0.24	2.96	0.09	0.68	39	55
HL	6	663	0	-0.02	2.09	0.40	1	0.02	1.59	0.29	0.50	0.50	1.00	199	0.32	0.35	0.56	0.49	39	56
HL	6	656	0	-0.05	-0.13	0.22	1	0.04	-0.58	0.19	0.44	0.29	1.54	219	0.13	1.41	0.23	0.41	39	57
HL	6	655	0	-0.04	-1.54	0.22	1	0.03	-1.90	0.20	0.35	0.30	1.17	226	0.24	0.02	0.90	0.10	39	58
HL	6	1496	0	-0.02	1.68	0.34	1	0.02	1.28	0.27	0.40	0.43	0.92	206	0.36	0.02	0.89	0.06	39	59
HL	6	1031	0	-0.04	-1.00	0.08	1	0.03	-1.06	0.07	0.05	0.11	0.49	222	0.63	0.60	0.44	0.22	39	60
HL	7	1118	0	0.04	-2.45	0.31	1	-0.04	-1.96	0.27	-0.49	0.42	-1.17	134	0.24	0.44	0.51	-0.41	26	1

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	7	784	0	-0.03	-1.09	0.27	1	0.02	-1.35	0.25	0.26	0.37	0.71	138	0.48	0.03	0.87	0.17	26	2
HL	7	888	0	-0.01	-2.35	0.31	1	0.01	-2.45	0.30	0.10	0.43	0.22	139	0.82	0.02	0.88	0.19	26	3
HL	7	883	0	0.08	0.13	0.30	1	-0.07	1.13	0.34	-1.01	0.45	-2.25	140	0.03	4.64	0.03	-1.24	26	4
HL	7	885	0	0.00	-2.10	0.29	1	0.00	-2.10	0.28	0.00	0.40	0.00	138	1.00	0.01	0.92	0.09	26	5
HL	7	886	0	0.00	1.39	0.41	1	0.00	1.39	0.36	0.00	0.55	0.00	134	1.00	0.02	0.88	0.40	26	6
HL	7	882	0	0.00	-2.00	0.29	1	0.00	-2.02	0.28	0.02	0.40	0.06	138	0.95	0.24	0.62	0.38	26	7
HL	7	763	0	0.05	-1.60	0.28	1	-0.04	-1.16	0.25	-0.44	0.37	-1.19	137	0.24	0.02	0.88	-0.17	26	8
HL	7	762	0	-0.01	-0.58	0.27	1	0.01	-0.65	0.25	0.07	0.37	0.20	137	0.84	0.01	0.94	-0.09	26	9
HL	7	1098	0	0.05	-0.20	0.28	1	-0.04	0.30	0.28	-0.51	0.40	-1.28	139	0.20	0.82	0.36	-0.49	26	10
HL	7	1175	0	0.03	-0.58	0.27	1	-0.02	-0.33	0.26	-0.25	0.37	-0.67	138	0.51	0.01	0.92	-0.09	26	11
HL	7	871	0	0.05	-2.65	0.33	1	-0.04	-2.04	0.28	-0.62	0.43	-1.44	132	0.15	0.67	0.41	-0.53	26	12
HL	7	790	0	0.00	-2.10	0.29	1	0.00	-2.10	0.28	0.00	0.40	0.00	138	1.00	0.06	0.80	-0.31	26	13
HL	7	774	0	0.01	1.40	0.41	1	-0.01	1.66	0.39	-0.26	0.57	-0.45	138	0.66	0.51	0.47	0.77	26	14
HL	7	1097	0	-0.08	-0.43	0.16	1	0.07	-0.66	0.14	0.24	0.21	1.13	136	0.26	0.03	0.87	0.07	26	15
HL	7	1099	0	-0.02	-0.43	0.27	1	0.01	-0.59	0.25	0.16	0.37	0.42	137	0.67	0.34	0.56	0.40	26	16
HL	7	1089	0	0.04	0.96	0.36	1	-0.03	1.66	0.39	-0.70	0.53	-1.31	140	0.19	0.68	0.41	-1.03	26	17
HL	7	892	0	0.02	0.04	0.29	1	-0.02	0.30	0.28	-0.26	0.40	-0.65	138	0.52	0.02	0.88	-0.06	26	18
HL	7	843	0	-0.04	2.80	0.73	1	0.03	1.51	0.38	1.29	0.82	1.58	98	0.12	0.53	0.47	1.29	26	19
HL	7	1178	0	0.06	0.96	0.36	1	-0.05	2.47	0.53	-1.51	0.64	-2.36	129	0.02	2.06	0.15	-1.58	26	20
HL	7	806	0	0.00	-0.05	0.29	1	0.00	-0.05	0.26	0.00	0.39	0.00	137	1.00	0.17	0.68	0.32	26	21
HL	7	878	0	0.00	0.53	0.18	1	0.01	0.53	0.16	0.00	0.25	0.00	136	1.00	0.00	0.98	0.01	26	22
HL	7	808	0	-0.06	-0.04	0.14	1	0.05	-0.18	0.12	0.13	0.19	0.71	136	0.48	1.83	0.18	0.53	26	23
HL	7	1088	0	0.03	0.40	0.31	1	-0.02	0.73	0.30	-0.32	0.44	-0.74	139	0.46	0.02	0.88	-0.05	26	24
HL	7	769	0	0.00	-2.08	0.29	1	0.00	-2.04	0.28	-0.04	0.40	-0.11	138	0.91	0.13	0.72	-0.30	26	25
HL	7	803	0	0.00	-0.04	0.29	1	0.00	0.01	0.27	-0.05	0.39	-0.12	137	0.90	0.05	0.82	-0.02	26	26
HL	7	877	0	0.01	-0.73	0.27	1	-0.01	-0.65	0.25	-0.07	0.37	-0.20	138	0.84	0.02	0.90	-0.15	26	27
HL	7	1185	0	0.00	-0.66	0.27	1	0.00	-0.66	0.25	0.00	0.37	0.00	137	1.00	0.02	0.89	0.05	26	28
HL	7	777	0	0.03	-0.51	0.27	1	-0.03	-0.20	0.26	-0.31	0.38	-0.82	138	0.41	0.00	0.97	0.09	26	29
HL	7	903	0	-0.02	2.36	0.60	1	0.01	1.82	0.42	0.54	0.73	0.74	118	0.46	0.07	0.79	0.80	26	30
HL	7	887	0	0.06	-1.75	0.28	1	-0.05	-1.22	0.25	-0.53	0.38	-1.42	136	0.16	1.99	0.16	-0.81	26	31

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	7	930	0	0.03	-0.73	0.27	1	-0.03	-0.46	0.25	-0.26	0.37	-0.71	138	0.48	0.00	0.97	-0.07	26	32
HL	7	880	0	0.05	0.40	0.31	1	-0.05	1.13	0.34	-0.73	0.46	-1.59	140	0.11	0.02	0.88	-0.24	26	33
HL	7	1096	0	-0.18	0.08	0.16	1	0.16	-0.45	0.14	0.53	0.21	2.49	133	0.01	2.63	0.11	0.72	26	34
HL	7	875	0	0.00	-0.59	0.27	1	0.00	-0.59	0.25	0.00	0.37	0.00	137	1.00	0.12	0.73	-0.24	26	35
HL	7	811	0	-0.02	0.40	0.31	1	0.01	0.23	0.28	0.18	0.42	0.42	135	0.67	0.28	0.59	0.44	26	36
HL	7	869	0	-0.03	1.80	0.48	1	0.02	1.25	0.35	0.55	0.59	0.93	122	0.36	0.03	0.86	0.19	26	37
HL	7	879	0	-0.02	0.31	0.31	1	0.02	0.08	0.27	0.23	0.41	0.56	135	0.57	0.14	0.70	0.32	26	38
HL	7	897	0	0.00	-0.59	0.27	1	0.00	-0.59	0.25	0.00	0.37	0.00	137	1.00	0.28	0.59	-0.36	26	39
HL	7	1182	0	0.02	-0.04	0.29	1	-0.02	0.15	0.27	-0.19	0.40	-0.49	138	0.63	0.03	0.87	0.05	26	40
HL	7	891	0	0.05	-0.28	0.28	1	-0.04	0.23	0.28	-0.51	0.39	-1.30	139	0.20	1.18	0.28	-0.82	26	41
HL	7	874	0	-0.01	2.36	0.60	1	0.01	2.01	0.44	0.36	0.75	0.48	123	0.63	0.02	0.88	0.23	26	42
HL	7	1179	0	0.04	1.09	0.37	1	-0.04	2.01	0.44	-0.91	0.58	-1.57	139	0.12	0.89	0.35	-0.90	26	43
HL	7	870	0	0.00	2.36	0.60	1	0.00	2.47	0.53	-0.11	0.80	-0.14	135	0.89	0.02	0.88	0.29	26	44
HL	7	872	0	0.01	0.82	0.21	1	-0.01	0.89	0.19	-0.07	0.28	-0.24	135	0.81	0.02	0.89	-0.08	26	45
HL	7	889	0	-0.04	0.63	0.19	1	0.04	0.46	0.16	0.17	0.25	0.70	133	0.49	1.09	0.30	0.62	26	46
HL	7	829	0	-0.10	-0.73	0.27	1	0.08	-1.61	0.26	0.88	0.37	2.36	139	0.02	0.88	0.35	0.47	26	47
HL	7	839	0	-0.08	1.40	0.41	1	0.06	0.30	0.28	1.10	0.50	2.20	116	0.03	1.84	0.17	1.09	26	48
HL	7	899	0	-0.03	-0.20	0.28	1	0.03	-0.53	0.25	0.33	0.38	0.86	136	0.39	0.37	0.54	0.63	26	49
HL	7	876	0	0.03	0.96	0.36	1	-0.03	1.51	0.38	-0.55	0.52	-1.06	140	0.29	0.82	0.36	-0.99	26	50
HL	7	770	0	0.01	0.33	0.21	1	-0.01	0.39	0.20	-0.07	0.29	-0.23	137	0.82	0.00	0.97	0.02	26	51
HL	7	834	0	0.02	-0.28	0.28	1	-0.01	-0.13	0.26	-0.15	0.38	-0.39	138	0.70	0.05	0.82	-0.03	26	52
HL	7	884	0	0.03	1.24	0.39	1	-0.03	2.01	0.44	-0.77	0.59	-1.29	140	0.20	0.57	0.45	-0.72	26	53
HL	7	902	0	-0.05	0.72	0.34	1	0.05	0.08	0.27	0.64	0.43	1.48	129	0.14	0.69	0.41	0.63	26	54
HL	7	1104	0	-0.10	0.22	0.30	1	0.09	-0.78	0.25	1.00	0.39	2.55	132	0.01	2.27	0.13	0.87	26	55
HL	7	822	0	0.00	2.05	0.53	1	0.00	2.02	0.44	0.02	0.69	0.03	132	0.97	0.01	0.93	-0.30	26	56
HL	7	1032	0	0.07	-1.14	0.11	1	-0.06	-1.04	0.10	-0.10	0.15	-0.70	137	0.48	2.28	0.13	-0.55	26	57
HL	8	909	0	-0.03	-2.36	0.29	1	0.03	-2.77	0.34	0.41	0.44	0.92	153	0.36	0.03	0.87	0.07	30	1
HL	8	917	0	-0.03	-3.15	0.36	1	0.03	-4.26	0.60	1.10	0.70	1.59	126	0.11	1.55	0.21	1.08	30	2
HL	8	1544	0	-0.02	-0.25	0.24	1	0.02	-0.46	0.25	0.21	0.35	0.61	160	0.54	0.04	0.84	0.15	30	3
HL	8	894	0	-0.02	-0.01	0.25	1	0.02	-0.21	0.25	0.20	0.35	0.58	160	0.56	0.16	0.69	0.30	30	4

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	8	867	0	-0.02	0.18	0.25	1	0.02	-0.02	0.26	0.20	0.36	0.56	160	0.58	0.44	0.51	0.38	30	5
HL	8	1676	0	-0.01	0.15	0.15	1	0.01	0.15	0.15	0.00	0.21	0.00	160	1.00	0.61	0.44	0.30	30	6
HL	8	913	0	-0.01	1.20	0.32	1	0.01	1.06	0.31	0.14	0.45	0.31	160	0.76	0.29	0.59	0.37	30	7
HL	8	929	0	0.02	-2.36	0.29	1	-0.02	-2.10	0.29	-0.26	0.40	-0.64	160	0.52	0.34	0.56	-0.44	30	8
HL	8	904	0	0.01	-2.05	0.27	1	-0.02	-1.86	0.27	-0.19	0.38	-0.49	160	0.62	0.69	0.41	0.58	30	9
HL	8	927	0	-0.04	-1.52	0.25	1	0.04	-1.94	0.28	0.41	0.37	1.12	157	0.27	0.57	0.45	0.42	30	10
HL	8	1127	0	0.00	0.39	0.26	1	0.00	0.39	0.27	0.00	0.38	0.00	160	1.00	0.00	0.97	0.09	30	11
HL	8	855	0	0.00	-1.05	0.24	1	-0.01	-1.01	0.25	-0.05	0.34	-0.14	160	0.89	0.06	0.81	-0.23	30	12
HL	8	1126	0	0.02	-3.15	0.36	1	-0.02	-2.77	0.34	-0.39	0.49	-0.79	160	0.43	1.48	0.22	-1.17	30	13
HL	8	848	0	-0.02	-2.20	0.28	1	0.02	-2.45	0.31	0.25	0.42	0.60	156	0.55	0.01	0.91	0.08	30	14
HL	8	802	0	0.01	2.34	0.47	1	-0.01	2.89	0.60	-0.55	0.76	-0.72	149	0.47	1.87	0.17		30	15
HL	8	771	0	0.01	0.75	0.28	1	-0.01	0.87	0.30	-0.12	0.41	-0.29	159	0.77	0.00	0.97	-0.15	30	16
HL	8	785	0	0.02	-0.60	0.24	1	-0.02	-0.40	0.25	-0.20	0.34	-0.58	159	0.57	0.10	0.75	-0.20	30	17
HL	8	767	0	0.03	-0.41	0.15	1	-0.03	-0.28	0.16	-0.13	0.22	-0.59	160	0.56	0.44	0.51	0.25	30	18
HL	8	914	0	0.00	0.05	0.25	1	0.00	0.05	0.26	0.00	0.36	0.00	160	1.00	0.02	0.89	-0.04	30	19
HL	8	921	0	0.00	-0.77	0.24	1	0.00	-0.77	0.25	0.00	0.34	0.00	160	1.00	0.10	0.76	-0.25	30	20
HL	8	911	0	0.00	0.63	0.18	1	0.00	0.63	0.19	0.00	0.26	0.00	160	1.00	0.00	0.98	0.01	30	21
HL	8	833	0	-0.07	-0.31	0.24	1	0.08	-1.01	0.25	0.70	0.35	2.01	160	0.05	1.68	0.19	0.72	30	22
HL	8	912	0	-0.01	-0.07	0.25	1	0.01	-0.21	0.25	0.14	0.35	0.41	160	0.69	0.00	0.99	0.09	30	23
HL	8	916	0	0.02	-0.01	0.25	1	-0.02	0.18	0.26	-0.19	0.36	-0.52	159	0.60	0.82	0.36	-0.48	30	24
HL	8	796	0	-0.02	-0.07	0.25	1	0.02	-0.28	0.25	0.21	0.35	0.59	160	0.56	0.27	0.60	0.29	30	25
HL	8	793	0	0.02	2.58	0.52	1	-0.02	4.04	1.02	-1.46	1.14	-1.28	115	0.20	0.13	0.72		30	26
HL	8	772	0	-0.03	1.30	0.33	1	0.03	0.87	0.30	0.43	0.44	0.97	160	0.33	0.01	0.94	0.23	30	27
HL	8	810	0	0.00	2.12	0.44	1	0.00	2.12	0.44	0.00	0.62	0.00	160	1.00	0.37	0.54	0.81	30	28
HL	8	1079	0	0.01	-0.71	0.24	1	-0.01	-0.58	0.25	-0.13	0.34	-0.38	160	0.71	0.02	0.89	-0.02	30	29
HL	8	1543	0	0.04	0.25	0.26	1	-0.04	0.70	0.29	-0.45	0.39	-1.18	157	0.24	0.82	0.36	-0.52	30	30
HL	8	761	0	0.02	0.12	0.25	1	-0.02	0.32	0.27	-0.20	0.37	-0.55	159	0.58	0.14	0.71	-0.30	30	31
HL	8	910	0	0.02	-1.34	0.24	1	-0.02	-1.13	0.25	-0.21	0.35	-0.62	160	0.54	0.09	0.76	-0.22	30	32
HL	8	906	0	0.03	-0.13	0.25	1	-0.04	0.25	0.26	-0.38	0.36	-1.05	158	0.30	2.29	0.13	-0.68	30	33
HL	8	922	0	0.03	-0.43	0.24	1	-0.03	-0.15	0.25	-0.28	0.35	-0.79	159	0.43	0.69	0.41	-0.54	30	34

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
HL	8	1190	0	0.03	-0.77	0.24	1	-0.03	-0.46	0.25	-0.31	0.34	-0.90	159	0.37	0.67	0.41	-0.37	30	35
HL	8	1105	0	0.00	0.25	0.26	1	0.00	0.25	0.26	0.00	0.37	0.00	160	1.00	0.01	0.91	-0.15	30	36
HL	8	1546	0	-0.02	5.26		1	0.03	2.57	0.53	2.69	1.91	1.41	97	0.16	0.24	0.63		30	37
HL	8	893	0	0.02	0.67	0.28	1	-0.02	0.96	0.31	-0.29	0.41	-0.70	158	0.48	0.05	0.82	-0.03	30	38
HL	8	1078	0	-0.01	0.24	0.26	1	0.01	0.11	0.26	0.14	0.37	0.37	160	0.71	0.00	0.97	0.06	30	39
HL	8	926	0	-0.02	0.18	0.25	1	0.02	-0.02	0.26	0.20	0.36	0.56	160	0.58	1.77	0.18	0.69	30	40
HL	8	1210	0	-0.03	0.25	0.26	1	0.03	-0.09	0.25	0.33	0.36	0.92	160	0.36	0.37	0.54	0.41	30	41
HL	8	820	0	-0.05	0.82	0.14	1	0.05	0.66	0.13	0.15	0.19	0.79	160	0.43	0.04	0.85	0.08	30	42
HL	8	780	0	-0.03	0.46	0.13	1	0.04	0.36	0.13	0.10	0.19	0.56	160	0.57	0.67	0.41	0.28	30	43
HL	8	1212	0	0.02	-1.05	0.24	1	-0.03	-0.82	0.25	-0.23	0.34	-0.67	160	0.51	0.09	0.77	-0.18	30	44
HL	8	925	0	0.03	-0.66	0.24	1	-0.03	-0.40	0.25	-0.26	0.34	-0.74	159	0.46	0.01	0.92	-0.12	30	45
HL	8	905	0	-0.01	0.52	0.27	1	0.01	0.39	0.27	0.13	0.38	0.35	160	0.73	0.04	0.85	0.01	30	46
HL	8	1547	0	0.01	2.89	0.60	1	-0.01	3.32	0.73	-0.43	0.94	-0.46	152	0.65	0.09	0.76	0.41	30	47
HL	8	1214	0	0.02	0.35	0.12	1	-0.02	0.40	0.12	-0.05	0.17	-0.32	159	0.75	0.01	0.94	-0.03	30	48
HL	8	1192	0	0.02	-1.17	0.24	1	-0.02	-1.01	0.25	-0.16	0.35	-0.47	160	0.64	0.02	0.89	-0.03	30	49
HL	8	1199	0	0.01	-0.77	0.24	1	-0.01	-0.64	0.25	-0.13	0.34	-0.37	160	0.71	0.00	0.95	-0.05	30	50
HL	8	1201	0	-0.03	0.52	0.27	1	0.03	0.18	0.26	0.35	0.38	0.92	160	0.36	0.12	0.73	0.27	30	51
HL	8	901	0	-0.03	1.10	0.31	1	0.04	0.62	0.28	0.48	0.42	1.15	160	0.25	1.19	0.28	0.91	30	52
HL	8	764	0	0.03	0.83	0.29	1	-0.04	1.38	0.34	-0.55	0.45	-1.22	153	0.22	0.06	0.81	-0.27	30	53
HL	8	1545	0	-0.01	-0.54	0.24	1	0.01	-0.64	0.25	0.10	0.34	0.30	160	0.77	0.06	0.81	-0.19	30	54
HL	8	924	0	0.00	0.61	0.27	1	0.00	0.61	0.28	0.00	0.39	0.00	160	1.00	0.03	0.87	-0.20	30	55
HL	8	805	0	0.00	-0.54	0.24	1	0.00	-0.58	0.25	0.04	0.34	0.12	160	0.90	0.65	0.42	-0.42	30	56
HL	8	1092	0	0.00	1.28	0.33	1	0.00	1.28	0.33	0.00	0.47	0.00	160	1.00	0.05	0.83	-0.04	30	57
HL	8	920	0	0.05	-0.25	0.24	1	-0.05	0.25	0.26	-0.50	0.36	-1.39	158	0.17	0.88	0.35	-0.53	30	58
HL	8	766	0	-0.02	2.89	0.60	1	0.03	1.93	0.41	0.96	0.72	1.32	146	0.19	3.00	0.08		30	59
HL	8	826	0	0.02	-0.19	0.24	1	-0.02	-0.02	0.26	-0.17	0.35	-0.48	159	0.63	0.04	0.84	0.00	30	60
HL	8	778	0	0.00	-0.20	0.24	1	0.00	-0.20	0.25	0.00	0.35	0.00	160	1.00	0.24	0.62	-0.31	30	61
HL	8	1034	0	0.04	-0.29	0.10	1	-0.04	-0.24	0.10	-0.06	0.14	-0.41	160	0.68	0.17	0.68	-0.14	30	62

Appendix Table I.4:Mathematics: DIF FRL

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	3	178	C	0.02	-4.11	0.42	D	-0.01	-3.54	0.33	-0.57	0.54	-1.07	272	0.29	0.55	0.46	-0.59	28	1
MA	3	182	C	0.00	-0.54	0.18	D	0.00	-0.54	0.17	0.00	0.25	0.00	292	1.00	0.28	0.60	-0.18	28	2
MA	3	206	C	0.03	-1.81	0.20	D	-0.03	-1.48	0.18	-0.32	0.27	-1.22	293	0.23	0.45	0.50	-0.23	28	3
MA	3	1303	C	0.02	1.39	0.28	D	-0.01	1.72	0.23	-0.33	0.36	-0.91	284	0.36	0.01	0.94	-0.05	28	4
MA	3	225	C	0.03	0.18	0.20	D	-0.02	0.44	0.18	-0.26	0.27	-0.99	290	0.33	0.06	0.81	0.11	28	5
MA	3	1516	C	-0.05	1.39	0.20	D	0.04	1.06	0.12	0.33	0.23	1.40	218	0.16	1.83	0.18	0.52	28	6
MA	3	215	C	-0.03	-2.42	0.22	D	0.02	-2.80	0.25	0.38	0.34	1.14	306	0.26	0.96	0.33	0.42	28	7
MA	3	169	C	-0.02	-0.77	0.18	D	0.01	-0.92	0.17	0.14	0.25	0.58	295	0.56	0.00	0.97	0.03	28	8
MA	3	1434	C	-0.04	2.19	0.37	D	0.03	1.41	0.22	0.77	0.43	1.80	221	0.07	1.43	0.23	0.57	28	9
MA	3	231	C	0.01	-0.23	0.19	D	-0.01	-0.17	0.17	-0.06	0.25	-0.24	290	0.81	0.00	0.95	0.05	28	10
MA	3	219	C	-0.03	1.94	0.34	D	0.02	1.41	0.22	0.52	0.40	1.31	237	0.19	1.03	0.31	0.49	28	11
MA	3	202	C	-0.03	-2.32	0.22	D	0.02	-2.74	0.25	0.42	0.33	1.27	306	0.20	2.24	0.13	0.60	28	12
MA	3	221	C	0.05	-0.01	0.19	D	-0.04	0.47	0.18	-0.49	0.26	-1.86	294	0.06	4.28	0.04	-0.64	28	13
MA	3	992	C	0.00	3.24	0.59	D	0.00	3.54	0.46	-0.31	0.75	-0.41	271	0.68	0.00	0.98	-0.72	28	14
MA	3	371	C	0.01	0.52	0.21	D	-0.01	0.60	0.18	-0.08	0.28	-0.29	283	0.77	0.10	0.76	-0.15	28	15
MA	3	173	C	0.07	-0.68	0.18	D	-0.05	-0.12	0.17	-0.56	0.25	-2.26	294	0.02	2.53	0.11	-0.43	28	16
MA	3	226	C	0.01	0.99	0.24	D	-0.01	1.11	0.20	-0.12	0.31	-0.39	279	0.69	0.00	0.96	-0.07	28	17
MA	3	233	C	0.01	2.77	0.62	D	0.00	3.31	0.50	-0.54	0.80	-0.67	274	0.50	4.59	0.03		28	18
MA	3	174	C	0.01	-1.14	0.18	D	0.00	-1.09	0.17	-0.05	0.25	-0.19	296	0.85	0.57	0.45	-0.28	28	19
MA	3	1036	C	0.01	1.94	0.34	D	-0.01	2.23	0.28	-0.29	0.44	-0.67	278	0.50	0.04	0.84	-0.24	28	20
MA	3	210	C	0.01	0.82	0.23	D	-0.01	0.95	0.19	-0.14	0.30	-0.45	282	0.65	0.00	0.98	0.04	28	21
MA	3	1437	C	0.00	2.33	0.40	D	0.00	2.48	0.30	-0.14	0.50	-0.29	266	0.77	0.01	0.92	-0.25	28	22
MA	3	207	C	0.01	-1.17	0.18	D	-0.01	-1.06	0.17	-0.11	0.25	-0.44	295	0.66	0.21	0.65	-0.17	28	23
MA	3	212	C	-0.07	0.14	0.20	D	0.05	-0.45	0.17	0.59	0.26	2.27	281	0.02	2.11	0.15	0.48	28	24
MA	3	172	C	-0.03	0.10	0.20	D	0.02	-0.17	0.17	0.27	0.26	1.06	283	0.29	0.00	0.99	0.05	28	25
MA	3	198	C	0.00	-2.46	0.23	D	0.00	-2.46	0.23	0.00	0.32	0.00	301	1.00	0.31	0.58	-0.26	28	26
MA	3	368	C	-0.02	0.82	0.23	D	0.01	0.60	0.18	0.21	0.29	0.73	271	0.47	0.06	0.81	0.14	28	27
MA	3	191	C	0.04	-0.23	0.19	D	-0.03	0.08	0.17	-0.31	0.25	-1.24	292	0.22	0.81	0.37	-0.30	28	28
MA	3	193	C	0.03	-1.30	0.18	D	-0.03	-1.03	0.17	-0.27	0.25	-1.09	294	0.28	3.94	0.05	-0.61	28	29

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	3	1435	C	-0.05	-1.41	0.19	D	0.04	-1.86	0.19	0.45	0.27	1.70	304	0.09	1.30	0.25	0.37	28	30
MA	3	189	C	-0.03	-2.01	0.20	D	0.02	-2.36	0.22	0.36	0.30	1.19	306	0.24	0.45	0.50	0.26	28	31
MA	3	995	C	0.05	0.22	0.20	D	-0.04	0.74	0.19	-0.52	0.27	-1.89	295	0.06	0.24	0.62	-0.19	28	32
MA	3	229	C	-0.03	-0.54	0.18	D	0.02	-0.75	0.17	0.21	0.25	0.84	293	0.40	1.11	0.29	0.30	28	33
MA	3	374	C	0.02	0.48	0.21	D	-0.02	0.74	0.19	-0.26	0.28	-0.93	288	0.35	0.19	0.66	0.18	28	34
MA	3	184	C	-0.02	-1.92	0.20	D	0.01	-2.14	0.21	0.21	0.29	0.74	304	0.46	0.46	0.50	0.26	28	35
MA	3	186	C	-0.01	-0.09	0.19	D	0.01	-0.17	0.17	0.08	0.25	0.33	287	0.74	0.06	0.80	-0.11	28	36
MA	3	1035	C	-0.01	0.43	0.21	D	0.01	0.32	0.17	0.11	0.27	0.41	280	0.68	0.00	0.96	0.06	28	37
MA	3	201	C	-0.02	-1.44	0.19	D	0.01	-1.58	0.18	0.14	0.26	0.53	300	0.59	0.36	0.55	0.18	28	38
MA	3	1439	C	-0.04	-1.24	0.18	D	0.03	-1.61	0.18	0.38	0.26	1.46	302	0.15	0.37	0.54	0.21	28	39
MA	3	211	C	0.00	1.24	0.26	D	0.00	1.24	0.21	0.00	0.33	0.00	271	1.00	0.25	0.62	0.24	28	40
MA	3	234	C	0.00	1.91	0.32	D	0.00	1.82	0.19	0.09	0.37	0.25	224	0.80	0.02	0.88	0.14	28	41
MA	3	216	C	-0.01	-0.68	0.18	D	0.01	-0.78	0.17	0.10	0.25	0.42	293	0.68	0.06	0.81	0.09	28	42
MA	3	235	C	-0.03	2.18	0.31	D	0.03	1.68	0.17	0.51	0.36	1.42	212	0.16	0.26	0.61	0.23	28	43
MA	3	209	C	0.01	0.71	0.23	D	-0.01	0.81	0.19	-0.09	0.29	-0.32	281	0.75	0.25	0.62	-0.22	28	44
MA	3	213	C	-0.01	0.34	0.21	D	0.01	0.20	0.17	0.15	0.27	0.54	281	0.59	0.00	0.99	-0.05	28	45
MA	3	224	C	0.00	0.22	0.20	D	0.00	0.22	0.17	0.00	0.27	0.00	285	1.00	0.21	0.65	0.17	28	46
MA	3	204	C	-0.02	-0.74	0.18	D	0.02	-0.92	0.17	0.18	0.25	0.72	295	0.48	0.02	0.89	0.08	28	47
MA	3	1438	C	0.00	-0.37	0.19	D	0.00	-0.37	0.17	0.00	0.25	0.00	291	1.00	0.00	0.97	-0.03	28	48
MA	3	230	C	0.04	0.34	0.21	D	-0.03	0.74	0.19	-0.39	0.28	-1.42	292	0.16	0.43	0.51	-0.25	28	49
MA	3	190	C	0.02	-2.01	0.20	D	-0.02	-1.79	0.19	-0.22	0.28	-0.78	295	0.43	0.57	0.45	-0.26	28	50
MA	3	180	C	0.01	-0.51	0.18	D	-0.01	-0.42	0.17	-0.09	0.25	-0.35	292	0.73	0.06	0.80	-0.11	28	51
MA	3	1433	C	0.03	0.14	0.20	D	-0.02	0.44	0.18	-0.30	0.27	-1.14	290	0.26	0.02	0.89	0.00	28	52
MA	3	188	C	-0.02	-1.27	0.18	D	0.02	-1.48	0.18	0.21	0.26	0.83	300	0.41	0.41	0.52	0.24	28	53
MA	3	214	C	-0.01	-0.34	0.19	D	0.01	-0.42	0.17	0.08	0.25	0.34	290	0.74	0.00	0.95	-0.02	28	54
MA	3	223	C	0.04	-0.01	0.19	D	-0.03	0.32	0.17	-0.33	0.26	-1.28	292	0.20	0.01	0.94	0.02	28	55
MA	3	205	C	0.00	0.35	0.21	D	0.00	0.35	0.18	0.00	0.27	0.00	283	1.00	0.00	0.95	0.02	28	56
MA	3	217	C	0.01	1.05	0.25	D	-0.01	1.23	0.21	-0.19	0.32	-0.58	281	0.56	0.02	0.88	-0.01	28	57
MA	3	1305	C	-0.02	2.70	0.46	D	0.02	1.95	0.25	0.75	0.53	1.42	212	0.16	0.22	0.64	0.39	28	58
MA	3	187	C	0.00	-1.88	0.20	D	0.00	-1.94	0.20	0.05	0.28	0.18	301	0.85	0.00	0.98	-0.05	28	59

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	3	208	C	0.00	-0.02	0.19	D	0.00	-0.02	0.17	0.00	0.26	0.00	287	1.00	0.08	0.78	-0.14	28	60
MA	3	218	C	0.04	0.34	0.21	D	-0.03	0.81	0.19	-0.46	0.28	-1.66	293	0.10	0.00	0.95	-0.06	28	61
MA	3	185	C	0.01	2.05	0.35	D	-0.01	2.48	0.30	-0.42	0.46	-0.91	284	0.36	0.18	0.67	-0.45	28	62
MA	4	135	C	-0.05	-0.89	0.18	D	0.05	-1.32	0.19	0.44	0.26	1.70	278	0.09	0.05	0.82	0.11	27	1
MA	4	140	C	-0.01	-1.58	0.18	D	0.01	-1.69	0.20	0.11	0.27	0.42	277	0.68	0.01	0.92	-0.09	27	2
MA	4	109	C	-0.09	-0.41	0.18	D	0.09	-1.22	0.19	0.81	0.26	3.12	278	0.00	6.00	0.01	0.73	27	3
MA	4	257	C	0.06	0.09	0.20	D	-0.06	0.80	0.21	-0.71	0.29	-2.47	277	0.01	5.06	0.02	-0.82	27	4
MA	4	157	C	-0.04	0.12	0.20	D	0.04	-0.31	0.18	0.43	0.27	1.61	275	0.11	2.04	0.15	0.52	27	5
MA	4	236	C	0.00	-0.17	0.19	D	0.00	-0.17	0.18	0.00	0.26	0.00	278	1.00	0.32	0.57	-0.21	27	6
MA	4	170	C	0.06	-0.57	0.18	D	-0.06	0.03	0.19	-0.60	0.26	-2.33	278	0.02	1.41	0.24	-0.35	27	7
MA	4	1009	C	0.00	0.60	0.22	D	0.00	0.60	0.20	0.00	0.30	0.00	275	1.00	0.57	0.45	0.31	27	8
MA	4	262	C	0.05	-1.21	0.11	D	-0.05	-1.01	0.11	-0.19	0.16	-1.22	278	0.22	1.68	0.20	-0.34	27	9
MA	4	238	C	0.00	-0.21	0.19	D	0.00	-0.21	0.18	0.00	0.26	0.00	278	1.00	0.00	0.98	-0.04	27	10
MA	4	268	C	0.03	-1.55	0.18	D	-0.03	-1.25	0.19	-0.29	0.26	-1.13	278	0.26	0.11	0.74	-0.14	27	11
MA	4	276	C	0.02	0.16	0.20	D	-0.02	0.39	0.20	-0.22	0.28	-0.80	278	0.42	0.18	0.67	-0.18	27	12
MA	4	244	C	0.00	3.45	0.72	D	0.00	4.05	0.72	-0.60	1.01	-0.59	278	0.56	0.00	1.00	-0.56	27	13
MA	4	1441	C	0.06	-0.34	0.18	D	-0.06	0.24	0.19	-0.58	0.26	-2.21	278	0.03	1.23	0.27	-0.37	27	14
MA	4	166	C	-0.02	0.77	0.23	D	0.02	0.51	0.20	0.26	0.31	0.85	270	0.40	0.65	0.42	0.35	27	15
MA	4	247	C	-0.02	0.20	0.20	D	0.02	0.03	0.19	0.18	0.27	0.65	276	0.52	0.16	0.69	0.18	27	16
MA	4	171	C	-0.01	0.37	0.21	D	0.01	0.28	0.19	0.10	0.28	0.35	276	0.73	0.02	0.89	0.09	27	17
MA	4	1005	C	-0.04	-0.89	0.18	D	0.04	-1.25	0.19	0.37	0.26	1.43	278	0.15	0.26	0.61	0.19	27	18
MA	4	254	C	0.03	0.25	0.20	D	-0.03	0.63	0.20	-0.38	0.29	-1.32	278	0.19	0.01	0.93	-0.07	27	19
MA	4	1451	C	-0.03	2.50	0.46	D	0.03	1.55	0.26	0.95	0.53	1.80	217	0.07	1.93	0.16	0.91	27	20
MA	4	239	C	-0.02	3.45	0.72	D	0.02	2.32	0.34	1.13	0.79	1.43	196	0.16	0.01	0.94	0.35	27	21
MA	4	165	C	-0.01	-0.09	0.19	D	0.01	-0.18	0.18	0.09	0.26	0.32	276	0.75	0.14	0.71	0.14	27	22
MA	4	1982	C	0.01	-1.10	0.18	D	-0.01	-0.99	0.18	-0.11	0.25	-0.45	277	0.65	0.10	0.76	-0.13	27	23
MA	4	265	C	0.05	-1.16	0.18	D	-0.05	-0.69	0.18	-0.47	0.25	-1.86	277	0.06	0.09	0.77	-0.12	27	24
MA	4	259	C	0.03	0.39	0.21	D	-0.03	0.75	0.21	-0.36	0.30	-1.21	277	0.23	0.99	0.32	-0.37	27	25
MA	4	256	C	0.01	0.49	0.22	D	-0.01	0.63	0.20	-0.14	0.30	-0.47	276	0.64	0.21	0.65	-0.22	27	26
MA	4	250	C	-0.04	-0.02	0.19	D	0.04	-0.44	0.18	0.42	0.26	1.59	275	0.11	0.30	0.58	0.22	27	27

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	4	164	C	0.05	-0.20	0.19	D	-0.05	0.31	0.19	-0.51	0.27	-1.90	277	0.06	1.71	0.19	-0.41	27	28
MA	4	1006	C	0.02	0.06	0.20	D	-0.02	0.28	0.19	-0.22	0.27	-0.78	277	0.43	0.42	0.52	-0.24	27	29
MA	4	263	C	0.01	-0.60	0.18	D	-0.01	-0.47	0.18	-0.13	0.25	-0.51	277	0.61	0.00	0.99	-0.04	27	30
MA	4	261	C	0.02	-0.30	0.18	D	-0.02	-0.11	0.18	-0.19	0.26	-0.74	277	0.46	0.05	0.82	-0.11	27	31
MA	4	1443	C	0.02	-0.16	0.19	D	-0.02	0.06	0.19	-0.22	0.27	-0.84	277	0.40	0.08	0.78	-0.13	27	32
MA	4	168	C	-0.03	0.31	0.21	D	0.03	0.03	0.19	0.28	0.28	1.00	273	0.32	0.01	0.93	-0.02	27	33
MA	4	163	C	0.03	-1.58	0.18	D	-0.03	-1.32	0.19	-0.25	0.26	-0.97	277	0.33	2.12	0.15	-0.49	27	34
MA	4	103	C	-0.05	0.02	0.20	D	0.05	-0.47	0.18	0.49	0.27	1.85	275	0.07	1.80	0.18	0.45	27	35
MA	4	245	C	0.01	-0.27	0.19	D	-0.01	-0.18	0.18	-0.09	0.26	-0.35	277	0.72	0.21	0.64	-0.19	27	36
MA	4	167	C	0.08	-1.38	0.18	D	-0.08	-0.69	0.18	-0.69	0.25	-2.72	277	0.01	2.56	0.11	-0.46	27	37
MA	4	1010	C	0.00	3.42	0.71	D	0.00	3.33	0.51	0.09	0.88	0.11	250	0.92	0.00	0.97	-0.51	27	38
MA	4	277	C	0.02	-0.20	0.19	D	-0.02	-0.01	0.19	-0.19	0.26	-0.72	277	0.47	2.98	0.08	-0.55	27	39
MA	4	240	C	-0.01	1.61	0.32	D	0.01	1.49	0.25	0.13	0.41	0.31	262	0.75	0.05	0.83	-0.01	27	40
MA	4	264	C	-0.01	0.31	0.21	D	0.01	0.17	0.19	0.14	0.28	0.49	274	0.62	1.73	0.19	0.44	27	41
MA	4	154	C	-0.02	-0.79	0.18	D	0.02	-0.95	0.18	0.16	0.25	0.65	277	0.52	0.16	0.69	0.16	27	42
MA	4	1981	C	-0.07	-1.04	0.18	D	0.07	-1.69	0.20	0.66	0.27	2.47	274	0.01	3.74	0.05	0.64	27	43
MA	4	271	C	-0.03	-0.63	0.18	D	0.03	-0.89	0.18	0.26	0.25	1.01	277	0.31	0.15	0.70	0.15	27	44
MA	4	253	C	0.00	1.04	0.26	D	0.00	1.07	0.23	-0.02	0.34	-0.07	272	0.94	0.61	0.44	0.38	27	45
MA	4	375	C	-0.02	0.50	0.15	D	0.01	0.40	0.14	0.10	0.21	0.46	275	0.64	0.00	0.99	0.00	27	46
MA	4	1444	C	0.00	0.39	0.21	D	0.00	0.37	0.19	0.02	0.29	0.08	274	0.93	0.17	0.68	-0.23	27	47
MA	4	267	C	-0.08	-0.85	0.18	D	0.07	-1.54	0.19	0.69	0.26	2.64	276	0.01	3.17	0.08	0.63	27	48
MA	4	242	C	0.02	-2.25	0.21	D	-0.02	-2.03	0.21	-0.21	0.30	-0.72	277	0.47	1.10	0.29	-0.46	27	49
MA	4	274	C	0.01	-0.13	0.19	D	-0.01	-0.01	0.19	-0.12	0.27	-0.45	277	0.66	0.24	0.62	-0.20	27	50
MA	4	246	C	-0.04	1.61	0.32	D	0.04	0.89	0.22	0.72	0.39	1.88	241	0.06	1.90	0.17	0.65	27	51
MA	4	1440	C	0.02	-0.60	0.18	D	-0.02	-0.40	0.18	-0.19	0.25	-0.76	277	0.45	0.64	0.42	-0.28	27	52
MA	4	373	C	0.02	-0.13	0.19	D	-0.02	0.03	0.19	-0.15	0.27	-0.58	277	0.56	1.33	0.25	0.37	27	53
MA	4	278	C	-0.02	0.85	0.24	D	0.02	0.59	0.20	0.27	0.32	0.85	267	0.40	0.53	0.47	0.30	27	54
MA	4	1007	C	0.00	0.26	0.21	D	0.00	0.31	0.19	-0.05	0.28	-0.18	276	0.86	0.05	0.83	0.11	27	55
MA	4	377	C	-0.07	-0.11	0.19	D	0.07	-0.79	0.18	0.68	0.26	2.60	275	0.01	5.11	0.02	0.71	27	56
MA	4	243	C	0.07	-0.03	0.19	D	-0.06	0.71	0.21	-0.74	0.28	-2.62	276	0.01	1.57	0.21	-0.42	27	57

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	4	378	C	-0.05	-0.03	0.19	D	0.05	-0.53	0.18	0.50	0.26	1.90	274	0.06	1.48	0.22	0.44	27	58
MA	4	241	C	0.04	-0.07	0.19	D	-0.04	0.31	0.19	-0.38	0.27	-1.41	276	0.16	0.01	0.92	-0.07	27	59
MA	4	252	C	-0.02	4.11	1.01	D	0.02	2.32	0.34	1.79	1.06	1.69	166	0.09	0.14	0.71		27	60
MA	4	258	C	0.03	-0.55	0.18	D	-0.03	-0.27	0.18	-0.28	0.26	-1.09	276	0.28	0.00	0.97	0.05	27	61
MA	4	249	C	0.00	-0.78	0.18	D	0.00	-0.78	0.18	0.00	0.25	0.00	276	1.00	0.26	0.61	-0.20	27	62
MA	4	1447	C	-0.01	-1.92	0.19	D	0.01	-2.03	0.21	0.11	0.29	0.38	275	0.70	0.08	0.78	0.13	27	63
MA	5	422	C	-0.06	-0.52	0.19	D	0.05	-1.02	0.19	0.50	0.27	1.83	243	0.07	5.05	0.02	0.72	30	1
MA	5	1128	C	0.01	-1.42	0.19	D	-0.01	-1.29	0.20	-0.13	0.28	-0.49	243	0.63	0.24	0.62	-0.20	30	2
MA	5	459	C	-0.01	0.59	0.24	D	0.01	0.52	0.21	0.07	0.32	0.22	240	0.82	0.03	0.87	-0.12	30	3
MA	5	455	C	0.05	-0.67	0.19	D	-0.05	-0.25	0.19	-0.41	0.27	-1.53	243	0.13	1.16	0.28	-0.37	30	4
MA	5	1217	C	0.01	1.39	0.31	D	-0.01	1.57	0.28	-0.18	0.42	-0.44	241	0.66	0.07	0.79	0.25	30	5
MA	5	434	C	-0.01	-0.13	0.20	D	0.01	-0.22	0.19	0.09	0.28	0.31	243	0.76	0.02	0.89	0.01	30	6
MA	5	432	C	0.03	0.22	0.22	D	-0.03	0.52	0.21	-0.29	0.31	-0.96	243	0.34	0.77	0.38	-0.31	30	7
MA	5	417	C	-0.02	1.39	0.31	D	0.02	0.97	0.24	0.42	0.39	1.07	227	0.29	0.01	0.92	-0.06	30	8
MA	5	1457	C	-0.10	0.48	0.23	D	0.10	-0.55	0.19	1.03	0.30	3.41	234	0.00	4.54	0.03	0.83	30	9
MA	5	424	C	-0.06	-0.67	0.19	D	0.06	-1.25	0.20	0.58	0.27	2.12	243	0.04	2.75	0.10	0.49	30	10
MA	5	441	C	0.01	-1.31	0.19	D	-0.01	-1.25	0.20	-0.06	0.27	-0.23	243	0.82	0.02	0.88	-0.09	30	11
MA	5	1136	C	0.00	-0.18	0.20	D	0.00	-0.18	0.19	0.00	0.28	0.00	243	1.00	0.40	0.53	0.24	30	12
MA	5	431	C	-0.01	-0.25	0.20	D	0.01	-0.33	0.19	0.08	0.28	0.28	243	0.78	0.00	0.94	-0.07	30	13
MA	5	1223	C	-0.01	0.83	0.26	D	0.01	0.71	0.22	0.13	0.34	0.37	238	0.71	0.00	0.95	0.10	30	14
MA	5	463	C	0.07	0.36	0.16	D	-0.06	0.76	0.16	-0.41	0.22	-1.82	243	0.07	8.06	0.00	-1.21	30	15
MA	5	413	C	-0.07	-0.85	0.19	D	0.07	-1.53	0.20	0.68	0.28	2.45	242	0.02	3.01	0.08	0.62	30	16
MA	5	442	C	0.00	0.28	0.22	D	0.00	0.28	0.21	0.00	0.30	0.00	242	1.00	0.12	0.73	-0.20	30	17
MA	5	450	C	0.10	-0.25	0.20	D	-0.10	0.81	0.23	-1.06	0.30	-3.50	240	0.00	9.31	0.00	-1.12	30	18
MA	5	1452	C	0.00	1.58	0.34	D	0.00	1.58	0.28	0.00	0.44	0.00	236	1.00	0.26	0.61	-0.39	30	19
MA	5	1202	C	-0.03	0.53	0.24	D	0.03	0.21	0.20	0.32	0.31	1.03	238	0.31	0.11	0.74	0.16	30	20
MA	5	1130	C	-0.07	-0.45	0.19	D	0.07	-1.06	0.19	0.61	0.27	2.23	243	0.03	2.19	0.14	0.57	30	21
MA	5	1454	C	0.04	-0.37	0.20	D	-0.04	0.01	0.20	-0.38	0.28	-1.37	243	0.17	0.00	0.99	-0.05	30	22
MA	5	414	C	0.10	0.02	0.11	D	-0.10	0.33	0.11	-0.31	0.16	-2.00	242	0.05	0.43	0.51	-0.26	30	23
MA	5	444	C	0.01	-0.78	0.19	D	-0.01	-0.66	0.19	-0.12	0.27	-0.45	243	0.65	0.17	0.68	-0.19	30	24

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	5	460	C	0.00	-1.84	0.20	D	0.00	-1.84	0.22	0.00	0.30	0.00	243	1.00	0.00	0.95	0.07	30	25
MA	5	1232	C	-0.02	1.49	0.32	D	0.02	1.09	0.25	0.40	0.41	0.99	226	0.32	0.04	0.84	0.21	30	26
MA	5	420	C	0.00	2.35	0.46	D	0.00	2.30	0.37	0.05	0.59	0.09	232	0.93	0.08	0.78	-0.44	30	27
MA	5	462	C	0.02	0.48	0.23	D	-0.02	0.76	0.23	-0.28	0.32	-0.86	243	0.39	0.00	0.96	-0.09	30	28
MA	5	1455	C	0.01	-0.67	0.19	D	-0.01	-0.62	0.19	-0.05	0.27	-0.18	243	0.86	0.04	0.84	0.10	30	29
MA	5	436	C	0.06	-0.21	0.20	D	-0.06	0.38	0.21	-0.59	0.29	-2.05	243	0.04	6.32	0.01	-1.02	30	30
MA	5	1229	C	0.01	0.97	0.27	D	-0.01	1.21	0.25	-0.24	0.37	-0.65	242	0.52	0.28	0.60	-0.40	30	31
MA	5	457	C	0.00	-0.37	0.20	D	0.00	-0.37	0.19	0.00	0.27	0.00	243	1.00	0.01	0.91	-0.09	30	32
MA	5	439	C	-0.05	0.09	0.21	D	0.05	-0.37	0.19	0.45	0.29	1.58	241	0.12	3.31	0.07	0.61	30	33
MA	5	440	C	0.01	1.12	0.28	D	-0.01	1.35	0.26	-0.22	0.39	-0.57	242	0.57	0.00	0.96	0.09	30	34
MA	5	415	C	0.01	-0.33	0.20	D	-0.01	-0.25	0.19	-0.08	0.28	-0.28	243	0.78	0.00	0.99	-0.05	30	35
MA	5	429	C	0.00	0.52	0.24	D	0.00	0.52	0.21	0.00	0.32	0.00	241	1.00	0.00	0.96	0.08	30	36
MA	5	445	C	-0.03	0.48	0.23	D	0.03	0.13	0.20	0.35	0.31	1.13	238	0.26	0.75	0.39	0.37	30	37
MA	5	412	C	-0.01	0.48	0.23	D	0.01	0.38	0.21	0.10	0.31	0.30	240	0.76	0.30	0.58	-0.32	30	38
MA	5	426	C	0.03	0.18	0.22	D	-0.03	0.56	0.22	-0.39	0.31	-1.26	243	0.21	1.22	0.27	-0.43	30	39
MA	5	448	C	0.04	-0.92	0.19	D	-0.04	-0.58	0.19	-0.34	0.27	-1.26	243	0.21	1.65	0.20	-0.44	30	40
MA	5	421	C	0.02	-1.31	0.19	D	-0.02	-1.14	0.19	-0.18	0.27	-0.66	243	0.51	0.20	0.65	-0.18	30	41
MA	5	446	C	0.03	-0.60	0.19	D	-0.03	-0.33	0.19	-0.27	0.27	-0.98	243	0.33	0.10	0.75	-0.15	30	42
MA	5	1456	C	-0.03	0.65	0.24	D	0.02	0.34	0.21	0.31	0.32	0.96	237	0.34	1.34	0.25	0.56	30	43
MA	5	1093	C	-0.02	1.95	0.40	D	0.02	1.44	0.22	0.51	0.46	1.11	186	0.27	2.03	0.15	1.24	30	44
MA	5	443	C	-0.03	0.65	0.24	D	0.02	0.34	0.21	0.31	0.32	0.96	237	0.34	0.01	0.93	0.10	30	45
MA	5	454	C	-0.03	-0.60	0.19	D	0.03	-0.84	0.19	0.24	0.27	0.89	243	0.37	0.26	0.61	-0.21	30	46
MA	5	425	C	-0.01	-0.21	0.20	D	0.01	-0.33	0.19	0.12	0.28	0.42	243	0.67	0.70	0.40	0.32	30	47
MA	5	419	C	0.05	0.13	0.21	D	-0.04	0.66	0.22	-0.53	0.31	-1.72	243	0.09	1.15	0.28	-0.45	30	48
MA	5	433	C	0.01	-1.57	0.19	D	-0.01	-1.45	0.20	-0.12	0.28	-0.44	243	0.66	0.06	0.81	-0.13	30	49
MA	5	458	C	-0.01	-1.73	0.20	D	0.01	-1.84	0.22	0.11	0.29	0.39	242	0.70	0.30	0.58	0.21	30	50
MA	5	416	C	0.09	-1.10	0.19	D	-0.09	-0.33	0.19	-0.77	0.27	-2.86	243	0.00	12.27	0.00	-1.15	30	51
MA	5	456	C	-0.02	-0.48	0.19	D	0.02	-0.66	0.19	0.17	0.27	0.63	243	0.53	0.23	0.63	0.19	30	52
MA	5	449	C	0.02	0.90	0.26	D	-0.02	1.21	0.25	-0.31	0.37	-0.85	243	0.40	0.03	0.85	-0.17	30	53
MA	5	435	C	-0.02	0.33	0.13	D	0.02	0.26	0.10	0.07	0.16	0.43	235	0.67	0.76	0.38	0.30	30	54

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	5	452	C	0.00	-0.66	0.19	D	0.00	-0.66	0.19	0.00	0.27	0.00	243	1.00	0.00	0.94	0.02	30	55
MA	5	1187	C	-0.05	-0.33	0.20	D	0.05	-0.77	0.19	0.43	0.27	1.58	243	0.11	1.58	0.21	0.48	30	56
MA	5	451	C	-0.03	-0.37	0.20	D	0.03	-0.66	0.19	0.29	0.27	1.05	243	0.30	0.56	0.46	0.26	30	57
MA	5	1058	C	0.02	0.22	0.22	D	-0.02	0.43	0.21	-0.20	0.30	-0.67	243	0.51	0.01	0.91	-0.02	30	58
MA	5	464	C	0.00	0.87	0.19	D	0.00	0.87	0.16	0.00	0.25	0.00	238	1.00	0.10	0.75	0.12	30	59
MA	5	437	C	-0.03	0.13	0.21	D	0.03	-0.13	0.20	0.26	0.29	0.89	240	0.37	2.89	0.09	0.60	30	60
MA	5	1121	C	-0.03	-0.33	0.20	D	0.03	-0.61	0.19	0.28	0.27	1.02	242	0.31	2.43	0.12	0.54	30	61
MA	5	453	C	-0.01	0.53	0.24	D	0.01	0.40	0.21	0.13	0.32	0.41	239	0.69	0.13	0.72	-0.21	30	62
MA	5	1563	C	0.00	0.21	0.22	D	0.00	0.21	0.20	0.00	0.30	0.00	241	1.00	0.01	0.91	-0.02	30	63
MA	5	428	C	0.02	-0.17	0.20	D	-0.02	0.07	0.20	-0.24	0.28	-0.84	242	0.40	0.06	0.81	-0.12	30	64
MA	6	581	C	-0.06	0.57	0.27	D	0.05	-0.13	0.20	0.69	0.33	2.09	221	0.04	2.32	0.13	0.66	26	1
MA	6	568	C	-0.04	-0.78	0.20	D	0.04	-1.15	0.18	0.37	0.27	1.37	243	0.17	2.50	0.11	0.53	26	2
MA	6	1770	C	0.01	-1.46	0.19	D	-0.01	-1.38	0.18	-0.08	0.27	-0.29	245	0.77	0.76	0.38	-0.34	26	3
MA	6	579	C	0.04	-0.95	0.20	D	-0.04	-0.61	0.19	-0.35	0.27	-1.28	244	0.20	1.45	0.23	-0.48	26	4
MA	6	470	C	-0.01	0.78	0.29	D	0.01	0.60	0.23	0.18	0.37	0.49	230	0.63	0.86	0.35	0.47	26	5
MA	6	468	C	-0.01	-0.80	0.20	D	0.01	-0.88	0.18	0.08	0.27	0.31	242	0.76	0.28	0.60	-0.26	26	6
MA	6	1458	C	-0.03	0.36	0.25	D	0.03	-0.05	0.20	0.40	0.32	1.25	228	0.21	3.31	0.07	0.73	26	7
MA	6	1200	C	0.02	-0.46	0.21	D	-0.01	-0.32	0.19	-0.15	0.28	-0.51	242	0.61	0.00	0.96	-0.04	26	8
MA	6	551	C	-0.01	-0.24	0.22	D	0.01	-0.35	0.19	0.12	0.29	0.41	238	0.69	0.28	0.60	0.21	26	9
MA	6	480	C	0.00	-0.18	0.22	D	0.00	-0.18	0.20	0.00	0.30	0.00	240	1.00	0.01	0.91	-0.02	26	10
MA	6	469	C	0.10	-0.12	0.10	D	-0.08	0.10	0.10	-0.22	0.14	-1.56	243	0.12	2.78	0.10	-0.54	26	11
MA	6	585	C	-0.01	1.84	0.43	D	0.01	1.50	0.31	0.34	0.53	0.64	217	0.53	0.63	0.43	0.93	26	12
MA	6	578	C	-0.02	0.06	0.23	D	0.01	-0.12	0.20	0.18	0.31	0.59	235	0.56	0.02	0.89	0.11	26	13
MA	6	1518	C	0.00	-0.34	0.21	D	0.00	-0.34	0.19	0.00	0.29	0.00	239	1.00	0.32	0.57	-0.27	26	14
MA	6	1251	C	-0.01	3.01	0.72	D	0.01	2.49	0.47	0.52	0.86	0.60	200	0.55	0.03	0.86	-0.54	26	15
MA	6	490	C	0.01	-0.46	0.21	D	-0.01	-0.39	0.19	-0.08	0.28	-0.27	241	0.78	0.01	0.90	0.09	26	16
MA	6	1256	C	-0.03	0.36	0.25	D	0.03	-0.03	0.20	0.39	0.32	1.21	229	0.23	1.18	0.28	0.48	26	17
MA	6	502	C	0.04	1.10	0.19	D	-0.03	1.39	0.18	-0.30	0.26	-1.15	242	0.25	1.88	0.17	-0.49	26	18
MA	6	484	C	0.04	-0.33	0.21	D	-0.04	0.14	0.21	-0.47	0.30	-1.56	244	0.12	2.24	0.13	-0.61	26	19
MA	6	1580	C	-0.03	0.12	0.24	D	0.03	-0.20	0.20	0.31	0.31	1.02	232	0.31	1.01	0.31	0.41	26	20

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	6	1131	C	0.03	0.05	0.11	D	-0.02	0.12	0.10	-0.07	0.15	-0.45	234	0.65	0.04	0.85	-0.08	26	21
MA	6	1062	C	-0.01	0.93	0.19	D	0.01	0.85	0.14	0.08	0.24	0.34	218	0.73	0.01	0.94	0.04	26	22
MA	6	537	C	-0.01	-0.61	0.21	D	0.01	-0.68	0.19	0.07	0.28	0.25	238	0.80	0.57	0.45	0.28	26	23
MA	6	567	C	0.01	-0.21	0.22	D	0.00	-0.16	0.20	-0.05	0.30	-0.18	237	0.86	0.18	0.67	-0.24	26	24
MA	6	577	C	0.00	0.67	0.28	D	0.00	0.60	0.24	0.07	0.37	0.19	230	0.85	1.59	0.21	0.59	26	25
MA	6	1142	C	0.01	-0.55	0.21	D	0.00	-0.50	0.19	-0.05	0.28	-0.17	236	0.87	1.13	0.29	-0.42	26	26
MA	6	487	C	0.02	0.03	0.23	D	-0.02	0.29	0.22	-0.26	0.32	-0.81	238	0.42	0.13	0.72	0.19	26	27
MA	6	580	C	0.05	-0.03	0.23	D	-0.05	0.66	0.24	-0.68	0.33	-2.05	241	0.04	1.38	0.24	-0.48	26	28
MA	6	526	C	0.01	-0.18	0.22	D	-0.01	-0.11	0.20	-0.07	0.30	-0.22	236	0.82	0.00	0.97	0.07	26	29
MA	6	1253	C	0.00	0.25	0.25	D	0.00	0.19	0.22	0.06	0.33	0.18	230	0.86	0.01	0.91	0.03	26	30
MA	6	534	C	0.03	0.19	0.24	D	-0.03	0.60	0.24	-0.41	0.34	-1.20	238	0.23	0.41	0.52	-0.33	26	31
MA	6	1582	C	-0.05	-0.09	0.23	D	0.04	-0.54	0.19	0.45	0.30	1.52	227	0.13	1.30	0.25	0.42	26	32
MA	6	1225	C	-0.01	2.01	0.47	D	0.01	1.69	0.34	0.32	0.58	0.55	211	0.58	0.00	0.98	0.19	26	33
MA	6	520	C	-0.03	0.38	0.26	D	0.03	0.00	0.21	0.38	0.33	1.15	223	0.25	0.16	0.68	0.21	26	34
MA	6	499	C	-0.07	0.31	0.25	D	0.06	-0.44	0.19	0.75	0.32	2.36	215	0.02	7.45	0.01	1.03	26	35
MA	6	535	C	-0.07	-0.60	0.21	D	0.06	-1.19	0.19	0.60	0.28	2.15	233	0.03	1.72	0.19	0.43	26	36
MA	6	571	C	-0.02	-2.35	0.22	D	0.01	-2.52	0.22	0.17	0.31	0.55	238	0.58	0.11	0.74	0.20	26	37
MA	6	553	C	0.00	-0.18	0.22	D	0.00	-0.18	0.20	0.00	0.30	0.00	233	1.00	0.02	0.88	-0.01	26	38
MA	6	563	C	-0.01	-0.55	0.21	D	0.01	-0.64	0.19	0.09	0.28	0.33	233	0.75	0.18	0.67	0.19	26	39
MA	6	550	C	-0.04	-1.04	0.20	D	0.03	-1.35	0.19	0.31	0.27	1.13	235	0.26	0.07	0.80	0.13	26	40
MA	6	515	C	-0.01	-0.18	0.22	D	0.01	-0.30	0.20	0.12	0.30	0.41	231	0.68	0.70	0.40	0.34	26	41
MA	6	509	C	0.02	-0.76	0.20	D	-0.02	-0.57	0.19	-0.19	0.28	-0.69	235	0.49	0.63	0.43	-0.31	26	42
MA	6	495	C	0.05	-1.32	0.20	D	-0.04	-0.93	0.19	-0.39	0.27	-1.42	236	0.16	2.19	0.14	-0.54	26	43
MA	6	574	C	0.03	-0.51	0.21	D	-0.03	-0.18	0.20	-0.33	0.29	-1.12	236	0.27	3.27	0.07	-0.76	26	44
MA	6	478	C	0.03	-0.29	0.22	D	-0.03	0.03	0.21	-0.32	0.30	-1.05	235	0.29	0.37	0.54	0.29	26	45
MA	6	575	C	-0.01	1.63	0.40	D	0.01	1.27	0.30	0.36	0.50	0.73	210	0.46	1.92	0.17	-1.32	26	46
MA	6	491	C	0.03	0.09	0.13	D	-0.03	0.20	0.12	-0.11	0.18	-0.62	231	0.53	2.58	0.11	-0.51	26	47
MA	6	512	C	0.02	0.31	0.25	D	-0.02	0.63	0.24	-0.32	0.35	-0.93	235	0.35	0.15	0.70	-0.26	26	48
MA	6	521	C	0.04	0.25	0.25	D	-0.04	0.82	0.26	-0.57	0.36	-1.61	237	0.11	1.23	0.27	-0.56	26	49
MA	6	1101	C	0.02	-0.69	0.21	D	-0.02	-0.50	0.19	-0.20	0.28	-0.70	234	0.49	0.90	0.34	-0.37	26	50

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	6	572	C	-0.01	-0.04	0.23	D	0.01	-0.10	0.21	0.06	0.31	0.20	230	0.84	0.20	0.66	-0.25	26	51
MA	6	1581	C	0.05	-0.73	0.20	D	-0.04	-0.31	0.20	-0.42	0.29	-1.47	235	0.14	2.81	0.09	-0.61	26	52
MA	6	476	C	0.00	1.02	0.32	D	0.00	1.02	0.27	0.00	0.42	0.00	227	1.00	0.49	0.48	-0.53	26	53
MA	6	1203	C	0.01	-0.90	0.20	D	-0.01	-0.84	0.19	-0.06	0.28	-0.22	233	0.82	0.02	0.88	0.10	26	54
MA	6	524	C	0.03	1.01	0.32	D	-0.02	1.66	0.34	-0.66	0.46	-1.42	235	0.16	0.60	0.44	-0.56	26	55
MA	6	514	C	-0.02	-1.03	0.20	D	0.01	-1.16	0.19	0.12	0.27	0.45	232	0.65	0.01	0.93	0.09	26	56
MA	6	1063	C	-0.05	-0.83	0.20	D	0.04	-1.26	0.19	0.43	0.28	1.56	231	0.12	2.49	0.11	0.53	26	57
MA	6	570	C	-0.02	1.63	0.40	D	0.02	1.10	0.28	0.53	0.49	1.09	201	0.28	2.87	0.09	1.79	26	58
MA	6	545	C	-0.01	0.50	0.27	D	0.01	0.40	0.23	0.10	0.35	0.28	224	0.78	0.01	0.93	0.13	26	59
MA	6	517	C	-0.02	-0.35	0.22	D	0.02	-0.55	0.19	0.20	0.29	0.68	228	0.50	0.57	0.45	0.28	26	60
MA	6	466	C	-0.04	1.22	0.34	D	0.03	0.57	0.24	0.65	0.42	1.57	201	0.12	9.71	0.00	1.75	26	61
MA	6	482	C	0.00	2.00	0.47	D	0.00	1.92	0.38	0.08	0.60	0.13	219	0.90	0.19	0.66	-0.64	26	62
MA	6	1254	C	0.04	-0.70	0.21	D	-0.03	-0.35	0.20	-0.35	0.29	-1.23	233	0.22	1.76	0.18	-0.48	26	63
MA	7	475	C	-0.07	0.52	0.36	D	0.09	-0.57	0.28	1.09	0.45	2.41	145	0.02	2.70	0.10	1.10	17	1
MA	7	564	C	0.02	-0.18	0.28	D	-0.03	0.14	0.33	-0.32	0.43	-0.74	137	0.46	1.16	0.28	-0.73	17	2
MA	7	1463	C	-0.03	-0.18	0.28	D	0.04	-0.57	0.28	0.40	0.40	0.99	145	0.32	0.03	0.87	0.03	17	3
MA	7	505	C	0.01	-0.54	0.26	D	-0.01	-0.41	0.29	-0.13	0.39	-0.34	139	0.74	0.00	0.96	0.07	17	4
MA	7	516	C	0.04	0.18	0.32	D	-0.05	1.12	0.44	-0.94	0.54	-1.72	121	0.09	1.16	0.28	-1.02	17	5
MA	7	508	C	0.02	-1.45	0.23	D	-0.03	-1.23	0.26	-0.23	0.35	-0.65	136	0.52	0.15	0.70	0.23	17	6
MA	7	525	C	0.02	-0.74	0.25	D	-0.03	-0.49	0.28	-0.24	0.38	-0.64	137	0.52	0.01	0.94	-0.16	17	7
MA	7	1134	C	0.08	-1.40	0.23	D	-0.10	-0.57	0.28	-0.83	0.36	-2.29	131	0.02	3.17	0.07	-0.74	17	8
MA	7	1066	C	0.01	2.85	1.01	D	-0.01	4.28		-1.43	2.09	-0.68	101	0.50	0.23	0.64		17	9
MA	7	488	C	0.02	-0.54	0.26	D	-0.03	-0.24	0.30	-0.30	0.39	-0.76	136	0.45	0.00	0.97	0.10	17	10
MA	7	477	C	0.02	0.08	0.31	D	-0.03	0.49	0.36	-0.41	0.47	-0.87	135	0.39	0.00	0.96	-0.14	17	11
MA	7	1460	C	0.01	2.85	1.01	D	-0.01	4.28		-1.43	2.09	-0.68	101	0.50	0.00	0.95		17	12
MA	7	494	C	-0.02	-0.61	0.25	D	0.03	-0.87	0.27	0.27	0.37	0.72	142	0.47	0.07	0.78	0.25	17	13
MA	7	506	C	0.03	-0.10	0.29	D	-0.04	0.49	0.36	-0.59	0.46	-1.27	131	0.21	0.00	0.99	-0.14	17	14
MA	7	496	C	-0.04	-0.54	0.26	D	0.05	-0.95	0.27	0.40	0.37	1.09	143	0.28	0.19	0.67	0.34	17	15
MA	7	479	C	0.00	0.17	0.32	D	-0.01	0.25	0.33	-0.08	0.46	-0.18	141	0.86	0.01	0.91	0.22	17	16
MA	7	483	C	0.06	-0.19	0.28	D	-0.08	0.94	0.41	-1.13	0.50	-2.24	117	0.03	2.23	0.14	-1.06	17	17

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	7	559	C	0.02	-0.27	0.28	D	-0.03	0.04	0.32	-0.31	0.42	-0.73	137	0.47	0.03	0.86	-0.21	17	18
MA	7	1560	C	0.00	1.29	0.33	D	0.00	1.23	0.32	0.06	0.46	0.14	145	0.89	0.80	0.37	-0.62	17	19
MA	7	486	C	0.04	-0.49	0.26	D	-0.06	0.13	0.33	-0.62	0.42	-1.48	129	0.14	0.08	0.78	-0.26	17	20
MA	7	1234	C	0.06	-0.69	0.25	D	-0.08	0.13	0.33	-0.82	0.41	-1.99	126	0.05	1.38	0.24	-0.66	17	21
MA	7	1247	C	0.01	1.17	0.47	D	-0.01	1.57	0.53	-0.41	0.70	-0.58	135	0.56	0.00	0.95	-0.25	17	22
MA	7	481	C	-0.01	-0.65	0.17	D	0.01	-0.67	0.18	0.02	0.25	0.09	140	0.93	0.17	0.68	-0.19	17	23
MA	7	498	C	-0.04	-0.62	0.26	D	0.05	-1.04	0.27	0.41	0.37	1.12	140	0.27	1.12	0.29	0.62	17	24
MA	7	485	C	0.08	-0.99	0.24	D	-0.10	-0.07	0.31	-0.92	0.39	-2.34	125	0.02	0.99	0.32	-0.58	17	25
MA	7	1237	C	0.03	-0.42	0.27	D	-0.03	-0.07	0.31	-0.35	0.41	-0.85	134	0.40	0.00	0.99	-0.11	17	26
MA	7	555	C	-0.01	4.06		D	0.01	2.33	0.73	1.73	1.97	0.88	106	0.38				17	27
MA	7	557	C	0.04	-0.89	0.24	D	-0.05	-0.43	0.29	-0.47	0.38	-1.24	132	0.22	0.55	0.46	-0.37	17	28
MA	7	552	C	0.02	0.95	0.43	D	-0.02	1.57	0.53	-0.63	0.68	-0.92	129	0.36	0.04	0.83	-0.18	17	29
MA	7	536	C	0.00	-1.27	0.23	D	-0.01	-1.25	0.26	-0.02	0.35	-0.07	135	0.95	0.04	0.85	-0.01	17	30
MA	7	549	C	0.00	-0.27	0.28	D	0.00	-0.27	0.30	0.00	0.41	0.00	138	1.00	0.00	0.96	0.09	17	31
MA	7	1459	C	0.04	-0.58	0.26	D	-0.05	-0.07	0.31	-0.51	0.40	-1.26	131	0.21	1.11	0.29	-0.60	17	32
MA	7	541	C	-0.02	-0.95	0.24	D	0.03	-1.18	0.26	0.22	0.36	0.62	137	0.54	0.02	0.90	-0.04	17	33
MA	7	501	C	0.01	0.78	0.40	D	-0.01	0.93	0.41	-0.15	0.58	-0.26	140	0.79	0.04	0.85	0.10	17	34
MA	7	547	C	-0.07	-0.24	0.19	D	0.09	-0.55	0.15	0.31	0.24	1.32	142	0.19	3.57	0.06	1.15	17	35
MA	7	513	C	-0.01	4.04		D	0.01	2.33	0.73	1.71	1.97	0.87	105	0.39	0.02	0.89		17	36
MA	7	503	C	-0.02	-0.29	0.28	D	0.03	-0.59	0.28	0.30	0.40	0.75	141	0.45	0.00	0.97	0.10	17	37
MA	7	1461	C	0.03	-0.04	0.30	D	-0.04	0.48	0.36	-0.52	0.47	-1.12	131	0.26	1.02	0.31	-0.78	17	38
MA	7	1252	C	-0.01	2.11	0.72	D	0.01	1.57	0.53	0.54	0.89	0.60	139	0.55	0.23	0.63	0.07	17	39
MA	7	493	C	0.02	-0.71	0.25	D	-0.03	-0.43	0.29	-0.28	0.38	-0.74	134	0.46	0.01	0.93	-0.06	17	40
MA	7	1558	C	-0.02	-0.13	0.29	D	0.02	-0.34	0.29	0.21	0.41	0.51	141	0.61	0.01	0.93	0.17	17	41
MA	7	561	C	0.02	-0.29	0.28	D	-0.02	-0.07	0.31	-0.22	0.42	-0.53	136	0.60	0.04	0.85	-0.03	17	42
MA	7	492	C	-0.03	-0.04	0.30	D	0.04	-0.43	0.29	0.38	0.42	0.92	142	0.36	0.49	0.48	0.47	17	43
MA	7	511	C	0.02	-0.04	0.30	D	-0.02	0.24	0.34	-0.28	0.45	-0.63	136	0.53	0.25	0.62	-0.42	17	44
MA	7	616	C	-0.03	-1.45	0.23	D	0.03	-1.70	0.26	0.25	0.35	0.73	136	0.47	0.00	0.98	-0.05	17	45
MA	7	562	C	-0.06	-0.57	0.18	D	0.08	-0.92	0.18	0.35	0.26	1.35	143	0.18	1.04	0.31	0.40	17	46
MA	7	533	C	0.03	-0.80	0.25	D	-0.03	-0.49	0.28	-0.30	0.37	-0.80	136	0.42	1.47	0.23	-0.66	17	47

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	7	467	C	-0.02	0.61	0.32	D	0.03	0.34	0.23	0.27	0.40	0.69	141	0.49	0.10	0.75	-0.21	17	48
MA	7	471	C	-0.04	2.14	0.72	D	0.05	0.62	0.37	1.52	0.81	1.87	122	0.06	1.81	0.18	1.29	17	49
MA	7	543	C	0.00	0.64	0.38	D	0.00	0.64	0.37	0.00	0.53	0.00	144	1.00	0.04	0.84	0.07	17	50
MA	7	474	C	-0.05	0.80	0.40	D	0.06	-0.15	0.30	0.96	0.50	1.91	144	0.06	2.16	0.14	0.95	17	51
MA	7	565	C	0.02	-1.14	0.23	D	-0.03	-0.87	0.27	-0.26	0.36	-0.74	136	0.46	0.61	0.43	-0.48	17	52
MA	7	522	C	-0.03	0.98	0.43	D	0.03	0.34	0.35	0.63	0.55	1.15	145	0.25	0.39	0.53	0.71	17	53
MA	7	489	C	0.01	-0.49	0.26	D	-0.01	-0.36	0.29	-0.13	0.39	-0.33	136	0.74	0.17	0.68	-0.32	17	54
MA	7	540	C	-0.05	-0.81	0.25	D	0.06	-1.33	0.26	0.52	0.36	1.45	139	0.15	2.08	0.15	0.73	17	55
MA	7	1568	C	0.00	-1.41	0.23	D	0.00	-1.41	0.26	0.00	0.35	0.00	134	1.00	0.04	0.85	-0.01	17	56
MA	7	523	C	0.01	-1.68	0.23	D	-0.01	-1.61	0.26	-0.07	0.35	-0.19	134	0.85	0.23	0.63	-0.33	17	57
MA	7	527	C	-0.05	-0.27	0.28	D	0.06	-0.83	0.27	0.57	0.39	1.45	143	0.15	0.61	0.44	0.60	17	58
MA	7	1241	C	-0.07	-0.83	0.25	D	0.09	-1.54	0.26	0.72	0.36	1.99	138	0.05	1.76	0.19	0.56	17	59
MA	7	1244	C	-0.01	0.38	0.34	D	0.02	0.12	0.33	0.26	0.47	0.55	143	0.59	0.15	0.69	0.38	17	60
MA	7	1264	C	-0.04	4.06		D	0.05	0.91	0.42	3.14	1.88	1.67	89	0.10	3.36	0.07		17	61
MA	7	1259	C	0.01	-0.43	0.27	D	-0.01	-0.36	0.29	-0.07	0.40	-0.19	137	0.85	0.04	0.85	0.02	17	62
MA	7	1065	C	-0.02	-1.17	0.23	D	0.02	-1.33	0.26	0.16	0.35	0.46	135	0.65	0.14	0.71	0.21	17	63
MA	8	602	C	-0.02	0.12	0.29	D	0.02	-0.20	0.29	0.32	0.41	0.78	166	0.44	0.23	0.63	0.35	17	1
MA	8	594	C	-0.01	-0.26	0.26	D	0.01	-0.36	0.28	0.10	0.38	0.26	163	0.80	0.05	0.82	0.17	17	2
MA	8	593	C	-0.02	-0.33	0.26	D	0.02	-0.58	0.27	0.25	0.37	0.68	164	0.50	1.67	0.20	0.58	17	3
MA	8	583	C	0.01	0.61	0.21	D	-0.01	0.69	0.23	-0.08	0.32	-0.26	160	0.79	0.00	0.96	0.02	17	4
MA	8	544	C	-0.01	-0.26	0.26	D	0.01	-0.36	0.28	0.10	0.38	0.26	163	0.80	0.22	0.64	0.26	17	5
MA	8	604	C	0.00	-0.64	0.24	D	0.00	-0.64	0.26	0.00	0.35	0.00	161	1.00	0.01	0.94	-0.05	17	6
MA	8	1556	C	-0.01	2.39		D	0.01	1.46	0.52	0.93	1.69	0.55	109	0.58				17	7
MA	8	597	C	-0.03	-1.05	0.22	D	0.03	-1.34	0.24	0.28	0.33	0.87	161	0.39	0.00	1.00	0.06	17	8
MA	8	1236	C	0.01	-0.33	0.26	D	-0.01	-0.20	0.29	-0.13	0.38	-0.33	160	0.74	0.09	0.76	-0.23	17	9
MA	8	569	C	0.02	-0.63	0.24	D	-0.02	-0.43	0.27	-0.20	0.36	-0.55	159	0.58	0.01	0.92	-0.11	17	10
MA	8	1230	C	0.01	-0.90	0.23	D	-0.01	-0.85	0.25	-0.05	0.34	-0.16	160	0.87	0.15	0.70	0.21	17	11
MA	8	1135	C	-0.03	1.86	0.91	D	0.03	0.64	0.32	1.22	0.96	1.27	112	0.21	1.47	0.23	1.61	17	12
MA	8	590	C	0.00	0.75	0.37	D	0.00	0.75	0.38	0.00	0.53	0.00	165	1.00	0.00	0.95	0.14	17	13
MA	8	573	C	0.02	-0.26	0.26	D	-0.03	0.06	0.31	-0.32	0.40	-0.81	157	0.42	0.00	0.98	-0.08	17	14

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	8	596	C	0.02	-1.57	0.21	D	-0.02	-1.40	0.24	-0.17	0.32	-0.53	159	0.60	0.14	0.71	-0.17	17	15
MA	8	615	C	0.03	-0.39	0.25	D	-0.04	0.06	0.31	-0.46	0.40	-1.15	154	0.25	0.10	0.75	-0.22	17	16
MA	8	531	C	0.01	-0.04	0.28	D	-0.01	0.06	0.31	-0.11	0.41	-0.25	161	0.80	0.00	0.96	-0.08	17	17
MA	8	601	C	0.01	0.12	0.29	D	-0.02	0.37	0.33	-0.25	0.44	-0.56	159	0.58	0.06	0.81	0.00	17	18
MA	8	618	C	0.01	-2.16	0.22	D	-0.01	-2.04	0.25	-0.12	0.33	-0.37	160	0.71	0.04	0.83	-0.14	17	19
MA	8	1138	C	0.01	1.36	0.54	D	-0.01	1.85	0.55	-0.49	0.77	-0.64	164	0.52	0.28	0.60	-0.61	17	20
MA	8	620	C	0.01	1.81	0.59	D	-0.01	2.49	0.74	-0.68	0.94	-0.72	152	0.47	0.10	0.75	-1.10	17	21
MA	8	607	C	0.02	-0.95	0.22	D	-0.02	-0.78	0.26	-0.17	0.34	-0.50	159	0.62	0.34	0.56	-0.30	17	22
MA	8	1270	C	0.00	0.21	0.30	D	0.00	0.16	0.31	0.05	0.44	0.11	164	0.91	0.17	0.68	-0.36	17	23
MA	8	1273	C	0.02	0.02	0.29	D	-0.02	0.37	0.33	-0.35	0.44	-0.79	157	0.43	0.06	0.81	0.21	17	24
MA	8	576	C	-0.01	0.62	0.35	D	0.01	0.37	0.33	0.25	0.49	0.52	165	0.60	0.74	0.39	0.59	17	25
MA	8	1269	C	-0.02	-0.92	0.23	D	0.03	-1.16	0.25	0.24	0.33	0.72	161	0.48	0.07	0.79	0.18	17	26
MA	8	1464	C	-0.06	1.27	0.46	D	0.07	-0.03	0.30	1.30	0.55	2.35	149	0.02	2.40	0.12	1.06	17	27
MA	8	582	C	0.00	0.39	0.32	D	-0.01	0.48	0.35	-0.09	0.47	-0.19	162	0.85	0.06	0.81	-0.31	17	28
MA	8	548	C	-0.02	2.93	1.01	D	0.02	1.46	0.48	1.47	1.12	1.32	128	0.19	1.49	0.22	1.87	17	29
MA	8	598	C	-0.03	-0.71	0.24	D	0.04	-1.04	0.25	0.33	0.34	0.97	163	0.33	0.51	0.48	0.29	17	30
MA	8	617	C	-0.03	-0.06	0.28	D	0.04	-0.51	0.27	0.45	0.39	1.16	165	0.25	3.14	0.08	0.85	17	31
MA	8	591	C	0.00	1.26	0.46	D	-0.01	1.46	0.48	-0.19	0.67	-0.29	163	0.77	1.86	0.17		17	32
MA	8	613	C	0.03	0.28	0.21	D	-0.03	0.55	0.23	-0.27	0.31	-0.87	161	0.39	0.68	0.41	-0.39	17	33
MA	8	592	C	-0.02	-0.60	0.24	D	0.03	-0.86	0.25	0.26	0.35	0.73	161	0.47	1.09	0.30	0.47	17	34
MA	8	621	C	0.03	-1.37	0.22	D	-0.04	-1.05	0.25	-0.32	0.33	-0.98	156	0.33	0.59	0.44	-0.31	17	35
MA	8	1218	C	0.02	1.26	0.46	D	-0.02	2.04	0.61	-0.78	0.77	-1.02	145	0.31	0.02	0.88	-0.16	17	36
MA	8	529	C	0.00	-0.35	0.26	D	-0.01	-0.29	0.28	-0.06	0.38	-0.17	158	0.87	1.77	0.18	-0.75	17	37
MA	8	1141	C	-0.03	-0.77	0.23	D	0.03	-1.05	0.25	0.28	0.34	0.81	160	0.42	0.08	0.77	0.19	17	38
MA	8	584	C	0.00	-0.29	0.26	D	0.00	-0.29	0.28	0.00	0.39	0.00	159	1.00	1.18	0.28	-0.58	17	39
MA	8	1695	C	0.05	0.19	0.30	D	-0.06	1.45	0.49	-1.27	0.57	-2.22	128	0.03	1.90	0.17	-1.08	17	40
MA	8	566	C	0.03	-0.54	0.25	D	-0.04	-0.13	0.29	-0.42	0.38	-1.09	153	0.28	0.59	0.44	-0.41	17	41
MA	8	1268	C	0.01	2.21	0.72	D	-0.02	4.47		-2.26	1.98	-1.14	97	0.26	0.04	0.84		17	42
MA	8	1465	C	-0.03	1.49	0.51	D	0.04	0.48	0.35	1.02	0.62	1.65	151	0.10	0.09	0.77	0.45	17	43
MA	8	1228	C	0.01	-0.77	0.23	D	-0.01	-0.66	0.26	-0.11	0.35	-0.32	157	0.75	0.01	0.93	-0.10	17	44

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	8	588	C	0.00	2.21	0.72	D	0.00	2.04	0.61	0.17	0.94	0.19	163	0.85	0.19	0.66	0.95	17	45
MA	8	612	C	-0.05	0.49	0.34	D	0.06	-0.37	0.28	0.86	0.44	1.97	161	0.05	1.46	0.23	0.82	17	46
MA	8	542	C	0.02	0.89	0.40	D	-0.03	1.71	0.54	-0.82	0.67	-1.23	143	0.22	0.07	0.79	-0.44	17	47
MA	8	1274	C	-0.03	-0.35	0.26	D	0.03	-0.66	0.26	0.31	0.37	0.83	162	0.41	0.00	0.97	-0.08	17	48
MA	8	1467	C	0.03	-0.66	0.24	D	-0.04	-0.29	0.28	-0.37	0.37	-1.00	154	0.32	1.32	0.25	-0.56	17	49
MA	8	600	C	0.03	-1.65	0.21	D	-0.03	-1.41	0.24	-0.24	0.32	-0.74	157	0.46	0.27	0.60	-0.24	17	50
MA	8	614	C	0.03	-1.42	0.22	D	-0.03	-1.17	0.25	-0.25	0.33	-0.75	156	0.45	1.37	0.24	-0.45	17	51
MA	8	586	C	0.03	-0.77	0.23	D	-0.03	-0.44	0.27	-0.33	0.36	-0.91	155	0.36	0.02	0.88	-0.01	17	52
MA	8	1466	C	-0.02	0.89	0.40	D	0.03	0.36	0.33	0.53	0.52	1.03	162	0.31	0.08	0.78	-0.02	17	53
MA	8	608	C	-0.04	-1.42	0.22	D	0.05	-1.83	0.24	0.40	0.33	1.24	157	0.22	1.23	0.27	0.40	17	54
MA	8	611	C	0.05	-1.13	0.22	D	-0.06	-0.59	0.27	-0.54	0.35	-1.57	153	0.12	1.39	0.24	-0.50	17	55
MA	8	556	C	-0.03	0.01	0.29	D	0.04	-0.44	0.27	0.46	0.40	1.16	163	0.25	2.78	0.10	0.71	17	56
MA	8	532	C	-0.02	-0.66	0.24	D	0.03	-0.92	0.25	0.26	0.35	0.76	160	0.45	0.57	0.45	0.33	17	57
MA	8	530	C	0.05	-1.18	0.22	D	-0.06	-0.66	0.26	-0.52	0.34	-1.53	153	0.13	0.30	0.59	-0.25	17	58
MA	8	603	C	0.03	-0.83	0.23	D	-0.03	-0.52	0.27	-0.31	0.36	-0.87	155	0.39	1.11	0.29	-0.52	17	59
MA	8	599	C	-0.06	1.06	0.43	D	0.07	-0.21	0.29	1.27	0.51	2.48	151	0.01	2.99	0.08	1.29	17	60
MA	8	589	C	0.00	-1.42	0.22	D	0.00	-1.42	0.24	0.00	0.33	0.00	157	1.00	0.01	0.91	-0.02	17	61
MA	8	1140	C	-0.01	4.14		D	0.01	2.48	0.74	1.65	1.97	0.84	116	0.40				17	62

Appendix Table I.5 : Mathematics: DIF Gender

Subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	3	178	F	0.00	-3.82	0.37	M	0.00	-3.75	0.37	-0.07	0.52	-0.13	306	0.89	0.02	0.88	-0.05	33	1
MA	3	182	F	-0.02	-0.45	0.17	M	0.02	-0.63	0.18	0.18	0.25	0.72	305	0.47	0.61	0.44	0.25	33	2
MA	3	206	F	-0.02	-1.50	0.18	M	0.03	-1.78	0.19	0.28	0.27	1.04	304	0.30	0.29	0.59	0.18	33	3
MA	3	1303	F	0.03	1.32	0.23	M	-0.03	1.92	0.29	-0.60	0.37	-1.64	289	0.10	2.49	0.11	-0.69	33	4
MA	3	225	F	-0.04	0.58	0.19	M	0.05	0.08	0.19	0.49	0.27	1.85	306	0.07	2.94	0.09	0.52	33	5
MA	3	1516	F	0.02	1.08	0.13	M	-0.02	1.23	0.15	-0.15	0.20	-0.74	301	0.46	3.24	0.07	-0.70	33	6
MA	3	215	F	-0.01	-2.55	0.23	M	0.01	-2.65	0.24	0.10	0.33	0.30	304	0.76	0.00	0.98	-0.06	33	7
MA	3	169	F	0.09	-1.28	0.18	M	-0.09	-0.41	0.18	-0.87	0.25	-3.48	306	0.00	12.33	0.00	-1.07	33	8
MA	3	1434	F	-0.01	1.81	0.27	M	0.02	1.49	0.25	0.32	0.37	0.87	306	0.38	0.43	0.51	0.39	33	9
MA	3	231	F	0.01	-0.24	0.17	M	-0.01	-0.15	0.18	-0.09	0.25	-0.36	305	0.72	0.32	0.57	-0.18	33	10

MA	3	219	F	0.02	1.43	0.24	M	-0.02	1.77	0.27	-0.34	0.36	-0.93	298	0.36	0.07	0.79	-0.18	33	11
MA	3	202	F	0.01	-2.60	0.23	M	-0.01	-2.43	0.23	-0.17	0.33	-0.53	306	0.60	0.21	0.65	-0.21	33	12
MA	3	221	F	0.03	0.13	0.18	M	-0.03	0.41	0.19	-0.28	0.26	-1.05	303	0.30	1.44	0.23	-0.37	33	13
MA	3	992	F	-0.01	3.75	0.59	M	0.01	3.18	0.47	0.56	0.75	0.75	294	0.45	0.00	0.97	0.84	33	14
MA	3	371	F	-0.03	0.73	0.20	M	0.03	0.41	0.19	0.32	0.28	1.16	306	0.25	0.71	0.40	0.30	33	15
MA	3	173	F	0.03	-0.51	0.17	M	-0.03	-0.22	0.18	-0.29	0.25	-1.17	305	0.24	1.55	0.21	-0.35	33	16
MA	3	226	F	-0.01	1.17	0.22	M	0.02	0.95	0.22	0.22	0.31	0.70	306	0.49	0.38	0.54	0.26	33	17
MA	3	233	F	-0.02	4.90		M	0.02	2.64	0.38	2.26	1.78	1.27	173	0.21	4.28	0.04		33	18
MA	3	174	F	0.03	-1.28	0.18	M	-0.04	-0.94	0.18	-0.34	0.25	-1.36	306	0.17	2.08	0.15	-0.47	33	19
MA	3	1036	F	0.00	2.12	0.30	M	0.00	2.10	0.30	0.02	0.43	0.05	306	0.96	0.16	0.68	-0.26	33	20
MA	3	210	F	-0.04	1.22	0.22	M	0.05	0.60	0.20	0.62	0.30	2.04	305	0.04	3.51	0.06	0.64	33	21
MA	3	1437	F	0.01	2.23	0.31	M	-0.01	2.67	0.38	-0.43	0.49	-0.89	293	0.38	0.38	0.54	-0.48	33	22
MA	3	207	F	0.01	-1.16	0.17	M	-0.01	-1.06	0.18	-0.09	0.25	-0.37	306	0.71	0.12	0.73	-0.13	33	23
MA	3	212	F	0.00	-0.20	0.17	M	0.00	-0.20	0.18	0.00	0.25	0.00	305	1.00	0.01	0.94	0.02	33	24
MA	3	172	F	-0.09	0.43	0.19	M	0.10	-0.53	0.18	0.97	0.26	3.74	306	0.00	18.02	0.00	1.51	33	25
MA	3	198	F	0.02	-2.60	0.23	M	-0.02	-2.33	0.22	-0.27	0.32	-0.85	306	0.40	0.43	0.51	-0.29	33	26
MA	3	368	F	0.01	0.65	0.20	M	-0.01	0.73	0.21	-0.07	0.28	-0.26	304	0.79	0.00	0.96	0.04	33	27
MA	3	191	F	-0.02	0.06	0.18	M	0.03	-0.19	0.18	0.25	0.25	0.99	306	0.33	0.71	0.40	0.26	33	28
MA	3	193	F	0.05	-1.40	0.18	M	-0.05	-0.91	0.18	-0.50	0.25	-1.98	306	0.05	1.61	0.20	-0.38	33	29
MA	3	1435	F	0.04	-1.85	0.19	M	-0.04	-1.42	0.18	-0.43	0.27	-1.61	306	0.11	1.79	0.18	-0.43	33	30
MA	3	189	F	-0.01	-2.13	0.21	M	0.01	-2.23	0.22	0.11	0.30	0.36	305	0.72	0.33	0.56	0.23	33	31
MA	3	995	F	-0.01	0.58	0.19	M	0.01	0.44	0.20	0.13	0.27	0.48	306	0.63	0.01	0.94	0.02	33	32
MA	3	229	F	0.01	-0.68	0.17	M	-0.01	-0.63	0.18	-0.06	0.25	-0.23	305	0.82	0.07	0.79	-0.09	33	33
MA	3	374	F	-0.02	0.73	0.20	M	0.02	0.52	0.20	0.21	0.28	0.74	306	0.46	0.15	0.70	0.15	33	34
MA	3	184	F	0.03	-2.21	0.21	M	-0.03	-1.86	0.20	-0.36	0.29	-1.24	306	0.21	0.48	0.49	-0.26	33	35
MA	3	186	F	-0.02	-0.06	0.18	M	0.02	-0.22	0.18	0.16	0.25	0.62	306	0.53	0.23	0.64	0.18	33	36
MA	3	1035	F	0.01	0.33	0.18	M	-0.01	0.41	0.19	-0.08	0.27	-0.29	304	0.77	0.03	0.86	0.09	33	37
MA	3	201	F	0.00	-1.54	0.18	M	0.00	-1.49	0.19	-0.04	0.26	-0.17	306	0.86	0.01	0.92	-0.01	33	38
MA	3	1439	F	0.00	-1.40	0.18	M	0.01	-1.46	0.18	0.05	0.26	0.20	305	0.84	0.18	0.67	0.17	33	39
MA	3	211	F	-0.02	1.38	0.23	M	0.02	1.10	0.23	0.28	0.33	0.85	306	0.40	0.11	0.73	0.17	33	40
MA	3	234	F	0.04	1.54	0.20	M	-0.04	2.27	0.29	-0.73	0.35	-2.10	266	0.04	3.75	0.05	-1.18	33	41
MA	3	216	F	-0.02	-0.65	0.17	M	0.02	-0.81	0.18	0.16	0.25	0.65	305	0.52	0.00	0.95	0.01	33	42
MA	3	235	F	0.02	1.70	0.20	M	-0.02	1.95	0.22	-0.25	0.30	-0.83	300	0.40	0.00	0.99	-0.01	33	43
MA	3	209	F	0.03	0.61	0.19	M	-0.03	0.95	0.22	-0.34	0.29	-1.16	300	0.25	0.62	0.43	-0.30	33	44
MA	3	213	F	-0.06	0.58	0.19	M	0.06	-0.05	0.18	0.63	0.27	2.37	306	0.02	4.73	0.03	0.70	33	45
MA	3	224	F	0.02	0.10	0.18	M	-0.03	0.37	0.19	-0.27	0.26	-1.03	303	0.30	1.10	0.29	-0.31	33	46
MA	3	204	F	0.03	-0.98	0.17	M	-0.03	-0.69	0.18	-0.29	0.25	-1.16	306	0.25	0.43	0.51	-0.21	33	47
MA	3	1438	F	0.00	-0.37	0.17	M	0.00	-0.37	0.18	0.00	0.25	0.00	305	1.00	0.01	0.94	0.02	33	48
MA	3	230	F	0.01	0.54	0.19	M	-0.01	0.60	0.20	-0.06	0.28	-0.22	305	0.82	0.00	0.95	-0.06	33	49
MA	3	190	F	0.03	-2.09	0.20	M	-0.03	-1.70	0.19	-0.38	0.28	-1.37	306	0.17	1.55	0.21	-0.42	33	50
MA	3	180	F	-0.03	-0.33	0.17	M	0.03	-0.60	0.18	0.26	0.25	1.07	306	0.28	1.34	0.25	0.33	33	51
MA	3	1433	F	0.01	0.26	0.18	M	-0.01	0.37	0.19	-0.11	0.27	-0.41	304	0.68	0.01	0.93	0.01	33	52
MA	3	188	F	0.02	-1.47	0.18	M	-0.02	-1.29	0.18	-0.18	0.26	-0.70	306	0.48	0.24	0.63	-0.18	33	53
MA	3	214	F	-0.05	-0.15	0.17	M	0.05	-0.63	0.18	0.48	0.25	1.92	306	0.06	4.96	0.03	0.66	33	54
MA	3	223	F	0.00	0.19	0.18	M	0.00	0.15	0.19	0.04	0.26	0.16	305	0.87	0.04	0.85	0.08	33	55
MA	3	205	F	-0.01	0.40	0.19	M	0.01	0.29	0.19	0.10	0.27	0.38	306	0.70	0.13	0.72	0.14	33	56
MA	3	217	F	-0.03	1.43	0.24	M	0.03	0.90	0.22	0.53	0.32	1.64	305	0.10	0.68	0.41	0.32	33	57
MA	3	1305	F	0.01	1.97	0.28	M	-0.02	2.41	0.34	-0.44	0.44	-1.00	293	0.32	0.20	0.65	-0.34	33	58

MA	3	187	F	-0.02	-1.78	0.19	M	0.02	-2.06	0.21	0.28	0.28	1.00	303	0.32	0.62	0.43	0.32	33	59
MA	3	208	F	-0.01	0.00	0.18	M	0.01	-0.05	0.18	0.06	0.25	0.22	305	0.83	0.01	0.94	0.07	33	60
MA	3	218	F	-0.01	0.69	0.20	M	0.01	0.52	0.20	0.17	0.28	0.60	306	0.55	0.02	0.90	-0.07	33	61
MA	3	185	F	-0.02	2.69	0.37	M	0.02	2.01	0.30	0.69	0.48	1.44	295	0.15	1.76	0.18	0.87	33	62
MA	4	135	F	-0.02	-0.98	0.17	M	0.03	-1.25	0.20	0.27	0.26	1.04	247	0.30	1.57	0.21	0.40	31	1
MA	4	140	F	0.01	-1.67	0.18	M	-0.01	-1.58	0.21	-0.10	0.27	-0.36	253	0.72	0.01	0.94	-0.02	31	2
MA	4	109	F	-0.03	-0.69	0.16	M	0.04	-0.98	0.20	0.29	0.26	1.15	249	0.25	1.82	0.18	0.40	31	3
MA	4	257	F	0.00	0.44	0.19	M	0.00	0.44	0.23	0.00	0.29	0.00	248	1.00	0.04	0.85	-0.11	31	4
MA	4	157	F	0.01	-0.16	0.17	M	-0.02	-0.03	0.21	-0.13	0.27	-0.47	245	0.64	0.08	0.77	-0.15	31	5
MA	4	236	F	0.00	-0.17	0.17	M	0.01	-0.20	0.20	0.02	0.27	0.09	249	0.93	0.00	0.94	-0.02	31	6
MA	4	170	F	0.02	-0.36	0.17	M	-0.02	-0.16	0.20	-0.20	0.26	-0.75	245	0.45	0.31	0.58	-0.18	31	7
MA	4	1009	F	0.00	0.60	0.20	M	0.00	0.60	0.23	0.00	0.31	0.00	247	1.00	0.02	0.89	0.11	31	8
MA	4	262	F	0.01	-1.12	0.10	M	-0.01	-1.09	0.12	-0.03	0.16	-0.16	250	0.87	0.05	0.82	-0.06	31	9
MA	4	238	F	0.00	-0.19	0.17	M	0.01	-0.24	0.20	0.05	0.26	0.20	249	0.84	0.06	0.80	0.12	31	10
MA	4	268	F	0.04	-1.61	0.18	M	-0.06	-1.13	0.20	-0.48	0.26	-1.81	257	0.07	1.99	0.16	-0.44	31	11
MA	4	276	F	-0.02	0.41	0.19	M	0.03	0.10	0.21	0.31	0.28	1.10	256	0.27	1.57	0.21	0.43	31	12
MA	4	244	F	0.01	3.26	0.51	M	-0.01	5.49		-2.23	1.91	-1.17	134	0.24	1.26	0.26		31	13
MA	4	1441	F	-0.05	0.18	0.18	M	0.06	-0.36	0.20	0.54	0.27	2.01	258	0.05	0.60	0.44	0.25	31	14
MA	4	166	F	0.01	0.56	0.19	M	-0.01	0.71	0.24	-0.15	0.31	-0.49	242	0.62	0.33	0.57	-0.27	31	15
MA	4	247	F	-0.04	0.31	0.18	M	0.05	-0.16	0.20	0.47	0.27	1.70	258	0.09	1.06	0.30	0.35	31	16
MA	4	171	F	0.03	0.18	0.18	M	-0.04	0.54	0.23	-0.36	0.29	-1.24	236	0.21	1.05	0.31	-0.40	31	17
MA	4	1005	F	0.00	-1.06	0.17	M	0.00	-1.06	0.20	0.00	0.26	0.00	249	1.00	0.03	0.86	-0.09	31	18
MA	4	254	F	0.02	0.31	0.18	M	-0.03	0.65	0.24	-0.34	0.30	-1.14	235	0.26	0.71	0.40	-0.31	31	19
MA	4	1451	F	-0.01	1.97	0.30	M	0.01	1.70	0.33	0.26	0.44	0.59	260	0.55	0.95	0.33	0.55	31	20
MA	4	239	F	0.01	2.38	0.35	M	-0.02	3.14	0.59	-0.75	0.69	-1.09	195	0.28	0.07	0.80	-0.09	31	21
MA	4	165	F	-0.03	-0.01	0.17	M	0.04	-0.31	0.20	0.30	0.27	1.13	251	0.26	1.09	0.30	0.33	31	22
MA	4	1982	F	0.02	-1.15	0.17	M	-0.03	-0.90	0.20	-0.25	0.26	-0.98	249	0.33	1.48	0.22	-0.39	31	23
MA	4	265	F	0.00	-0.93	0.16	M	0.00	-0.93	0.20	0.00	0.26	0.00	247	1.00	0.02	0.90	0.00	31	24
MA	4	259	F	0.00	0.56	0.19	M	-0.01	0.62	0.24	-0.07	0.31	-0.21	242	0.83	0.00	0.96	0.03	31	25
MA	4	256	F	0.02	0.45	0.19	M	-0.03	0.74	0.24	-0.29	0.31	-0.94	234	0.35	1.59	0.21	-0.49	31	26
MA	4	250	F	0.02	-0.33	0.17	M	-0.03	-0.10	0.21	-0.23	0.27	-0.85	242	0.40	0.80	0.37	-0.33	31	27
MA	4	164	F	0.01	-0.01	0.17	M	-0.02	0.17	0.22	-0.17	0.28	-0.63	241	0.53	0.22	0.64	-0.18	31	28
MA	4	1006	F	-0.03	0.34	0.18	M	0.04	-0.06	0.21	0.40	0.28	1.45	255	0.15	1.05	0.31	0.35	31	29
MA	4	263	F	0.04	-0.71	0.16	M	-0.06	-0.27	0.20	-0.44	0.26	-1.70	242	0.09	4.49	0.03	-0.63	31	30
MA	4	261	F	0.00	-0.20	0.17	M	0.00	-0.20	0.20	0.00	0.27	0.00	245	1.00	0.02	0.90	-0.07	31	31
MA	4	1443	F	0.00	-0.05	0.17	M	0.00	-0.05	0.21	0.00	0.27	0.00	246	1.00	0.07	0.80	0.11	31	32
MA	4	168	F	-0.02	0.28	0.18	M	0.03	-0.02	0.21	0.29	0.28	1.05	252	0.29	0.41	0.52	0.25	31	33
MA	4	163	F	-0.04	-1.26	0.17	M	0.06	-1.75	0.21	0.49	0.27	1.80	239	0.07	2.83	0.09	0.55	31	34
MA	4	103	F	-0.06	0.05	0.18	M	0.08	-0.63	0.20	0.68	0.26	2.58	256	0.01	3.74	0.05	0.63	31	35
MA	4	245	F	-0.02	-0.13	0.17	M	0.03	-0.35	0.20	0.22	0.26	0.85	249	0.40	0.86	0.35	0.31	31	36
MA	4	167	F	0.01	-1.09	0.17	M	-0.02	-0.97	0.20	-0.12	0.26	-0.46	248	0.64	0.30	0.58	-0.18	31	37
MA	4	1010	F	0.00	3.26	0.51	M	0.00	3.53	0.72	-0.27	0.88	-0.30	221	0.76	0.00	0.97	-0.70	31	38
MA	4	277	F	-0.02	0.02	0.17	M	0.03	-0.27	0.20	0.29	0.27	1.09	251	0.28	0.68	0.41	0.30	31	39
MA	4	240	F	0.00	1.51	0.25	M	0.00	1.57	0.32	-0.06	0.41	-0.14	240	0.89	0.02	0.90	0.15	31	40
MA	4	264	F	0.06	-0.10	0.17	M	-0.09	0.80	0.25	-0.90	0.30	-2.98	216	0.00	4.12	0.04	-0.68	31	41
MA	4	154	F	0.00	-0.87	0.16	M	0.00	-0.87	0.20	0.00	0.26	0.00	247	1.00	0.00	0.98	-0.05	31	42
MA	4	1981	F	-0.03	-1.18	0.17	M	0.05	-1.57	0.21	0.40	0.26	1.50	242	0.14	3.29	0.07	0.58	31	43
MA	4	271	F	0.03	-0.88	0.16	M	-0.04	-0.59	0.20	-0.29	0.26	-1.12	246	0.27	1.00	0.32	-0.33	31	44

MA	4	253	F	-0.01	1.12	0.22	M	0.01	1.00	0.26	0.12	0.35	0.35	249	0.73	0.00	0.99	-0.07	31	45
MA	4	375	F	0.04	0.34	0.13	M	-0.05	0.62	0.17	-0.28	0.22	-1.30	238	0.20	0.94	0.33	-0.25	31	46
MA	4	1444	F	0.04	0.15	0.18	M	-0.06	0.74	0.24	-0.59	0.30	-1.96	224	0.05	3.78	0.05	-0.82	31	47
MA	4	267	F	-0.02	-1.09	0.17	M	0.02	-1.29	0.20	0.19	0.26	0.74	246	0.46	0.58	0.45	0.30	31	48
MA	4	242	F	0.01	-2.24	0.20	M	-0.02	-2.03	0.22	-0.21	0.30	-0.70	257	0.48	0.55	0.46	-0.31	31	49
MA	4	274	F	-0.02	0.05	0.18	M	0.03	-0.23	0.20	0.28	0.27	1.04	251	0.30	0.59	0.44	0.27	31	50
MA	4	246	F	0.02	1.02	0.22	M	-0.02	1.38	0.30	-0.37	0.37	-0.99	226	0.32	0.53	0.47	-0.41	31	51
MA	4	1440	F	-0.04	-0.33	0.17	M	0.05	-0.74	0.20	0.42	0.26	1.61	250	0.11	1.80	0.18	0.40	31	52
MA	4	373	F	0.02	-0.16	0.17	M	-0.03	0.12	0.21	-0.28	0.27	-1.01	239	0.31	1.24	0.27	-0.36	31	53
MA	4	278	F	0.03	0.48	0.19	M	-0.05	1.07	0.27	-0.58	0.33	-1.77	220	0.08	3.55	0.06	-0.75	31	54
MA	4	1007	F	-0.02	0.38	0.19	M	0.02	0.17	0.22	0.21	0.28	0.75	251	0.46	0.63	0.43	0.27	31	55
MA	4	377	F	-0.01	-0.40	0.17	M	0.02	-0.55	0.20	0.15	0.26	0.58	248	0.57	0.00	0.97	0.05	31	56
MA	4	243	F	-0.02	0.47	0.19	M	0.03	0.17	0.22	0.31	0.29	1.07	254	0.29	0.67	0.41	0.27	31	57
MA	4	378	F	0.02	-0.40	0.17	M	-0.03	-0.14	0.21	-0.26	0.27	-0.96	242	0.34	1.47	0.23	-0.45	31	58
MA	4	241	F	0.00	0.10	0.18	M	-0.01	0.17	0.22	-0.06	0.28	-0.23	244	0.82	0.01	0.93	-0.07	31	59
MA	4	252	F	0.00	2.82	0.42	M	0.01	2.56	0.47	0.26	0.63	0.41	258	0.68	1.29	0.26		31	60
MA	4	258	F	0.02	-0.51	0.17	M	-0.03	-0.27	0.20	-0.24	0.26	-0.92	243	0.36	0.20	0.66	-0.16	31	61
MA	4	249	F	-0.02	-0.70	0.17	M	0.03	-0.90	0.20	0.19	0.26	0.76	247	0.45	1.36	0.24	0.39	31	62
MA	4	1447	F	-0.02	-1.87	0.18	M	0.03	-2.13	0.23	0.26	0.29	0.90	241	0.37	1.36	0.24	0.40	31	63
MA	5	1128	F	0.05	-1.62	0.20	M	-0.05	-1.13	0.19	-0.49	0.28	-1.76	243	0.08	4.09	0.04	-0.69	28	2
MA	5	459	F	0.00	0.57	0.22	M	0.00	0.52	0.23	0.05	0.32	0.16	243	0.87	0.00	0.98	0.06	28	3
MA	5	455	F	0.05	-0.67	0.19	M	-0.05	-0.24	0.20	-0.43	0.28	-1.56	243	0.12	0.87	0.35	-0.32	28	4
MA	5	1217	F	-0.01	1.57	0.29	M	0.01	1.40	0.30	0.17	0.42	0.41	243	0.68	0.05	0.83	-0.01	28	5
MA	5	434	F	-0.05	0.09	0.20	M	0.05	-0.43	0.19	0.52	0.28	1.86	243	0.06	4.94	0.03	0.77	28	6
MA	5	432	F	0.01	0.34	0.21	M	-0.01	0.42	0.22	-0.08	0.31	-0.25	242	0.80	0.00	0.96	-0.04	28	7
MA	5	417	F	0.03	0.89	0.24	M	-0.03	1.49	0.31	-0.61	0.39	-1.55	226	0.12	0.09	0.77	-0.25	28	8
MA	5	1457	F	0.01	-0.15	0.20	M	-0.01	-0.04	0.20	-0.11	0.28	-0.40	243	0.69	0.00	0.98	0.05	28	9
MA	5	424	F	-0.07	-0.63	0.19	M	0.07	-1.27	0.19	0.64	0.27	2.36	243	0.02	7.09	0.01	0.82	28	10
MA	5	441	F	-0.02	-1.18	0.19	M	0.02	-1.38	0.19	0.20	0.27	0.73	243	0.47	0.88	0.35	0.32	28	11
MA	5	1136	F	-0.07	0.17	0.20	M	0.07	-0.51	0.19	0.68	0.28	2.41	243	0.02	1.04	0.31	0.34	28	12
MA	5	431	F	-0.01	-0.23	0.19	M	0.01	-0.36	0.20	0.13	0.28	0.47	243	0.64	0.05	0.82	0.13	28	13
MA	5	1223	F	-0.01	0.83	0.23	M	0.01	0.69	0.24	0.14	0.34	0.43	243	0.67	0.56	0.45	0.39	28	14
MA	5	463	F	0.04	0.48	0.15	M	-0.04	0.72	0.18	-0.24	0.23	-1.05	234	0.29	0.34	0.56	-0.26	28	15
MA	5	413	F	-0.01	-1.15	0.19	M	0.01	-1.20	0.19	0.05	0.27	0.19	243	0.85	0.45	0.50	0.27	28	16
MA	5	442	F	-0.01	0.34	0.21	M	0.01	0.23	0.22	0.12	0.30	0.38	243	0.70	0.23	0.63	0.21	28	17
MA	5	450	F	-0.05	0.52	0.22	M	0.05	0.00	0.21	0.52	0.30	1.73	243	0.08	0.40	0.53	0.28	28	18
MA	5	1452	F	0.00	1.58	0.29	M	0.00	1.58	0.32	0.00	0.44	0.00	241	1.00	0.00	0.96	-0.18	28	19
MA	5	1202	F	0.03	0.21	0.21	M	-0.03	0.52	0.23	-0.31	0.31	-1.01	240	0.32	0.54	0.46	-0.31	28	20
MA	5	1130	F	-0.01	-0.71	0.19	M	0.01	-0.80	0.19	0.09	0.27	0.35	243	0.73	0.28	0.59	0.23	28	21
MA	5	1454	F	-0.02	-0.07	0.20	M	0.02	-0.28	0.20	0.21	0.28	0.74	243	0.46	0.00	0.98	0.05	28	22
MA	5	414	F	0.03	0.17	0.10	M	-0.02	0.24	0.12	-0.08	0.16	-0.49	238	0.62	0.90	0.34	-0.35	28	23
MA	5	444	F	0.04	-0.89	0.19	M	-0.04	-0.55	0.19	-0.34	0.27	-1.26	243	0.21	3.76	0.05	-0.69	28	24
MA	5	460	F	0.01	-1.92	0.22	M	-0.01	-1.77	0.20	-0.15	0.30	-0.51	243	0.61	0.24	0.62	-0.22	28	25
MA	5	1232	F	0.01	1.13	0.25	M	-0.01	1.40	0.30	-0.27	0.39	-0.69	236	0.49	0.09	0.77	-0.22	28	26
MA	5	420	F	-0.01	2.53	0.43	M	0.01	2.10	0.40	0.43	0.58	0.74	243	0.46	0.00	0.96	0.25	28	27
MA	5	462	F	-0.02	0.72	0.23	M	0.02	0.52	0.23	0.20	0.32	0.62	243	0.53	0.01	0.91	-0.10	28	28
MA	5	1455	F	0.00	-0.65	0.19	M	0.00	-0.65	0.19	0.00	0.27	0.00	243	1.00	0.02	0.88	-0.09	28	29
MA	5	436	F	-0.02	0.21	0.21	M	0.02	-0.04	0.20	0.25	0.29	0.86	243	0.39	0.17	0.68	0.22	28	30

MA	5	1229	F	0.05	0.78	0.23	M	-0.05	1.60	0.32	-0.82	0.40	-2.06	219	0.04	3.97	0.05	-1.23	28	31
MA	5	457	F	0.02	-0.45	0.19	M	-0.02	-0.28	0.20	-0.17	0.28	-0.62	243	0.53	0.00	0.97	-0.04	28	32
MA	5	439	F	-0.08	0.25	0.21	M	0.08	-0.55	0.19	0.80	0.28	2.83	242	0.01	5.26	0.02	0.77	28	33
MA	5	440	F	-0.03	1.57	0.29	M	0.03	0.94	0.26	0.64	0.39	1.63	240	0.10	0.50	0.48	0.43	28	34
MA	5	415	F	-0.06	0.01	0.20	M	0.06	-0.58	0.19	0.59	0.28	2.12	243	0.03	2.23	0.14	0.49	28	35
MA	5	429	F	0.02	0.39	0.21	M	-0.02	0.69	0.24	-0.30	0.32	-0.94	239	0.35	0.25	0.62	-0.22	28	36
MA	5	445	F	0.05	0.05	0.20	M	-0.05	0.58	0.23	-0.53	0.31	-1.72	238	0.09	3.88	0.05	-0.73	28	37
MA	5	412	F	0.01	0.39	0.21	M	-0.01	0.47	0.23	-0.08	0.31	-0.27	242	0.79	0.18	0.67	-0.24	28	38
MA	5	426	F	0.00	0.38	0.21	M	0.00	0.38	0.22	0.00	0.31	0.00	243	1.00	0.02	0.88	-0.01	28	39
MA	5	448	F	0.01	-0.78	0.19	M	-0.01	-0.73	0.19	-0.05	0.27	-0.19	243	0.85	0.00	0.97	-0.04	28	40
MA	5	421	F	-0.01	-1.18	0.19	M	0.01	-1.27	0.19	0.09	0.27	0.32	243	0.75	0.02	0.90	-0.09	28	41
MA	5	446	F	0.00	-0.46	0.19	M	0.00	-0.46	0.19	0.00	0.27	0.00	243	1.00	0.17	0.68	0.17	28	42
MA	5	1456	F	-0.02	0.62	0.22	M	0.03	0.32	0.22	0.30	0.31	0.97	243	0.33	0.55	0.46	0.35	28	43
MA	5	1093	F	0.00	1.59	0.25	M	0.00	1.59	0.30	0.00	0.39	0.00	234	1.00	2.11	0.15	0.89	28	44
MA	5	443	F	-0.01	0.52	0.22	M	0.01	0.42	0.22	0.11	0.31	0.34	243	0.73	0.37	0.54	0.30	28	45
MA	5	454	F	-0.03	-0.56	0.19	M	0.04	-0.87	0.19	0.31	0.27	1.16	243	0.25	2.74	0.10	0.55	28	46
MA	5	425	F	0.01	-0.30	0.19	M	-0.01	-0.24	0.20	-0.06	0.28	-0.22	243	0.82	0.06	0.81	-0.12	28	47
MA	5	419	F	0.02	0.30	0.21	M	-0.02	0.52	0.23	-0.22	0.31	-0.72	241	0.47	0.98	0.32	-0.43	28	48
MA	5	433	F	0.04	-1.74	0.21	M	-0.05	-1.31	0.19	-0.44	0.28	-1.54	242	0.13	3.32	0.07	-0.69	28	49
MA	5	458	F	-0.04	-1.57	0.20	M	0.04	-1.98	0.21	0.41	0.29	1.40	243	0.16	1.18	0.28	0.42	28	50
MA	5	416	F	0.05	-0.92	0.19	M	-0.05	-0.51	0.19	-0.42	0.27	-1.53	243	0.13	2.83	0.09	-0.55	28	51
MA	5	456	F	-0.03	-0.41	0.19	M	0.04	-0.73	0.19	0.31	0.27	1.16	243	0.25	0.40	0.53	0.24	28	52
MA	5	449	F	0.01	1.00	0.25	M	-0.01	1.15	0.28	-0.15	0.37	-0.40	240	0.69	0.63	0.43	-0.39	28	53
MA	5	435	F	0.09	0.17	0.11	M	-0.09	0.46	0.13	-0.29	0.17	-1.75	234	0.08	1.02	0.31	-0.35	28	54
MA	5	452	F	-0.04	-0.49	0.19	M	0.04	-0.84	0.19	0.35	0.27	1.29	243	0.20	1.40	0.24	0.40	28	55
MA	5	1187	F	0.07	-0.89	0.19	M	-0.08	-0.20	0.20	-0.69	0.28	-2.49	243	0.01	1.71	0.19	-0.49	28	56
MA	5	451	F	0.03	-0.63	0.19	M	-0.03	-0.40	0.20	-0.24	0.27	-0.87	243	0.38	0.26	0.61	-0.22	28	57
MA	5	1058	F	-0.02	0.43	0.21	M	0.02	0.23	0.22	0.21	0.30	0.68	243	0.50	0.01	0.92	0.09	28	58
MA	5	464	F	0.03	0.78	0.16	M	-0.02	0.97	0.19	-0.19	0.25	-0.76	238	0.45	0.42	0.52	-0.24	28	59
MA	5	437	F	-0.03	0.14	0.20	M	0.03	-0.16	0.20	0.31	0.29	1.07	242	0.29	0.99	0.32	0.40	28	60
MA	5	1121	F	-0.04	-0.29	0.19	M	0.04	-0.66	0.19	0.37	0.27	1.34	242	0.18	0.92	0.34	0.34	28	61
MA	5	453	F	0.03	0.32	0.21	M	-0.03	0.63	0.24	-0.31	0.32	-0.99	239	0.32	0.46	0.50	-0.38	28	62
MA	5	1563	F	0.04	0.02	0.20	M	-0.04	0.42	0.22	-0.40	0.30	-1.32	239	0.19	0.13	0.72	-0.18	28	63
MA	5	428	F	0.04	-0.25	0.20	M	-0.04	0.18	0.21	-0.43	0.29	-1.50	240	0.14	3.79	0.05	-0.64	28	64
MA	6	581	F	0.00	0.15	0.20	M	0.00	0.15	0.25	0.00	0.32	0.00	219	1.00	0.01	0.93	-0.10	30	1
MA	6	568	F	0.03	-1.11	0.17	M	-0.04	-0.79	0.21	-0.32	0.27	-1.17	219	0.24	1.70	0.19	-0.42	30	2
MA	6	1770	F	-0.04	-1.23	0.17	M	0.06	-1.70	0.21	0.47	0.27	1.72	220	0.09	3.85	0.05	0.67	30	3
MA	6	579	F	0.02	-0.88	0.18	M	-0.03	-0.60	0.22	-0.28	0.28	-0.99	217	0.32	0.33	0.57	-0.24	30	4
MA	6	470	F	0.02	0.56	0.23	M	-0.02	0.87	0.30	-0.30	0.38	-0.81	205	0.42	0.04	0.84	-0.15	30	5
MA	6	468	F	-0.01	-0.79	0.18	M	0.02	-0.92	0.21	0.13	0.27	0.49	222	0.62	0.06	0.80	0.15	30	6
MA	6	1458	F	0.01	0.07	0.20	M	-0.01	0.19	0.25	-0.12	0.32	-0.38	215	0.71	0.04	0.84	-0.11	30	7
MA	6	1200	F	-0.02	-0.30	0.19	M	0.02	-0.51	0.22	0.21	0.29	0.74	224	0.46	0.14	0.71	0.17	30	8
MA	6	551	F	-0.01	-0.26	0.19	M	0.01	-0.36	0.22	0.10	0.29	0.34	221	0.73	0.01	0.91	0.08	30	9
MA	6	480	F	0.03	-0.33	0.19	M	-0.04	0.07	0.24	-0.40	0.31	-1.32	208	0.19	2.66	0.10	-0.56	30	10
MA	6	469	F	0.11	-0.12	0.09	M	-0.14	0.21	0.12	-0.33	0.15	-2.19	201	0.03	2.10	0.15	-0.45	30	11
MA	6	585	F	0.00	1.59	0.32	M	0.00	1.70	0.41	-0.11	0.52	-0.22	211	0.83	0.02	0.88	-0.31	30	12
MA	6	578	F	0.00	-0.06	0.19	M	-0.01	0.00	0.24	-0.06	0.31	-0.21	215	0.84	0.02	0.88	0.00	30	13
MA	6	1518	F	-0.03	-0.21	0.19	M	0.04	-0.52	0.22	0.31	0.29	1.08	224	0.28	0.17	0.68	0.22	30	14

MA	6	1251	F	0.01	2.26	0.42	M	-0.02	3.81	1.02	-1.55	1.10	-1.41	138	0.16	2.27	0.13		30	15
MA	6	490	F	0.02	-0.52	0.18	M	-0.03	-0.27	0.23	-0.25	0.29	-0.84	212	0.40	0.93	0.33	-0.36	30	16
MA	6	1256	F	-0.02	0.26	0.21	M	0.03	-0.06	0.24	0.32	0.32	1.00	226	0.32	0.36	0.55	0.27	30	17
MA	6	502	F	0.00	1.26	0.17	M	0.00	1.26	0.20	0.00	0.26	0.00	219	1.00	0.02	0.88	-0.05	30	18
MA	6	484	F	-0.02	0.05	0.20	M	0.03	-0.27	0.23	0.33	0.30	1.08	225	0.28	0.02	0.90	0.02	30	19
MA	6	1580	F	0.03	-0.21	0.19	M	-0.04	0.18	0.25	-0.39	0.31	-1.25	205	0.21	0.94	0.33	-0.41	30	20
MA	6	1131	F	-0.02	0.12	0.10	M	0.03	0.05	0.12	0.07	0.15	0.48	216	0.63	0.55	0.46	0.28	30	21
MA	6	1062	F	0.04	0.76	0.14	M	-0.06	1.10	0.20	-0.34	0.25	-1.39	189	0.17	0.94	0.33	-0.49	30	22
MA	6	537	F	0.02	-0.75	0.18	M	-0.03	-0.50	0.22	-0.26	0.28	-0.90	212	0.37	1.01	0.31	-0.36	30	23
MA	6	567	F	-0.02	-0.10	0.20	M	0.02	-0.29	0.23	0.20	0.30	0.65	220	0.51	1.51	0.22	0.48	30	24
MA	6	577	F	0.00	0.66	0.24	M	0.01	0.59	0.28	0.07	0.37	0.20	218	0.84	0.02	0.89	-0.12	30	25
MA	6	1142	F	0.02	-0.61	0.18	M	-0.02	-0.40	0.23	-0.21	0.29	-0.73	212	0.47	0.31	0.58	-0.23	30	26
MA	6	487	F	-0.01	0.21	0.21	M	0.01	0.10	0.25	0.11	0.33	0.35	218	0.73	0.00	0.96	0.07	30	27
MA	6	580	F	-0.04	0.60	0.23	M	0.05	-0.02	0.24	0.62	0.34	1.85	233	0.07	1.16	0.28	0.45	30	28
MA	6	526	F	0.04	-0.34	0.19	M	-0.05	0.16	0.25	-0.50	0.31	-1.59	202	0.11	2.75	0.10	-0.66	30	29
MA	6	1253	F	-0.01	0.26	0.21	M	0.01	0.16	0.25	0.10	0.33	0.31	216	0.76	0.60	0.44	0.34	30	30
MA	6	534	F	-0.04	0.72	0.24	M	0.06	0.03	0.25	0.68	0.34	1.98	233	0.05	1.65	0.20	0.54	30	31
MA	6	1582	F	-0.04	-0.15	0.19	M	0.05	-0.60	0.22	0.45	0.29	1.54	222	0.12	1.45	0.23	0.40	30	32
MA	6	1225	F	-0.01	1.90	0.37	M	0.01	1.68	0.41	0.22	0.55	0.40	225	0.69	0.01	0.91	0.22	30	33
MA	6	520	F	-0.01	0.25	0.21	M	0.02	0.03	0.25	0.21	0.32	0.65	219	0.51	0.38	0.54	0.27	30	34
MA	6	499	F	0.00	-0.14	0.20	M	0.00	-0.14	0.24	0.00	0.31	0.00	213	1.00	0.00	0.97	-0.07	30	35
MA	6	535	F	0.00	-0.92	0.18	M	0.00	-0.92	0.21	0.00	0.28	0.00	217	1.00	0.10	0.75	-0.15	30	36
MA	6	571	F	0.02	-2.56	0.22	M	-0.03	-2.28	0.23	-0.28	0.31	-0.90	228	0.37	0.02	0.89	-0.13	30	37
MA	6	553	F	-0.01	-0.15	0.20	M	0.01	-0.24	0.23	0.09	0.30	0.30	218	0.76	0.00	0.97	-0.04	30	38
MA	6	563	F	-0.02	-0.51	0.19	M	0.03	-0.73	0.22	0.22	0.28	0.77	219	0.44	0.11	0.75	0.14	30	39
MA	6	550	F	-0.04	-1.04	0.18	M	0.05	-1.44	0.21	0.40	0.28	1.46	218	0.14	1.03	0.31	0.37	30	40
MA	6	515	F	-0.05	0.01	0.20	M	0.07	-0.59	0.22	0.60	0.30	2.02	227	0.04	4.25	0.04	0.75	30	41
MA	6	509	F	0.00	-0.66	0.18	M	0.00	-0.68	0.22	0.02	0.28	0.08	217	0.94	0.02	0.89	-0.09	30	42
MA	6	495	F	0.01	-1.16	0.18	M	-0.02	-1.05	0.21	-0.12	0.28	-0.43	217	0.67	0.00	0.95	-0.07	30	43
MA	6	574	F	0.03	-0.47	0.19	M	-0.04	-0.13	0.24	-0.35	0.30	-1.15	208	0.25	1.73	0.19	-0.50	30	44
MA	6	478	F	-0.01	-0.07	0.20	M	0.01	-0.18	0.23	0.11	0.31	0.35	218	0.73	0.07	0.79	0.15	30	45
MA	6	575	F	-0.01	1.52	0.32	M	0.01	1.27	0.35	0.25	0.48	0.54	226	0.59	0.00	0.95	-0.14	30	46
MA	6	491	F	0.00	0.15	0.12	M	0.01	0.15	0.14	0.00	0.18	0.00	214	1.00	0.07	0.79	0.09	30	47
MA	6	512	F	0.00	0.52	0.23	M	0.01	0.44	0.27	0.08	0.35	0.23	218	0.82	0.01	0.90	0.03	30	48
MA	6	521	F	0.03	0.32	0.22	M	-0.04	0.94	0.31	-0.62	0.38	-1.63	191	0.10	2.25	0.13	-0.67	30	49
MA	6	1101	F	-0.01	-0.52	0.19	M	0.02	-0.68	0.22	0.16	0.29	0.58	219	0.56	0.72	0.39	0.31	30	50
MA	6	572	F	0.02	-0.19	0.20	M	-0.03	0.11	0.25	-0.30	0.32	-0.94	208	0.35	0.25	0.62	-0.24	30	51
MA	6	1581	F	0.00	-0.49	0.19	M	0.01	-0.54	0.22	0.05	0.29	0.16	217	0.87	0.09	0.76	0.13	30	52
MA	6	476	F	-0.01	1.08	0.27	M	0.01	0.94	0.31	0.14	0.42	0.32	220	0.75	0.02	0.90	0.06	30	53
MA	6	1203	F	-0.02	-0.77	0.18	M	0.03	-1.00	0.21	0.23	0.28	0.84	219	0.40	1.36	0.24	0.40	30	54
MA	6	524	F	0.00	1.32	0.30	M	0.00	1.39	0.37	-0.07	0.47	-0.14	211	0.89	0.11	0.74	0.31	30	55
MA	6	514	F	0.00	-1.10	0.18	M	0.00	-1.10	0.21	0.00	0.28	0.00	216	1.00	0.01	0.93	-0.02	30	56
MA	6	1063	F	0.03	-1.19	0.18	M	-0.04	-0.88	0.21	-0.31	0.28	-1.11	214	0.27	0.95	0.33	-0.32	30	57
MA	6	570	F	-0.02	1.52	0.32	M	0.02	1.03	0.32	0.48	0.46	1.05	230	0.29	2.20	0.14	0.98	30	58
MA	6	545	F	0.01	0.41	0.22	M	-0.01	0.51	0.28	-0.10	0.36	-0.27	210	0.78	0.00	0.96	0.10	30	59
MA	6	517	F	0.02	-0.53	0.19	M	-0.02	-0.35	0.23	-0.18	0.29	-0.60	211	0.55	0.14	0.70	-0.15	30	60
MA	6	466	F	-0.03	1.08	0.27	M	0.04	0.51	0.28	0.57	0.39	1.47	231	0.14	1.44	0.23	0.55	30	61
MA	6	482	F	-0.02	2.38	0.46	M	0.02	1.53	0.38	0.86	0.60	1.42	235	0.16	0.06	0.81	0.37	30	62

MA	6	1254	F	0.02	-0.63	0.18	M	-0.03	-0.35	0.23	-0.28	0.29	-0.96	209	0.34	0.46	0.50	-0.27	30	63
MA	7	475	F	-0.02	0.06	0.31	M	0.02	-0.21	0.29	0.27	0.42	0.65	146	0.52	0.00	0.96	-0.11	19	1
MA	7	564	F	0.05	-0.36	0.28	M	-0.06	0.40	0.35	-0.76	0.45	-1.70	136	0.09	0.80	0.37	-0.57	19	2
MA	7	1463	F	-0.09	0.26	0.33	M	0.10	-0.89	0.26	1.15	0.42	2.76	141	0.01	5.41	0.02	1.25	19	3
MA	7	505	F	0.07	-0.84	0.25	M	-0.07	-0.03	0.31	-0.81	0.40	-2.03	139	0.04	5.26	0.02	-1.12	19	4
MA	7	516	F	0.00	0.61	0.37	M	0.00	0.53	0.37	0.09	0.52	0.17	146	0.87	0.00	0.95	-0.18	19	5
MA	7	508	F	0.02	-1.44	0.24	M	-0.02	-1.27	0.25	-0.17	0.34	-0.49	146	0.63	0.00	0.98	-0.08	19	6
MA	7	525	F	0.07	-0.97	0.25	M	-0.07	-0.21	0.29	-0.75	0.38	-1.95	141	0.05	1.22	0.27	-0.60	19	7
MA	7	1134	F	-0.02	-0.97	0.25	M	0.02	-1.14	0.25	0.18	0.35	0.50	146	0.61	0.18	0.67	0.24	19	8
MA	7	1066	F	-0.01	4.21		M	0.01	2.92	1.01	1.29	2.09	0.62	117	0.54	0.02	0.89		19	9
MA	7	488	F	-0.10	0.26	0.33	M	0.11	-0.95	0.26	1.21	0.41	2.93	141	0.00	5.36	0.02	1.10	19	10
MA	7	477	F	-0.01	0.37	0.34	M	0.01	0.17	0.33	0.20	0.47	0.43	146	0.67	0.02	0.88	0.21	19	11
MA	7	1460	F	-0.01	4.21		M	0.01	2.92	1.01	1.29	2.09	0.62	117	0.54	0.13	0.72		19	12
MA	7	494	F	-0.03	-0.58	0.26	M	0.03	-0.89	0.26	0.31	0.37	0.84	146	0.40	2.41	0.12	0.71	19	13
MA	7	506	F	-0.03	0.37	0.34	M	0.03	-0.03	0.31	0.40	0.46	0.88	146	0.38	0.31	0.58	0.40	19	14
MA	7	496	F	-0.03	-0.58	0.26	M	0.03	-0.89	0.26	0.31	0.37	0.84	146	0.40	0.01	0.92	0.06	19	15
MA	7	479	F	0.01	0.15	0.32	M	-0.01	0.28	0.34	-0.13	0.46	-0.29	144	0.77	0.02	0.90	0.21	19	16
MA	7	483	F	0.01	0.15	0.32	M	-0.02	0.40	0.35	-0.25	0.47	-0.53	143	0.59	0.04	0.85	-0.03	19	17
MA	7	559	F	0.01	-0.21	0.29	M	-0.01	-0.03	0.31	-0.18	0.42	-0.43	144	0.67	0.03	0.85	-0.02	19	18
MA	7	1560	F	0.03	1.01	0.29	M	-0.04	1.58	0.37	-0.57	0.47	-1.20	135	0.23	3.63	0.06	-1.29	19	19
MA	7	486	F	0.01	-0.31	0.28	M	-0.01	-0.13	0.30	-0.18	0.41	-0.44	143	0.66	0.02	0.89	-0.16	19	20
MA	7	1234	F	-0.02	-0.23	0.29	M	0.02	-0.46	0.28	0.23	0.40	0.59	144	0.56	0.53	0.47	0.45	19	21
MA	7	1247	F	-0.02	1.83	0.60	M	0.02	1.00	0.44	0.83	0.74	1.12	134	0.26	0.04	0.85	0.46	19	22
MA	7	481	F	0.09	-0.83	0.16	M	-0.09	-0.43	0.19	-0.40	0.25	-1.57	140	0.12	2.10	0.15	-0.66	19	23
MA	7	498	F	0.07	-1.12	0.25	M	-0.07	-0.46	0.28	-0.66	0.37	-1.78	142	0.08	0.68	0.41	-0.45	19	24
MA	7	485	F	-0.01	-0.53	0.27	M	0.01	-0.68	0.27	0.15	0.38	0.39	144	0.69	0.12	0.73	-0.24	19	25
MA	7	1237	F	0.03	-0.46	0.27	M	-0.04	-0.03	0.31	-0.43	0.41	-1.03	142	0.30	1.25	0.26	-0.66	19	26
MA	7	555	F	-0.01	4.20		M	0.01	2.20	0.72	2.00	1.97	1.02	96	0.31	0.13	0.72		19	27
MA	7	557	F	0.01	-0.74	0.26	M	-0.01	-0.64	0.27	-0.10	0.37	-0.28	143	0.78	0.13	0.71	-0.22	19	28
MA	7	552	F	0.00	1.28	0.47	M	0.00	1.19	0.47	0.08	0.67	0.13	143	0.90	0.00	1.00	0.27	19	29
MA	7	536	F	0.01	-1.30	0.24	M	-0.01	-1.24	0.25	-0.06	0.35	-0.18	143	0.86	0.00	1.00	0.08	19	30
MA	7	549	F	-0.05	0.04	0.31	M	0.05	-0.56	0.27	0.60	0.41	1.46	142	0.15	1.53	0.22	0.70	19	31
MA	7	1459	F	-0.02	-0.23	0.29	M	0.02	-0.49	0.28	0.26	0.40	0.65	143	0.52	0.16	0.69	0.26	19	32
MA	7	541	F	-0.05	-0.81	0.26	M	0.05	-1.30	0.25	0.49	0.36	1.38	144	0.17	0.67	0.41	0.40	19	33
MA	7	501	F	0.01	0.74	0.38	M	-0.01	0.98	0.44	-0.25	0.58	-0.43	140	0.67	0.02	0.89	-0.30	19	34
MA	7	547	F	0.01	-0.44	0.15	M	-0.01	-0.39	0.17	-0.05	0.23	-0.21	142	0.83	0.00	0.95	-0.04	19	35
MA	7	513	F	0.00	2.98	1.01	M	0.00	2.90	1.01	0.07	1.43	0.05	143	0.96	0.02	0.89		19	36
MA	7	503	F	-0.02	-0.31	0.28	M	0.02	-0.56	0.27	0.26	0.39	0.65	143	0.52	0.00	0.99	0.10	19	37
MA	7	1461	F	0.01	0.14	0.32	M	-0.01	0.26	0.34	-0.12	0.46	-0.26	142	0.79	0.00	1.00	-0.15	19	38
MA	7	1252	F	0.01	1.52	0.52	M	-0.01	2.18	0.73	-0.66	0.89	-0.74	128	0.46	0.18	0.67	-0.16	19	39
MA	7	493	F	-0.02	-0.46	0.27	M	0.02	-0.71	0.27	0.25	0.38	0.65	143	0.51	0.02	0.89	-0.03	19	40
MA	7	1558	F	0.00	-0.23	0.29	M	0.00	-0.23	0.30	0.00	0.41	0.00	143	1.00	0.00	1.00	-0.12	19	41
MA	7	561	F	-0.02	-0.05	0.30	M	0.02	-0.32	0.29	0.27	0.42	0.65	143	0.52	0.44	0.51	0.47	19	42
MA	7	492	F	0.00	-0.23	0.29	M	0.00	-0.23	0.30	0.00	0.41	0.00	143	1.00	0.00	0.97	-0.10	19	43
MA	7	511	F	-0.06	0.60	0.37	M	0.06	-0.32	0.29	0.92	0.47	1.97	138	0.05	4.00	0.05	1.21	19	44
MA	7	616	F	-0.02	-1.49	0.24	M	0.02	-1.63	0.24	0.14	0.34	0.40	146	0.69	0.02	0.88	0.12	19	45
MA	7	562	F	0.10	-0.96	0.17	M	-0.10	-0.47	0.19	-0.49	0.26	-1.89	143	0.06	2.52	0.11	-0.63	19	46
MA	7	533	F	0.07	-1.03	0.25	M	-0.08	-0.21	0.29	-0.81	0.38	-2.12	140	0.04	2.98	0.08	-0.80	19	47

MA	7	467	F	0.01	0.41	0.25	M	-0.01	0.48	0.28	-0.07	0.38	-0.20	144	0.85	1.65	0.20	-0.79	19	48
MA	7	471	F	0.00	1.08	0.43	M	0.00	1.21	0.47	-0.12	0.64	-0.19	144	0.85	2.05	0.15	2.41	19	49
MA	7	543	F	-0.01	0.75	0.38	M	0.01	0.53	0.37	0.23	0.53	0.43	146	0.67	0.38	0.54	0.65	19	50
MA	7	474	F	0.00	0.27	0.33	M	0.00	0.27	0.34	0.00	0.47	0.00	146	1.00	0.03	0.86	0.05	19	51
MA	7	565	F	0.03	-1.15	0.24	M	-0.03	-0.89	0.26	-0.26	0.35	-0.73	145	0.46	0.43	0.51	-0.37	19	52
MA	7	522	F	-0.01	0.73	0.38	M	0.01	0.53	0.37	0.21	0.53	0.39	145	0.70	0.04	0.83	0.07	19	53
MA	7	489	F	0.01	-0.47	0.27	M	-0.01	-0.38	0.28	-0.09	0.39	-0.24	144	0.81	1.12	0.29	-0.60	19	54
MA	7	540	F	-0.02	-0.95	0.25	M	0.02	-1.14	0.25	0.19	0.35	0.55	144	0.59	0.67	0.41	0.46	19	55
MA	7	1568	F	-0.01	-1.38	0.24	M	0.01	-1.45	0.25	0.07	0.35	0.22	144	0.83	0.31	0.58	-0.28	19	56
MA	7	523	F	0.04	-1.84	0.24	M	-0.05	-1.45	0.25	-0.39	0.35	-1.14	144	0.26	1.77	0.18	-0.70	19	57
MA	7	527	F	0.03	-0.69	0.26	M	-0.03	-0.38	0.28	-0.31	0.39	-0.79	143	0.43	0.00	0.99	-0.12	19	58
MA	7	1241	F	-0.04	-0.95	0.25	M	0.05	-1.35	0.25	0.40	0.35	1.13	143	0.26	0.99	0.32	0.49	19	59
MA	7	1244	F	-0.01	0.34	0.34	M	0.01	0.16	0.33	0.18	0.47	0.38	143	0.70	0.02	0.88	-0.05	19	60
MA	7	1264	F	0.01	1.51	0.52	M	-0.01	1.76	0.60	-0.25	0.80	-0.32	140	0.75	0.03	0.86	0.32	19	61
MA	7	1259	F	0.00	-0.40	0.28	M	0.00	-0.40	0.28	0.00	0.40	0.00	143	1.00	0.16	0.69	0.28	19	62
MA	7	1065	F	-0.05	-1.01	0.25	M	0.05	-1.47	0.25	0.46	0.35	1.31	143	0.19	0.48	0.49	0.32	19	63
MA	8	602	F	-0.04	0.23	0.31	M	0.03	-0.27	0.27	0.50	0.41	1.22	162	0.22	0.37	0.54	0.40	19	1
MA	8	594	F	0.03	-0.48	0.26	M	-0.03	-0.12	0.28	-0.36	0.38	-0.94	166	0.35	0.14	0.71	-0.22	19	2
MA	8	593	F	-0.03	-0.27	0.27	M	0.03	-0.61	0.25	0.34	0.37	0.92	165	0.36	1.16	0.28	0.52	19	3
MA	8	583	F	0.02	0.55	0.22	M	-0.02	0.75	0.23	-0.19	0.31	-0.61	166	0.54	0.40	0.53	-0.26	19	4
MA	8	544	F	-0.01	-0.27	0.27	M	0.01	-0.34	0.27	0.07	0.38	0.19	166	0.85	0.03	0.87	0.02	19	5
MA	8	604	F	0.03	-0.79	0.24	M	-0.03	-0.48	0.26	-0.31	0.35	-0.88	166	0.38	0.39	0.53	-0.35	19	6
MA	8	1556	F	-0.01	2.13	0.86	M	0.01	1.38	0.58	0.75	1.04	0.72	144	0.47				19	7
MA	8	597	F	-0.10	-0.73	0.25	M	0.09	-1.59	0.22	0.86	0.33	2.59	165	0.01	5.30	0.02	0.92	19	8
MA	8	1236	F	0.06	-0.61	0.25	M	-0.06	0.14	0.30	-0.75	0.39	-1.89	162	0.06	5.40	0.02	-1.20	19	9
MA	8	569	F	0.08	-0.96	0.24	M	-0.08	-0.04	0.29	-0.92	0.37	-2.48	161	0.01	2.92	0.09	-0.82	19	10
MA	8	1230	F	-0.05	-0.61	0.25	M	0.05	-1.13	0.23	0.52	0.34	1.52	165	0.13	1.78	0.18	0.58	19	11
MA	8	1135	F	0.02	0.64	0.35	M	-0.02	1.28	0.50	-0.65	0.61	-1.06	151	0.29	1.11	0.29	-1.36	19	12
MA	8	590	F	0.01	0.69	0.37	M	-0.01	0.82	0.38	-0.13	0.53	-0.25	166	0.80	0.62	0.43	0.67	19	13
MA	8	573	F	0.05	-0.41	0.26	M	-0.05	0.23	0.31	-0.64	0.41	-1.58	162	0.12	2.96	0.09	-0.79	19	14
MA	8	596	F	-0.08	-1.13	0.23	M	0.08	-1.84	0.22	0.71	0.32	2.21	166	0.03	1.05	0.30	0.43	19	15
MA	8	615	F	0.02	-0.34	0.27	M	-0.02	-0.04	0.29	-0.30	0.39	-0.78	166	0.44	0.02	0.88	0.03	19	16
MA	8	531	F	-0.05	0.44	0.34	M	0.05	-0.34	0.27	0.79	0.43	1.84	157	0.07	2.98	0.08	0.93	19	17
MA	8	601	F	0.01	0.14	0.30	M	-0.01	0.33	0.32	-0.19	0.44	-0.44	166	0.66	0.08	0.78	-0.27	19	18
MA	8	618	F	0.04	-2.29	0.24	M	-0.04	-1.94	0.23	-0.34	0.33	-1.05	166	0.30	0.62	0.43	-0.39	19	19
MA	8	1138	F	0.01	1.41	0.49	M	-0.01	1.92	0.66	-0.50	0.82	-0.61	156	0.54	0.48	0.49	-0.70	19	20
MA	8	620	F	-0.01	2.39	0.73	M	0.01	1.91	0.60	0.48	0.95	0.50	159	0.62	0.01	0.93	0.81	19	21
MA	8	607	F	-0.14	-0.12	0.28	M	0.13	-1.49	0.22	1.37	0.36	3.80	157	0.00	5.95	0.01	1.05	19	22
MA	8	1270	F	-0.02	0.33	0.32	M	0.02	0.05	0.30	0.29	0.44	0.65	165	0.51	0.77	0.38	0.63	19	23
MA	8	1273	F	-0.04	0.56	0.35	M	0.04	-0.13	0.28	0.69	0.45	1.54	158	0.12	1.02	0.31	0.68	19	24
MA	8	576	F	-0.01	0.56	0.35	M	0.01	0.43	0.33	0.13	0.48	0.27	165	0.79	0.17	0.68	0.48	19	25
MA	8	1269	F	0.09	-1.44	0.23	M	-0.09	-0.56	0.25	-0.88	0.34	-2.58	164	0.01	3.33	0.07	-0.74	19	26
MA	8	1464	F	-0.01	0.56	0.35	M	0.01	0.43	0.33	0.13	0.48	0.27	165	0.79	0.06	0.80	-0.34	19	27
MA	8	582	F	0.06	-0.04	0.29	M	-0.06	1.14	0.43	-1.18	0.52	-2.26	145	0.03	5.53	0.02	-1.60	19	28
MA	8	548	F	0.01	1.63	0.53	M	-0.01	2.33	0.72	-0.71	0.90	-0.79	153	0.43	0.18	0.67	0.13	19	29
MA	8	598	F	-0.01	-0.79	0.24	M	0.01	-0.93	0.24	0.14	0.34	0.40	165	0.69	0.06	0.80	0.14	19	30
MA	8	617	F	0.03	-0.48	0.26	M	-0.03	-0.05	0.29	-0.43	0.39	-1.10	164	0.27	0.00	0.95	-0.11	19	31
MA	8	591	F	-0.01	1.63	0.53	M	0.01	1.14	0.43	0.49	0.69	0.71	159	0.48	0.16	0.69	0.02	19	32

MA	8	613	F	0.05	0.22	0.20	M	-0.05	0.65	0.24	-0.44	0.32	-1.37	161	0.17	2.28	0.13	-0.74	19	33
MA	8	592	F	-0.01	-0.68	0.25	M	0.01	-0.76	0.25	0.08	0.35	0.22	163	0.83	0.01	0.92	0.03	19	34
MA	8	621	F	0.02	-1.30	0.23	M	-0.02	-1.16	0.23	-0.14	0.33	-0.44	163	0.66	0.02	0.90	-0.11	19	35
MA	8	1218	F	0.01	1.37	0.48	M	-0.01	1.90	0.60	-0.53	0.77	-0.69	157	0.49	0.06	0.81	0.11	19	36
MA	8	529	F	0.05	-0.62	0.25	M	-0.05	0.03	0.30	-0.65	0.39	-1.66	160	0.10	2.71	0.10	-1.14	19	37
MA	8	1141	F	0.04	-1.09	0.23	M	-0.04	-0.70	0.25	-0.39	0.34	-1.14	163	0.26	0.06	0.80	-0.17	19	38
MA	8	584	F	-0.05	0.04	0.30	M	0.05	-0.57	0.26	0.61	0.39	1.56	159	0.12	0.34	0.56	0.37	19	39
MA	8	1695	F	0.01	0.55	0.35	M	-0.01	0.80	0.38	-0.25	0.52	-0.49	162	0.63	0.00	0.94	-0.22	19	40
MA	8	566	F	0.05	-0.62	0.25	M	-0.05	-0.06	0.29	-0.56	0.38	-1.46	161	0.15	0.00	0.96	-0.07	19	41
MA	8	1268	F	0.00	3.12	1.02	M	0.00	3.05	1.01	0.07	1.44	0.05	163	0.96	0.50	0.48	-0.11	19	42
MA	8	1465	F	-0.01	0.98	0.41	M	0.01	0.80	0.38	0.17	0.56	0.31	162	0.76	0.24	0.62	-0.74	19	43
MA	8	1228	F	0.00	-0.74	0.25	M	0.00	-0.70	0.25	-0.04	0.35	-0.13	163	0.90	0.02	0.88	-0.01	19	44
MA	8	588	F	-0.02	3.12	1.03	M	0.02	1.59	0.52	1.54	1.15	1.34	120	0.18	0.32	0.57	2.12	19	45
MA	8	612	F	-0.01	0.13	0.30	M	0.01	-0.06	0.29	0.19	0.42	0.45	163	0.65	0.26	0.61	0.58	19	46
MA	8	542	F	-0.02	1.62	0.53	M	0.02	0.96	0.41	0.66	0.67	0.99	152	0.32	0.21	0.65	0.50	19	47
MA	8	1274	F	0.07	-0.86	0.24	M	-0.07	-0.06	0.29	-0.80	0.38	-2.13	159	0.03	3.83	0.05	-0.95	19	48
MA	8	1467	F	-0.01	-0.42	0.26	M	0.01	-0.57	0.26	0.15	0.37	0.41	163	0.69	0.00	0.99	-0.10	19	49
MA	8	600	F	0.04	-1.72	0.23	M	-0.04	-1.37	0.23	-0.35	0.32	-1.07	163	0.28	0.14	0.71	-0.20	19	50
MA	8	614	F	0.03	-1.46	0.23	M	-0.03	-1.16	0.23	-0.30	0.33	-0.92	163	0.36	0.93	0.33	-0.40	19	51
MA	8	586	F	-0.01	-0.56	0.25	M	0.01	-0.70	0.25	0.14	0.36	0.40	163	0.69	0.02	0.88	0.01	19	52
MA	8	1466	F	0.01	0.55	0.35	M	-0.01	0.66	0.36	-0.11	0.50	-0.22	163	0.82	0.01	0.92	-0.26	19	53
MA	8	608	F	0.03	-1.72	0.23	M	-0.03	-1.48	0.23	-0.24	0.32	-0.75	163	0.45	0.64	0.42	-0.34	19	54
MA	8	611	F	-0.04	-0.68	0.25	M	0.04	-1.11	0.23	0.42	0.34	1.24	163	0.22	0.97	0.33	0.44	19	55
MA	8	556	F	0.01	-0.28	0.27	M	-0.01	-0.14	0.28	-0.14	0.39	-0.36	163	0.72	0.04	0.83	-0.18	19	56
MA	8	532	F	-0.08	-0.35	0.27	M	0.08	-1.16	0.23	0.81	0.35	2.28	160	0.02	1.30	0.26	0.50	19	57
MA	8	530	F	-0.08	-0.56	0.25	M	0.08	-1.32	0.23	0.76	0.34	2.23	161	0.03	4.67	0.03	0.89	19	58
MA	8	603	F	-0.03	-0.56	0.25	M	0.03	-0.82	0.24	0.26	0.35	0.75	163	0.46	2.72	0.10	0.77	19	59
MA	8	599	F	0.02	0.13	0.30	M	-0.02	0.54	0.35	-0.41	0.46	-0.89	161	0.38	1.10	0.29	-0.88	19	60
MA	8	589	F	-0.05	-1.20	0.23	M	0.05	-1.63	0.23	0.44	0.32	1.34	163	0.18	1.20	0.27	0.46	19	61
MA	8	1140	F	0.00	3.12	1.02	M	0.00	3.05	1.01	0.07	1.44	0.05	163	0.96	0.00	1.00		19	62

Appendix Table I.6:Mathematics: DIF Survey

													Rasch-Welch			Mantel		Size Active ITEM		
subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
MA	3	178	0	-0.03	-3.28	0.47	1	0.01	-3.94	0.31	0.66	0.57	1.17	123	0.25	0.53	0.47	0.60	28	1
MA	3	182	0	-0.02	-0.45	0.27	1	0.00	-0.52	0.14	0.07	0.30	0.23	98	0.82	0.14	0.71	0.20	28	2
MA	3	206	0	-0.03	-1.49	0.28	1	0.01	-1.67	0.15	0.18	0.32	0.56	101	0.58	0.01	0.91	0.10	28	3
MA	3	1303	0	-0.09	2.80	0.61	1	0.02	1.37	0.19	1.43	0.64	2.26	75	0.03	4.49	0.03	1.80	28	4
MA	3	225	0	0.02	0.24	0.29	1	-0.01	0.38	0.15	-0.15	0.33	-0.45	100	0.65	0.65	0.42	-0.35	28	5
MA	3	1516	0	-0.04	1.27	0.22	1	0.01	1.11	0.11	0.15	0.24	0.62	98	0.54	0.09	0.76	0.17	28	6
MA	3	215	0	0.01	-2.74	0.39	1	0.00	-2.61	0.19	-0.13	0.43	-0.29	95	0.77	0.02	0.88	-0.04	28	7

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	3	169	0	-0.07	-0.52	0.27	1	0.02	-0.95	0.14	0.42	0.30	1.39	99	0.17	1.63	0.20	0.48	28	8
MA	3	1434	0	-0.02	1.82	0.42	1	0.00	1.60	0.20	0.22	0.47	0.47	94	0.64	0.04	0.85	0.22	28	9
MA	3	231	0	-0.06	0.08	0.28	1	0.02	-0.29	0.14	0.36	0.31	1.16	96	0.25	1.03	0.31	0.44	28	10
MA	3	219	0	0.02	1.36	0.37	1	-0.01	1.64	0.21	-0.28	0.42	-0.67	106	0.50	0.01	0.91	-0.18	28	11
MA	3	202	0	0.02	-2.74	0.39	1	-0.01	-2.47	0.18	-0.26	0.43	-0.61	92	0.54	0.63	0.43	-0.51	28	12
MA	3	221	0	0.06	-0.08	0.28	1	-0.02	0.34	0.15	-0.42	0.32	-1.33	103	0.19	0.69	0.41	-0.33	28	13
MA	3	992	0	0.02	2.80	0.61	1	-0.01	3.68	0.46	-0.88	0.76	-1.16	143	0.25	0.47	0.49	-2.22	28	14
MA	3	371	0	0.03	0.41	0.30	1	-0.01	0.60	0.16	-0.19	0.34	-0.57	101	0.57	0.06	0.81	-0.18	28	15
MA	3	173	0	0.01	-0.45	0.27	1	0.00	-0.38	0.14	-0.07	0.30	-0.22	99	0.82	0.15	0.70	0.17	28	16
MA	3	226	0	0.04	0.78	0.32	1	-0.01	1.13	0.18	-0.35	0.36	-0.96	106	0.34	1.04	0.31	-0.46	28	17
MA	3	233	0	-0.02	4.08		1	0.00	2.98	0.39	1.10	1.70	0.65	69	0.52	0.92	0.34		28	18
MA	3	174	0	0.02	-1.18	0.27	1	0.00	-1.08	0.14	-0.10	0.31	-0.32	98	0.75	0.30	0.59	-0.29	28	19
MA	3	1036	0	0.01	2.01	0.45	1	0.00	2.14	0.24	-0.14	0.51	-0.27	103	0.79	0.00	0.96	-0.12	28	20
MA	3	210	0	0.03	0.68	0.31	1	-0.01	0.95	0.17	-0.26	0.35	-0.75	103	0.46	0.17	0.68	-0.22	28	21
MA	3	1437	0	0.03	2.00	0.45	1	-0.01	2.56	0.29	-0.55	0.53	-1.04	119	0.30	0.55	0.46	-0.69	28	22
MA	3	207	0	-0.03	-0.96	0.27	1	0.01	-1.16	0.14	0.20	0.30	0.67	100	0.51	0.94	0.33	0.38	28	23
MA	3	212	0	-0.01	-0.16	0.28	1	0.00	-0.18	0.14	0.03	0.31	0.08	98	0.93	0.02	0.90	-0.02	28	24
MA	3	172	0	0.01	-0.08	0.28	1	0.00	-0.05	0.14	-0.03	0.31	-0.08	99	0.93	0.03	0.85	0.00	28	25
MA	3	198	0	0.05	-2.89	0.41	1	-0.01	-2.35	0.18	-0.55	0.45	-1.23	87	0.22	0.26	0.61	-0.36	28	26
MA	3	368	0	-0.01	0.78	0.32	1	0.00	0.68	0.16	0.11	0.36	0.30	97	0.76	0.00	1.00	0.10	28	27
MA	3	191	0	0.03	-0.23	0.27	1	-0.01	-0.03	0.14	-0.20	0.31	-0.66	100	0.51	0.23	0.64	-0.21	28	28
MA	3	193	0	0.05	-1.41	0.28	1	-0.01	-1.10	0.14	-0.31	0.31	-0.98	96	0.33	0.75	0.39	-0.39	28	29
MA	3	1435	0	-0.04	-1.41	0.28	1	0.01	-1.69	0.15	0.28	0.32	0.88	102	0.38	1.00	0.32	0.47	28	30
MA	3	189	0	-0.02	-2.02	0.31	1	0.01	-2.20	0.17	0.18	0.36	0.50	102	0.62	0.07	0.80	0.18	28	31
MA	3	995	0	-0.01	0.59	0.31	1	0.00	0.48	0.15	0.11	0.34	0.32	97	0.75	0.00	0.95	-0.04	28	32
MA	3	229	0	-0.06	-0.38	0.27	1	0.02	-0.71	0.14	0.33	0.30	1.10	98	0.27	0.81	0.37	0.33	28	33
MA	3	374	0	-0.01	0.68	0.31	1	0.00	0.64	0.16	0.05	0.35	0.13	98	0.90	0.01	0.92	-0.03	28	34
MA	3	184	0	-0.02	-1.92	0.31	1	0.01	-2.09	0.16	0.16	0.35	0.47	101	0.64	0.30	0.58	0.30	28	35
MA	3	186	0	0.05	-0.38	0.27	1	-0.01	-0.07	0.14	-0.31	0.31	-1.02	100	0.31	1.74	0.19	-0.54	28	36
MA	3	1035	0	-0.01	0.41	0.30	1	0.00	0.35	0.15	0.05	0.33	0.16	98	0.87	0.03	0.87	0.01	28	37
MA	3	201	0	0.02	-1.66	0.29	1	-0.01	-1.49	0.15	-0.16	0.33	-0.50	97	0.62	0.31	0.58	-0.24	28	38
MA	3	1439	0	-0.07	-1.11	0.27	1	0.02	-1.54	0.15	0.43	0.31	1.39	103	0.17	1.58	0.21	0.51	28	39
MA	3	211	0	-0.08	2.01	0.45	1	0.02	1.07	0.18	0.94	0.48	1.95	83	0.05	4.61	0.03	1.36	28	40
MA	3	234	0	0.05	1.53	0.30	1	-0.01	1.95	0.19	-0.43	0.35	-1.20	122	0.23	1.06	0.30	-0.84	28	41
MA	3	216	0	0.04	-0.89	0.27	1	-0.01	-0.68	0.14	-0.21	0.30	-0.69	98	0.49	0.46	0.50	-0.25	28	42
MA	3	235	0	-0.06	2.34	0.40	1	0.02	1.70	0.16	0.63	0.43	1.46	83	0.15	3.33	0.07	1.27	28	43
MA	3	209	0	0.02	0.68	0.31	1	0.00	0.84	0.17	-0.15	0.35	-0.43	101	0.67	0.10	0.75	0.21	28	44
MA	3	213	0	0.02	0.16	0.28	1	0.00	0.27	0.15	-0.12	0.32	-0.36	100	0.72	0.24	0.63	-0.27	28	45
MA	3	224	0	0.00	0.24	0.29	1	0.00	0.21	0.15	0.03	0.32	0.08	98	0.94	0.01	0.92	-0.02	28	46

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	3	204	0	-0.15	-0.16	0.28	1	0.04	-1.02	0.14	0.87	0.31	2.81	98	0.01	6.34	0.01	0.85	28	47
MA	3	1438	0	0.02	-0.45	0.27	1	0.00	-0.35	0.14	-0.11	0.30	-0.35	99	0.73	0.01	0.92	-0.03	28	48
MA	3	230	0	-0.04	0.78	0.32	1	0.01	0.50	0.15	0.28	0.35	0.79	95	0.43	0.89	0.35	0.44	28	49
MA	3	190	0	0.07	-2.34	0.34	1	-0.02	-1.76	0.15	-0.58	0.37	-1.55	89	0.13	0.30	0.58	-0.29	28	50
MA	3	180	0	0.06	-0.74	0.27	1	-0.02	-0.37	0.14	-0.37	0.30	-1.24	99	0.22	1.49	0.22	-0.46	28	51
MA	3	1433	0	-0.05	0.59	0.31	1	0.01	0.25	0.15	0.34	0.34	1.00	94	0.32	0.04	0.84	0.14	28	52
MA	3	188	0	0.07	-1.74	0.30	1	-0.02	-1.30	0.14	-0.44	0.33	-1.33	94	0.19	2.76	0.10	-0.67	28	53
MA	3	214	0	-0.03	-0.23	0.27	1	0.01	-0.42	0.14	0.19	0.31	0.63	98	0.53	0.01	0.93	0.03	28	54
MA	3	223	0	0.10	-0.31	0.27	1	-0.03	0.34	0.15	-0.64	0.31	-2.07	105	0.04	2.73	0.10	-0.62	28	55
MA	3	205	0	0.02	0.24	0.29	1	-0.01	0.38	0.15	-0.15	0.33	-0.45	100	0.65	0.03	0.86	-0.12	28	56
MA	3	217	0	0.01	1.11	0.34	1	0.00	1.15	0.18	-0.04	0.39	-0.11	100	0.91	0.38	0.54	-0.33	28	57
MA	3	1305	0	0.06	1.50	0.38	1	-0.02	2.48	0.28	-0.98	0.47	-2.08	137	0.04	0.99	0.32	-0.67	28	58
MA	3	187	0	-0.04	-1.66	0.29	1	0.01	-1.98	0.16	0.33	0.33	0.98	104	0.33	0.53	0.47	0.32	28	59
MA	3	208	0	-0.02	0.08	0.28	1	0.01	-0.05	0.14	0.12	0.32	0.39	98	0.70	0.02	0.90	-0.03	28	60
MA	3	218	0	0.05	0.32	0.29	1	-0.01	0.70	0.16	-0.38	0.33	-1.14	104	0.26	0.05	0.83	-0.13	28	61
MA	3	185	0	0.01	2.22	0.48	1	0.00	2.33	0.26	-0.11	0.55	-0.20	103	0.84	0.14	0.71	-0.52	28	62
MA	4	135	0	-0.08	-0.72	0.26	1	0.02	-1.19	0.15	0.47	0.30	1.58	106	0.12	1.40	0.24	0.50	25	1
MA	4	140	0	-0.02	-1.56	0.27	1	0.00	-1.67	0.16	0.11	0.31	0.34	108	0.74	0.17	0.68	0.21	25	2
MA	4	109	0	-0.02	-0.72	0.26	1	0.01	-0.85	0.14	0.14	0.30	0.46	105	0.65	0.65	0.42	0.31	25	3
MA	4	257	0	-0.06	0.85	0.34	1	0.02	0.36	0.16	0.49	0.38	1.30	95	0.20	1.26	0.26	0.53	25	4
MA	4	157	0	-0.01	-0.07	0.28	1	0.00	-0.11	0.15	0.05	0.32	0.14	104	0.89	0.00	0.96	0.07	25	5
MA	4	236	0	-0.05	0.09	0.29	1	0.02	-0.24	0.15	0.33	0.32	1.02	101	0.31	0.71	0.40	0.36	25	6
MA	4	170	0	0.00	-0.29	0.27	1	0.00	-0.29	0.15	0.00	0.31	0.00	105	1.00	0.01	0.91	-0.02	25	7
MA	4	1009	0	-0.02	0.74	0.33	1	0.01	0.59	0.17	0.16	0.37	0.42	101	0.68	0.62	0.43	0.42	25	8
MA	4	262	0	-0.07	-1.00	0.16	1	0.02	-1.15	0.09	0.15	0.19	0.81	107	0.42	0.42	0.51	0.19	25	9
MA	4	238	0	0.08	-0.58	0.26	1	-0.02	-0.08	0.15	-0.50	0.30	-1.64	109	0.10	0.39	0.53	-0.26	25	10
MA	4	268	0	0.07	-1.79	0.28	1	-0.02	-1.32	0.15	-0.47	0.32	-1.47	101	0.15	1.02	0.31	-0.40	25	11
MA	4	276	0	0.01	0.26	0.29	1	0.00	0.30	0.16	-0.04	0.34	-0.11	105	0.91	0.03	0.87	-0.13	25	12
MA	4	244	0	0.00	3.72	1.02	1	0.00	3.77	0.59	-0.05	1.18	-0.05	109	0.96	0.02	0.90		25	13
MA	4	1441	0	0.00	-0.06	0.28	1	0.00	-0.06	0.15	0.00	0.32	0.00	105	1.00	0.16	0.69	0.19	25	14
MA	4	166	0	0.01	0.54	0.31	1	0.00	0.65	0.17	-0.11	0.36	-0.31	106	0.76	0.00	0.95	-0.05	25	15
MA	4	247	0	-0.02	0.26	0.29	1	0.01	0.08	0.16	0.18	0.33	0.53	102	0.60	1.19	0.27	0.41	25	16
MA	4	171	0	-0.07	0.74	0.33	1	0.02	0.21	0.16	0.53	0.37	1.46	95	0.15	0.95	0.33	0.48	25	17
MA	4	1005	0	-0.02	-0.99	0.26	1	0.00	-1.09	0.15	0.09	0.30	0.31	106	0.75	0.02	0.89	0.01	25	18
MA	4	254	0	0.02	0.35	0.30	1	0.00	0.47	0.17	-0.12	0.34	-0.36	106	0.72	0.13	0.72	-0.19	25	19
MA	4	1451	0	-0.01	1.96	0.48	1	0.00	1.80	0.25	0.16	0.54	0.29	99	0.77	0.01	0.93	0.23	25	20
MA	4	239	0	-0.03	3.72	1.02	1	0.01	2.42	0.32	1.30	1.07	1.22	76	0.23	0.70	0.40		25	21
MA	4	165	0	0.07	-0.44	0.27	1	-0.02	-0.01	0.15	-0.43	0.31	-1.39	109	0.17	1.00	0.32	-0.36	25	22
MA	4	1982	0	0.00	-1.05	0.26	1	0.00	-1.05	0.15	0.00	0.30	0.00	106	1.00	0.02	0.89	0.01	25	23

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	4	265	0	0.06	-1.20	0.26	1	-0.02	-0.83	0.14	-0.37	0.30	-1.21	105	0.23	0.92	0.34	-0.32	25	24
MA	4	259	0	0.02	0.44	0.31	1	-0.01	0.65	0.17	-0.21	0.35	-0.58	108	0.56	0.75	0.39	-0.36	25	25
MA	4	256	0	0.02	0.44	0.31	1	-0.01	0.62	0.17	-0.18	0.35	-0.50	107	0.62	0.13	0.71	-0.20	25	26
MA	4	250	0	0.00	-0.22	0.27	1	0.00	-0.22	0.15	0.00	0.31	0.00	105	1.00	0.02	0.89	0.01	25	27
MA	4	164	0	0.01	0.01	0.28	1	0.00	0.05	0.15	-0.04	0.32	-0.12	105	0.91	0.06	0.80	-0.14	25	28
MA	4	1006	0	-0.05	0.44	0.31	1	0.01	0.11	0.16	0.33	0.34	0.96	99	0.34	0.53	0.47	0.33	25	29
MA	4	263	0	0.00	-0.52	0.27	1	0.00	-0.52	0.15	0.00	0.30	0.00	105	1.00	0.01	0.92	-0.02	25	30
MA	4	261	0	0.00	-0.22	0.27	1	0.00	-0.22	0.15	0.00	0.31	0.00	105	1.00	0.00	0.99	-0.06	25	31
MA	4	1443	0	0.06	-0.37	0.27	1	-0.02	0.04	0.15	-0.40	0.31	-1.30	109	0.20	3.21	0.07	-0.58	25	32
MA	4	168	0	0.03	0.01	0.28	1	-0.01	0.21	0.16	-0.20	0.32	-0.61	107	0.54	0.22	0.64	-0.20	25	33
MA	4	163	0	-0.03	-1.34	0.27	1	0.01	-1.52	0.15	0.18	0.31	0.60	108	0.55	0.02	0.90	0.10	25	34
MA	4	103	0	0.04	-0.44	0.27	1	-0.01	-0.17	0.15	-0.27	0.31	-0.87	107	0.39	1.19	0.28	-0.43	25	35
MA	4	245	0	0.04	-0.44	0.27	1	-0.01	-0.17	0.15	-0.27	0.31	-0.87	107	0.39	0.35	0.55	-0.25	25	36
MA	4	167	0	0.06	-1.34	0.27	1	-0.02	-0.96	0.14	-0.38	0.30	-1.25	104	0.21	2.24	0.13	-0.54	25	37
MA	4	1010	0	0.02	2.54	0.61	1	-0.01	3.79	0.59	-1.25	0.84	-1.48	188	0.14	2.11	0.15	-1.87	25	38
MA	4	277	0	0.06	-0.37	0.27	1	-0.02	-0.01	0.15	-0.36	0.31	-1.15	108	0.25	1.75	0.19	-0.56	25	39
MA	4	240	0	0.04	1.10	0.36	1	-0.01	1.68	0.24	-0.58	0.43	-1.34	123	0.18	0.80	0.37	-0.50	25	40
MA	4	264	0	-0.08	0.74	0.33	1	0.02	0.11	0.16	0.63	0.36	1.74	94	0.09	1.43	0.23	0.54	25	41
MA	4	154	0	0.09	-1.27	0.27	1	-0.03	-0.77	0.14	-0.50	0.30	-1.65	104	0.10	4.58	0.03	-0.77	25	42
MA	4	1981	0	0.00	-1.34	0.27	1	0.00	-1.34	0.15	0.00	0.31	0.00	106	1.00	0.06	0.81	0.14	25	43
MA	4	271	0	-0.04	-0.58	0.26	1	0.01	-0.79	0.14	0.21	0.30	0.71	105	0.48	0.33	0.56	0.25	25	44
MA	4	253	0	-0.05	1.55	0.42	1	0.02	0.94	0.19	0.62	0.46	1.34	90	0.18	0.54	0.46	0.46	25	45
MA	4	375	0	-0.08	0.70	0.23	1	0.02	0.37	0.12	0.32	0.26	1.25	100	0.22	2.46	0.12	0.50	25	46
MA	4	1444	0	-0.09	0.97	0.35	1	0.03	0.21	0.16	0.76	0.38	1.99	91	0.05	1.86	0.17	0.74	25	47
MA	4	267	0	-0.01	-1.13	0.26	1	0.00	-1.18	0.15	0.05	0.30	0.16	106	0.87	0.02	0.88	0.01	25	48
MA	4	242	0	-0.02	-2.04	0.30	1	0.00	-2.17	0.17	0.12	0.34	0.36	110	0.72	0.08	0.78	0.18	25	49
MA	4	274	0	0.01	-0.07	0.28	1	0.00	-0.04	0.15	-0.03	0.32	-0.08	105	0.94	0.02	0.88	-0.11	25	50
MA	4	246	0	-0.01	1.24	0.38	1	0.00	1.12	0.20	0.11	0.43	0.26	101	0.79	0.03	0.87	-0.04	25	51
MA	4	1440	0	-0.04	-0.29	0.27	1	0.01	-0.54	0.15	0.25	0.31	0.80	103	0.42	0.31	0.57	0.24	25	52
MA	4	373	0	0.03	-0.22	0.27	1	-0.01	-0.01	0.15	-0.21	0.31	-0.67	107	0.51	0.03	0.87	-0.11	25	53
MA	4	278	0	0.00	0.74	0.33	1	0.00	0.74	0.18	0.00	0.37	0.00	104	1.00	0.10	0.75	0.23	25	54
MA	4	1007	0	-0.01	0.35	0.30	1	0.00	0.28	0.16	0.07	0.34	0.21	103	0.84	0.01	0.91	-0.11	25	55
MA	4	377	0	0.04	-0.65	0.26	1	-0.01	-0.41	0.15	-0.24	0.30	-0.78	106	0.44	0.18	0.67	-0.19	25	56
MA	4	243	0	0.04	0.09	0.29	1	-0.01	0.42	0.17	-0.32	0.33	-0.98	110	0.33	0.45	0.50	-0.30	25	57
MA	4	378	0	-0.06	0.01	0.28	1	0.02	-0.39	0.15	0.40	0.32	1.26	101	0.21	2.71	0.10	0.81	25	58
MA	4	241	0	0.01	0.09	0.29	1	0.00	0.12	0.16	-0.03	0.33	-0.10	105	0.92	0.05	0.82	0.14	25	59
MA	4	252	0	-0.01	2.98	0.73	1	0.00	2.64	0.35	0.35	0.81	0.43	94	0.67	0.24	0.63		25	60
MA	4	258	0	-0.01	-0.37	0.27	1	0.00	-0.42	0.15	0.05	0.31	0.17	104	0.86	0.03	0.86	0.11	25	61
MA	4	249	0	0.00	-0.79	0.26	1	0.00	-0.79	0.14	0.00	0.30	0.00	105	1.00	0.15	0.70	0.19	25	62

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	4	1447	0	0.09	-2.54	0.34	1	-0.03	-1.81	0.16	-0.73	0.37	-1.95	93	0.05	2.99	0.08	-0.73	25	63
MA	5	135	0	-0.08	-0.72	0.26	1	0.02	-1.19	0.15	0.47	0.30	1.58	106	0.12	1.40	0.24	0.50	25	1
MA	5	140	0	-0.02	-1.56	0.27	1	0.00	-1.67	0.16	0.11	0.31	0.34	108	0.74	0.17	0.68	0.21	25	2
MA	5	109	0	-0.02	-0.72	0.26	1	0.01	-0.85	0.14	0.14	0.30	0.46	105	0.65	0.65	0.42	0.31	25	3
MA	5	257	0	-0.06	0.85	0.34	1	0.02	0.36	0.16	0.49	0.38	1.30	95	0.20	1.26	0.26	0.53	25	4
MA	5	157	0	-0.01	-0.07	0.28	1	0.00	-0.11	0.15	0.05	0.32	0.14	104	0.89	0.00	0.96	0.07	25	5
MA	5	236	0	-0.05	0.09	0.29	1	0.02	-0.24	0.15	0.33	0.32	1.02	101	0.31	0.71	0.40	0.36	25	6
MA	5	170	0	0.00	-0.29	0.27	1	0.00	-0.29	0.15	0.00	0.31	0.00	105	1.00	0.01	0.91	-0.02	25	7
MA	5	1009	0	-0.02	0.74	0.33	1	0.01	0.59	0.17	0.16	0.37	0.42	101	0.68	0.62	0.43	0.42	25	8
MA	5	262	0	-0.07	-1.00	0.16	1	0.02	-1.15	0.09	0.15	0.19	0.81	107	0.42	0.42	0.51	0.19	25	9
MA	5	238	0	0.08	-0.58	0.26	1	-0.02	-0.08	0.15	-0.50	0.30	-1.64	109	0.10	0.39	0.53	-0.26	25	10
MA	5	268	0	0.07	-1.79	0.28	1	-0.02	-1.32	0.15	-0.47	0.32	-1.47	101	0.15	1.02	0.31	-0.40	25	11
MA	5	276	0	0.01	0.26	0.29	1	0.00	0.30	0.16	-0.04	0.34	-0.11	105	0.91	0.03	0.87	-0.13	25	12
MA	5	244	0	0.00	3.72	1.02	1	0.00	3.77	0.59	-0.05	1.18	-0.05	109	0.96	0.02	0.90		25	13
MA	5	1441	0	0.00	-0.06	0.28	1	0.00	-0.06	0.15	0.00	0.32	0.00	105	1.00	0.16	0.69	0.19	25	14
MA	5	166	0	0.01	0.54	0.31	1	0.00	0.65	0.17	-0.11	0.36	-0.31	106	0.76	0.00	0.95	-0.05	25	15
MA	5	247	0	-0.02	0.26	0.29	1	0.01	0.08	0.16	0.18	0.33	0.53	102	0.60	1.19	0.27	0.41	25	16
MA	5	171	0	-0.07	0.74	0.33	1	0.02	0.21	0.16	0.53	0.37	1.46	95	0.15	0.95	0.33	0.48	25	17
MA	5	1005	0	-0.02	-0.99	0.26	1	0.00	-1.09	0.15	0.09	0.30	0.31	106	0.75	0.02	0.89	0.01	25	18
MA	5	254	0	0.02	0.35	0.30	1	0.00	0.47	0.17	-0.12	0.34	-0.36	106	0.72	0.13	0.72	-0.19	25	19
MA	5	1451	0	-0.01	1.96	0.48	1	0.00	1.80	0.25	0.16	0.54	0.29	99	0.77	0.01	0.93	0.23	25	20
MA	5	239	0	-0.03	3.72	1.02	1	0.01	2.42	0.32	1.30	1.07	1.22	76	0.23	0.70	0.40		25	21
MA	5	165	0	0.07	-0.44	0.27	1	-0.02	-0.01	0.15	-0.43	0.31	-1.39	109	0.17	1.00	0.32	-0.36	25	22
MA	5	1982	0	0.00	-1.05	0.26	1	0.00	-1.05	0.15	0.00	0.30	0.00	106	1.00	0.02	0.89	0.01	25	23
MA	5	265	0	0.06	-1.20	0.26	1	-0.02	-0.83	0.14	-0.37	0.30	-1.21	105	0.23	0.92	0.34	-0.32	25	24
MA	5	259	0	0.02	0.44	0.31	1	-0.01	0.65	0.17	-0.21	0.35	-0.58	108	0.56	0.75	0.39	-0.36	25	25
MA	5	256	0	0.02	0.44	0.31	1	-0.01	0.62	0.17	-0.18	0.35	-0.50	107	0.62	0.13	0.71	-0.20	25	26
MA	5	250	0	0.00	-0.22	0.27	1	0.00	-0.22	0.15	0.00	0.31	0.00	105	1.00	0.02	0.89	0.01	25	27
MA	5	164	0	0.01	0.01	0.28	1	0.00	0.05	0.15	-0.04	0.32	-0.12	105	0.91	0.06	0.80	-0.14	25	28
MA	5	1006	0	-0.05	0.44	0.31	1	0.01	0.11	0.16	0.33	0.34	0.96	99	0.34	0.53	0.47	0.33	25	29
MA	5	263	0	0.00	-0.52	0.27	1	0.00	-0.52	0.15	0.00	0.30	0.00	105	1.00	0.01	0.92	-0.02	25	30
MA	5	261	0	0.00	-0.22	0.27	1	0.00	-0.22	0.15	0.00	0.31	0.00	105	1.00	0.00	0.99	-0.06	25	31
MA	5	1443	0	0.06	-0.37	0.27	1	-0.02	0.04	0.15	-0.40	0.31	-1.30	109	0.20	3.21	0.07	-0.58	25	32
MA	5	168	0	0.03	0.01	0.28	1	-0.01	0.21	0.16	-0.20	0.32	-0.61	107	0.54	0.22	0.64	-0.20	25	33
MA	5	163	0	-0.03	-1.34	0.27	1	0.01	-1.52	0.15	0.18	0.31	0.60	108	0.55	0.02	0.90	0.10	25	34
MA	5	103	0	0.04	-0.44	0.27	1	-0.01	-0.17	0.15	-0.27	0.31	-0.87	107	0.39	1.19	0.28	-0.43	25	35
MA	5	245	0	0.04	-0.44	0.27	1	-0.01	-0.17	0.15	-0.27	0.31	-0.87	107	0.39	0.35	0.55	-0.25	25	36
MA	5	167	0	0.06	-1.34	0.27	1	-0.02	-0.96	0.14	-0.38	0.30	-1.25	104	0.21	2.24	0.13	-0.54	25	37
MA	5	1010	0	0.02	2.54	0.61	1	-0.01	3.79	0.59	-1.25	0.84	-1.48	188	0.14	2.11	0.15	-1.87	25	38

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	5	277	0	0.06	-0.37	0.27	1	-0.02	-0.01	0.15	-0.36	0.31	-1.15	108	0.25	1.75	0.19	-0.56	25	39
MA	5	240	0	0.04	1.10	0.36	1	-0.01	1.68	0.24	-0.58	0.43	-1.34	123	0.18	0.80	0.37	-0.50	25	40
MA	5	264	0	-0.08	0.74	0.33	1	0.02	0.11	0.16	0.63	0.36	1.74	94	0.09	1.43	0.23	0.54	25	41
MA	5	154	0	0.09	-1.27	0.27	1	-0.03	-0.77	0.14	-0.50	0.30	-1.65	104	0.10	4.58	0.03	-0.77	25	42
MA	5	1981	0	0.00	-1.34	0.27	1	0.00	-1.34	0.15	0.00	0.31	0.00	106	1.00	0.06	0.81	0.14	25	43
MA	5	271	0	-0.04	-0.58	0.26	1	0.01	-0.79	0.14	0.21	0.30	0.71	105	0.48	0.33	0.56	0.25	25	44
MA	5	253	0	-0.05	1.55	0.42	1	0.02	0.94	0.19	0.62	0.46	1.34	90	0.18	0.54	0.46	0.46	25	45
MA	5	375	0	-0.08	0.70	0.23	1	0.02	0.37	0.12	0.32	0.26	1.25	100	0.22	2.46	0.12	0.50	25	46
MA	5	1444	0	-0.09	0.97	0.35	1	0.03	0.21	0.16	0.76	0.38	1.99	91	0.05	1.86	0.17	0.74	25	47
MA	5	267	0	-0.01	-1.13	0.26	1	0.00	-1.18	0.15	0.05	0.30	0.16	106	0.87	0.02	0.88	0.01	25	48
MA	5	242	0	-0.02	-2.04	0.30	1	0.00	-2.17	0.17	0.12	0.34	0.36	110	0.72	0.08	0.78	0.18	25	49
MA	5	274	0	0.01	-0.07	0.28	1	0.00	-0.04	0.15	-0.03	0.32	-0.08	105	0.94	0.02	0.88	-0.11	25	50
MA	5	246	0	-0.01	1.24	0.38	1	0.00	1.12	0.20	0.11	0.43	0.26	101	0.79	0.03	0.87	-0.04	25	51
MA	5	1440	0	-0.04	-0.29	0.27	1	0.01	-0.54	0.15	0.25	0.31	0.80	103	0.42	0.31	0.57	0.24	25	52
MA	5	373	0	0.03	-0.22	0.27	1	-0.01	-0.01	0.15	-0.21	0.31	-0.67	107	0.51	0.03	0.87	-0.11	25	53
MA	5	278	0	0.00	0.74	0.33	1	0.00	0.74	0.18	0.00	0.37	0.00	104	1.00	0.10	0.75	0.23	25	54
MA	5	1007	0	-0.01	0.35	0.30	1	0.00	0.28	0.16	0.07	0.34	0.21	103	0.84	0.01	0.91	-0.11	25	55
MA	5	377	0	0.04	-0.65	0.26	1	-0.01	-0.41	0.15	-0.24	0.30	-0.78	106	0.44	0.18	0.67	-0.19	25	56
MA	5	243	0	0.04	0.09	0.29	1	-0.01	0.42	0.17	-0.32	0.33	-0.98	110	0.33	0.45	0.50	-0.30	25	57
MA	5	378	0	-0.06	0.01	0.28	1	0.02	-0.39	0.15	0.40	0.32	1.26	101	0.21	2.71	0.10	0.81	25	58
MA	5	241	0	0.01	0.09	0.29	1	0.00	0.12	0.16	-0.03	0.33	-0.10	105	0.92	0.05	0.82	0.14	25	59
MA	5	252	0	-0.01	2.98	0.73	1	0.00	2.64	0.35	0.35	0.81	0.43	94	0.67	0.24	0.63		25	60
MA	5	258	0	-0.01	-0.37	0.27	1	0.00	-0.42	0.15	0.05	0.31	0.17	104	0.86	0.03	0.86	0.11	25	61
MA	5	249	0	0.00	-0.79	0.26	1	0.00	-0.79	0.14	0.00	0.30	0.00	105	1.00	0.15	0.70	0.19	25	62
MA	5	1447	0	0.09	-2.54	0.34	1	-0.03	-1.81	0.16	-0.73	0.37	-1.95	93	0.05	2.99	0.08	-0.73	25	63
MA	6	581	0	0.02	0.02	0.24	1	-0.01	0.21	0.22	-0.19	0.33	-0.59	229	0.56	0.31	0.57	-0.30	27	1
MA	6	568	0	0.00	-0.98	0.21	1	0.00	-0.98	0.18	0.00	0.28	0.00	223	1.00	0.00	1.00	0.04	27	2
MA	6	579	0	0.00	-0.75	0.21	1	0.00	-0.75	0.19	0.00	0.28	0.00	223	1.00	0.54	0.46	0.31	27	3
MA	6	470	0	-0.03	0.83	0.29	1	0.02	0.41	0.24	0.42	0.38	1.11	212	0.27	0.91	0.34	0.46	27	4
MA	6	468	0	0.05	-1.11	0.21	1	-0.04	-0.68	0.19	-0.43	0.28	-1.54	225	0.12	0.76	0.38	-0.33	27	5
MA	6	1200	0	0.01	-0.44	0.22	1	-0.01	-0.37	0.20	-0.07	0.30	-0.23	225	0.82	0.07	0.79	-0.14	27	6
MA	6	551	0	-0.06	-0.04	0.23	1	0.05	-0.64	0.19	0.60	0.30	2.00	213	0.05	2.79	0.09	0.63	27	7
MA	6	480	0	-0.01	-0.19	0.23	1	0.00	-0.25	0.20	0.06	0.30	0.19	223	0.85	0.06	0.80	0.13	27	8
MA	6	469	0	-0.03	0.00	0.11	1	0.03	-0.08	0.10	0.08	0.15	0.53	224	0.60	0.53	0.46	0.21	27	9
MA	6	585	0	0.00	1.75	0.40	1	0.00	1.61	0.36	0.14	0.54	0.26	221	0.80	0.00	0.95	0.25	27	10
MA	6	578	0	-0.01	0.02	0.24	1	0.01	-0.09	0.21	0.11	0.32	0.35	222	0.73	0.03	0.87	0.00	27	11
MA	6	1251	0	0.00	2.68	0.60	1	0.00	2.50	0.52	0.18	0.79	0.23	219	0.82	0.26	0.61	1.32	27	12
MA	6	490	0	0.07	-0.81	0.21	1	-0.06	-0.18	0.21	-0.63	0.29	-2.13	230	0.03	4.96	0.03	-0.76	27	13
MA	6	1256	0	0.00	0.08	0.24	1	0.00	0.08	0.22	0.00	0.32	0.00	225	1.00	0.01	0.93	-0.09	27	14

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	6	502	0	-0.04	1.40	0.21	1	0.03	1.09	0.18	0.31	0.27	1.14	216	0.26	0.33	0.56	0.18	27	15
MA	6	484	0	0.02	-0.25	0.22	1	-0.02	0.00	0.21	-0.24	0.31	-0.79	228	0.43	1.18	0.28	-0.41	27	16
MA	6	1131	0	-0.06	0.10	0.11	1	0.05	-0.04	0.10	0.14	0.15	0.90	222	0.37	2.98	0.08	0.71	27	17
MA	6	1062	0	0.00	0.83	0.17	1	0.00	0.83	0.16	0.00	0.23	0.00	227	1.00	0.08	0.78	-0.17	27	18
MA	6	537	0	0.03	-0.81	0.21	1	-0.03	-0.54	0.19	-0.27	0.29	-0.93	225	0.35	0.86	0.35	-0.35	27	19
MA	6	567	0	0.08	-0.63	0.21	1	-0.07	0.19	0.22	-0.82	0.31	-2.64	233	0.01	7.86	0.01	-1.01	27	20
MA	6	577	0	-0.02	0.75	0.28	1	0.02	0.46	0.24	0.29	0.37	0.77	217	0.44	0.24	0.63	0.25	27	21
MA	6	1142	0	-0.03	-0.44	0.22	1	0.02	-0.69	0.19	0.25	0.29	0.85	220	0.40	0.44	0.51	0.27	27	22
MA	6	487	0	-0.04	0.38	0.26	1	0.03	-0.09	0.21	0.47	0.33	1.43	213	0.16	1.73	0.19	0.47	27	23
MA	6	580	0	-0.02	0.38	0.26	1	0.02	0.14	0.22	0.24	0.34	0.71	219	0.48	0.09	0.77	-0.18	27	24
MA	6	526	0	0.01	-0.25	0.22	1	-0.01	-0.18	0.21	-0.07	0.31	-0.22	225	0.83	0.02	0.90	-0.09	27	25
MA	6	1253	0	0.01	0.13	0.24	1	-0.01	0.24	0.23	-0.11	0.33	-0.33	227	0.75	0.05	0.82	-0.15	27	26
MA	6	534	0	-0.04	0.67	0.28	1	0.03	0.14	0.22	0.53	0.36	1.48	210	0.14	0.76	0.38	0.41	27	27
MA	6	1225	0	0.00	1.74	0.40	1	0.00	1.74	0.37	0.00	0.55	0.00	226	1.00	0.08	0.78	0.45	27	28
MA	6	520	0	0.06	-0.25	0.22	1	-0.05	0.46	0.24	-0.71	0.33	-2.14	233	0.03	1.14	0.28	-0.44	27	29
MA	6	499	0	0.00	-0.19	0.23	1	0.00	-0.19	0.21	0.00	0.31	0.00	224	1.00	0.01	0.93	0.02	27	30
MA	6	535	0	0.01	-1.02	0.21	1	-0.01	-0.94	0.18	-0.08	0.28	-0.30	223	0.76	0.00	0.97	-0.06	27	31
MA	6	571	0	0.00	-2.46	0.24	1	0.00	-2.51	0.21	0.05	0.32	0.16	222	0.88	1.67	0.20	0.55	27	32
MA	6	553	0	0.03	-0.39	0.22	1	-0.03	-0.07	0.21	-0.32	0.30	-1.06	229	0.29	0.00	0.98	-0.07	27	33
MA	6	563	0	0.00	-0.67	0.21	1	0.00	-0.67	0.19	0.00	0.28	0.00	223	1.00	0.01	0.93	-0.02	27	34
MA	6	550	0	-0.01	-1.24	0.21	1	0.01	-1.31	0.18	0.07	0.28	0.26	222	0.80	0.04	0.85	-0.11	27	35
MA	6	515	0	-0.04	-0.09	0.23	1	0.03	-0.48	0.19	0.39	0.30	1.28	217	0.20	0.80	0.37	0.35	27	36
MA	6	509	0	-0.02	-0.63	0.21	1	0.02	-0.80	0.19	0.18	0.28	0.62	221	0.54	0.02	0.89	-0.01	27	37
MA	6	495	0	0.01	-1.24	0.21	1	-0.01	-1.14	0.18	-0.10	0.28	-0.34	222	0.73	0.05	0.83	-0.11	27	38
MA	6	574	0	0.05	-0.63	0.21	1	-0.04	-0.16	0.21	-0.47	0.30	-1.59	230	0.11	2.36	0.12	-0.67	27	39
MA	6	478	0	0.04	-0.39	0.22	1	-0.03	0.02	0.21	-0.41	0.31	-1.35	231	0.18	1.29	0.26	-0.46	27	40
MA	6	575	0	0.00	1.33	0.35	1	0.00	1.39	0.33	-0.06	0.47	-0.13	228	0.90	0.01	0.92	-0.29	27	41
MA	6	491	0	-0.01	0.11	0.13	1	0.01	0.11	0.12	0.00	0.18	0.00	225	1.00	0.02	0.89	-0.05	27	42
MA	6	512	0	0.01	0.38	0.26	1	-0.01	0.48	0.24	-0.10	0.35	-0.27	228	0.79	0.90	0.34	-0.46	27	43
MA	6	521	0	-0.05	0.92	0.30	1	0.04	0.21	0.22	0.71	0.37	1.89	202	0.06	2.25	0.13	0.67	27	44
MA	6	1101	0	0.00	-0.63	0.21	1	0.00	-0.63	0.19	0.00	0.29	0.00	223	1.00	0.04	0.85	-0.10	27	45
MA	6	572	0	-0.03	0.08	0.24	1	0.02	-0.24	0.20	0.32	0.31	1.01	218	0.31	0.08	0.78	0.15	27	46
MA	6	476	0	0.00	1.01	0.31	1	0.00	0.94	0.28	0.07	0.42	0.16	224	0.87	0.00	0.96	0.12	27	47
MA	6	1203	0	-0.04	-0.72	0.21	1	0.03	-1.08	0.18	0.36	0.28	1.28	220	0.20	1.86	0.17	0.46	27	48
MA	6	524	0	0.02	1.11	0.32	1	-0.01	1.50	0.34	-0.39	0.47	-0.84	235	0.40	0.52	0.47	-0.56	27	49
MA	6	514	0	0.02	-1.24	0.21	1	-0.02	-1.08	0.18	-0.16	0.28	-0.59	223	0.56	0.01	0.92	-0.02	27	50
MA	6	1063	0	0.02	-1.20	0.21	1	-0.02	-1.04	0.18	-0.15	0.28	-0.55	223	0.58	0.18	0.67	-0.18	27	51
MA	6	570	0	0.02	1.01	0.31	1	-0.02	1.50	0.34	-0.49	0.46	-1.07	235	0.29	0.67	0.41	-0.64	27	52
MA	6	545	0	-0.01	0.45	0.26	1	0.01	0.37	0.23	0.08	0.35	0.24	223	0.81	0.00	0.98	0.07	27	53

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	6	517	0	-0.01	-0.44	0.22	1	0.01	-0.55	0.19	0.11	0.29	0.38	222	0.71	0.05	0.82	0.12	27	54
MA	6	466	0	0.00	0.75	0.28	1	0.00	0.80	0.26	-0.05	0.39	-0.13	227	0.90	0.04	0.84	-0.18	27	55
MA	6	482	0	0.00	1.91	0.43	1	0.00	1.91	0.40	0.00	0.59	0.00	226	1.00	0.03	0.87	0.42	27	56
MA	6	1254	0	0.01	-0.63	0.21	1	-0.01	-0.51	0.19	-0.11	0.29	-0.39	225	0.69	0.00	0.95	-0.03	27	57
MA	7	475	0	-0.06	0.36	0.35	1	0.05	-0.37	0.28	0.74	0.45	1.65	131	0.10	0.57	0.45	0.53	19	1
MA	7	564	0	-0.06	0.36	0.35	1	0.05	-0.37	0.28	0.74	0.45	1.65	131	0.10	1.43	0.23	0.75	19	2
MA	7	1463	0	0.05	-0.57	0.28	1	-0.04	-0.04	0.30	-0.53	0.41	-1.30	143	0.20	0.59	0.44	-0.49	19	3
MA	7	505	0	-0.04	-0.25	0.30	1	0.03	-0.66	0.26	0.41	0.39	1.05	138	0.30	0.31	0.58	0.35	19	4
MA	7	516	0	0.01	0.49	0.37	1	-0.01	0.75	0.39	-0.26	0.53	-0.49	143	0.63	0.83	0.36	-0.99	19	5
MA	7	508	0	-0.06	-1.13	0.26	1	0.05	-1.62	0.24	0.49	0.35	1.39	140	0.17	1.47	0.23	0.50	19	6
MA	7	525	0	-0.02	-0.50	0.28	1	0.02	-0.73	0.26	0.23	0.38	0.61	140	0.54	0.00	0.95	0.14	19	7
MA	7	1134	0	0.01	-1.07	0.26	1	-0.01	-0.98	0.25	-0.08	0.36	-0.23	142	0.82	0.00	1.00	0.09	19	8
MA	7	1066	0	0.01	2.87	1.01	1	-0.01		-1.37	2.09	-0.65	118.00	1	0.02	0.89			19	9
MA	7	488	0	0.07	-0.79	0.27	1	-0.06	-0.04	0.30	-0.75	0.40	-1.87	143	0.06	2.61	0.11	-0.68	19	10
MA	7	477	0	-0.01	0.36	0.35	1	0.01	0.15	0.32	0.22	0.47	0.46	139	0.65	0.03	0.86	0.04	19	11
MA	7	1460	0	-0.01	4.09		1	0.01	3.01	1.01	1.08	2.09	0.51	105	0.61	0.04	0.84		19	12
MA	7	494	0	-0.02	-0.65	0.27	1	0.01	-0.79	0.25	0.15	0.37	0.39	141	0.70	0.04	0.84	0.00	19	13
MA	7	506	0	0.00	0.14	0.33	1	0.00	0.14	0.32	0.00	0.46	0.00	142	1.00	0.00	0.95	0.09	19	14
MA	7	496	0	-0.04	-0.50	0.28	1	0.04	-0.92	0.25	0.42	0.37	1.13	139	0.26	0.99	0.32	0.55	19	15
MA	7	479	0	0.04	-0.07	0.31	1	-0.03	0.48	0.35	-0.55	0.47	-1.17	143	0.24	1.35	0.25	-0.70	19	16
MA	7	483	0	-0.01	0.36	0.35	1	0.01	0.15	0.32	0.22	0.47	0.46	139	0.65	0.62	0.43	0.54	19	17
MA	7	559	0	-0.01	-0.07	0.31	1	0.01	-0.22	0.29	0.15	0.42	0.35	141	0.72	0.14	0.71	-0.27	19	18
MA	7	1560	0	-0.05	1.70	0.40	1	0.04	0.94	0.28	0.75	0.49	1.55	125	0.12	0.55	0.46	0.47	19	19
MA	7	486	0	-0.03	-0.08	0.31	1	0.02	-0.37	0.28	0.30	0.42	0.71	137	0.48	0.00	0.99	0.10	19	20
MA	7	1234	0	0.02	-0.43	0.29	1	-0.02	-0.22	0.29	-0.21	0.40	-0.53	142	0.60	0.00	0.96	-0.13	19	21
MA	7	1247	0	0.03	0.96	0.44	1	-0.02	1.86	0.60	-0.90	0.74	-1.22	135	0.23	0.05	0.83	-0.49	19	22
MA	7	481	0	-0.06	-0.48	0.19	1	0.05	-0.75	0.17	0.27	0.25	1.07	138	0.29	0.75	0.39	0.40	19	23
MA	7	498	0	0.03	-0.95	0.26	1	-0.03	-0.66	0.26	-0.29	0.37	-0.77	141	0.44	0.18	0.67	-0.28	19	24
MA	7	485	0	-0.01	-0.59	0.28	1	0.01	-0.66	0.26	0.07	0.38	0.20	140	0.84	0.14	0.71	0.25	19	25
MA	7	1237	0	-0.03	-0.08	0.31	1	0.03	-0.45	0.27	0.37	0.41	0.90	137	0.37	0.02	0.88	0.18	19	26
MA	7	555	0	0.00	2.87	1.01	1	0.00	3.01	1.01	-0.14	1.43	-0.10	142	0.92	0.13	0.72		19	27
MA	7	557	0	-0.03	-0.51	0.28	1	0.03	-0.82	0.26	0.31	0.38	0.82	138	0.41	0.78	0.38	0.45	19	28
MA	7	552	0	0.05	0.62	0.38	1	-0.04	2.28	0.73	-1.66	0.82	-2.01	114	0.05	0.51	0.48	-1.04	19	29
MA	7	536	0	0.06	-1.54	0.25	1	-0.06	-1.01	0.25	-0.53	0.36	-1.49	140	0.14	1.04	0.31	-0.54	19	30
MA	7	549	0	0.04	-0.51	0.28	1	-0.03	-0.07	0.30	-0.44	0.41	-1.08	142	0.28	0.22	0.64	-0.28	19	31
MA	7	1459	0	-0.04	-0.08	0.31	1	0.04	-0.55	0.27	0.47	0.41	1.14	135	0.25	0.15	0.70	0.26	19	32
MA	7	541	0	-0.04	-0.88	0.26	1	0.03	-1.19	0.24	0.31	0.36	0.87	138	0.39	0.34	0.56	0.32	19	33
MA	7	501	0	-0.02	1.16	0.47	1	0.02	0.59	0.37	0.57	0.60	0.96	129	0.34	0.08	0.78	-0.02	19	34
MA	7	547	0	0.01	-0.42	0.16	1	-0.01	-0.42	0.16	0.00	0.23	0.00	141	1.00	0.05	0.82	0.13	19	35

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	7	513	0	-0.01	4.08		1	0.01	2.27	0.73	1.81	1.97	0.92	86	0.36	1.04	0.31		19	36
MA	7	503	0	0.03	-0.59	0.28	1	-0.02	-0.32	0.28	-0.27	0.40	-0.68	141	0.50	1.33	0.25	-0.61	19	37
MA	7	1461	0	0.05	-0.17	0.30	1	-0.05	0.59	0.37	-0.76	0.48	-1.60	139	0.11	3.92	0.05	-1.47	19	38
MA	7	1252	0	0.02	1.41	0.52	1	-0.02	2.27	0.73	-0.87	0.89	-0.97	133	0.33	0.14	0.71	-0.88	19	39
MA	7	493	0	0.00	-0.53	0.28	1	0.00	-0.53	0.27	0.00	0.39	0.00	140	1.00	0.04	0.85	0.01	19	40
MA	7	1558	0	0.06	-0.59	0.28	1	-0.05	0.13	0.32	-0.71	0.42	-1.69	141	0.09	2.99	0.08	-0.97	19	41
MA	7	561	0	-0.02	-0.08	0.31	1	0.02	-0.32	0.28	0.24	0.42	0.58	138	0.56	0.82	0.37	0.57	19	42
MA	7	492	0	0.05	-0.51	0.28	1	-0.04	0.03	0.31	-0.54	0.42	-1.29	141	0.20	0.32	0.57	-0.35	19	43
MA	7	511	0	0.04	-0.08	0.31	1	-0.03	0.46	0.35	-0.54	0.47	-1.15	141	0.25	0.73	0.39	-0.67	19	44
MA	7	616	0	-0.10	-1.13	0.26	1	0.09	-1.96	0.24	0.82	0.35	2.35	141	0.02	6.05	0.01	0.99	19	45
MA	7	562	0	-0.05	-0.62	0.19	1	0.04	-0.84	0.17	0.22	0.26	0.84	140	0.40	0.82	0.36	0.36	19	46
MA	7	533	0	0.05	-0.86	0.26	1	-0.04	-0.37	0.28	-0.49	0.38	-1.28	143	0.20	1.15	0.28	-0.52	19	47
MA	7	467	0	-0.05	0.78	0.34	1	0.05	0.22	0.23	0.57	0.41	1.39	120	0.17	0.94	0.33	0.65	19	48
MA	7	471	0	0.00	1.17	0.47	1	0.00	1.09	0.44	0.08	0.64	0.13	141	0.90	0.05	0.83	-0.53	19	49
MA	7	543	0	0.01	0.49	0.37	1	-0.01	0.75	0.39	-0.26	0.53	-0.49	143	0.63	0.24	0.63	-0.59	19	50
MA	7	474	0	-0.01	0.36	0.35	1	0.01	0.15	0.32	0.22	0.47	0.46	139	0.65	0.00	0.99	0.15	19	51
MA	7	565	0	0.04	-1.20	0.25	1	-0.03	-0.86	0.25	-0.34	0.36	-0.95	143	0.35	0.02	0.89	0.02	19	52
MA	7	522	0	-0.02	0.79	0.41	1	0.01	0.48	0.35	0.31	0.54	0.58	137	0.57	0.16	0.69	0.50	19	53
MA	7	489	0	-0.03	-0.25	0.30	1	0.03	-0.59	0.26	0.34	0.40	0.87	139	0.39	2.25	0.13	0.71	19	54
MA	7	540	0	0.07	-1.33	0.25	1	-0.06	-0.73	0.26	-0.60	0.36	-1.66	143	0.10	3.68	0.05	-0.96	19	55
MA	7	1568	0	0.05	-1.64	0.25	1	-0.04	-1.22	0.24	-0.42	0.35	-1.21	142	0.23	1.29	0.26	-0.56	19	56
MA	7	523	0	0.05	-1.84	0.25	1	-0.04	-1.45	0.24	-0.39	0.35	-1.11	141	0.27	0.02	0.90	-0.14	19	57
MA	7	527	0	-0.05	-0.25	0.30	1	0.05	-0.79	0.25	0.54	0.39	1.40	137	0.16	2.78	0.10	1.21	19	58
MA	7	1241	0	0.04	-1.33	0.25	1	-0.04	-0.98	0.25	-0.34	0.35	-0.97	142	0.33	0.01	0.93	-0.11	19	59
MA	7	1244	0	0.00	0.25	0.34	1	0.00	0.25	0.33	0.00	0.47	0.00	142	1.00	0.00	0.96	-0.15	19	60
MA	7	1264	0	0.01	1.42	0.52	1	-0.01	1.86	0.60	-0.44	0.80	-0.56	143	0.58	0.00	0.99	0.53	19	61
MA	7	1259	0	0.02	-0.50	0.28	1	-0.02	-0.30	0.28	-0.20	0.40	-0.50	143	0.62	0.22	0.64	-0.31	19	62
MA	7	1065	0	0.02	-1.33	0.25	1	-0.02	-1.16	0.24	-0.16	0.35	-0.47	142	0.64	0.03	0.86	-0.14	19	63
MA	8	602	0	0.02	-0.21	0.27	1	-0.03	0.13	0.31	-0.34	0.41	-0.83	159	0.41	2.25	0.13	-0.75	17	1
MA	8	594	0	0.02	-0.43	0.26	1	-0.02	-0.21	0.28	-0.21	0.38	-0.56	161	0.58	0.22	0.64	-0.26	17	2
MA	8	593	0	0.03	-0.62	0.25	1	-0.04	-0.21	0.28	-0.41	0.37	-1.08	160	0.28	1.11	0.29	-0.46	17	3
MA	8	583	0	-0.06	0.92	0.23	1	0.07	0.36	0.22	0.56	0.32	1.76	163	0.08	4.92	0.03	0.94	17	4
MA	8	544	0	0.07	-0.68	0.25	1	-0.07	0.23	0.32	-0.91	0.40	-2.26	151	0.03	5.10	0.02	-1.08	17	5
MA	8	604	0	-0.02	-0.43	0.26	1	0.03	-0.70	0.25	0.28	0.36	0.76	163	0.45	0.58	0.44	0.40	17	6
MA	8	1556	0	0.01	1.43	0.52	1	-0.01	2.42		-1.00	1.67	-0.60	96	0.55				17	7
MA	8	597	0	-0.03	-1.03	0.23	1	0.04	-1.33	0.23	0.31	0.33	0.93	163	0.35	1.15	0.28	0.47	17	8
MA	8	1236	0	0.01	-0.29	0.27	1	-0.01	-0.21	0.28	-0.07	0.39	-0.19	162	0.85	0.04	0.83	0.00	17	9
MA	8	569	0	-0.01	-0.49	0.26	1	0.01	-0.64	0.25	0.14	0.36	0.40	163	0.69	0.00	0.99	0.07	17	10
MA	8	1230	0	0.12	-1.44	0.23	1	-0.13	-0.21	0.28	-1.23	0.36	-3.42	154	0.00	9.54	0.00	-1.24	17	11

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	8	1135	0	0.01	0.83	0.36	1	-0.01	1.05	0.49	-0.23	0.61	-0.37	147	0.71	0.00	0.97	0.03	17	12
MA	8	590	0	-0.03	1.08	0.41	1	0.03	0.45	0.34	0.63	0.54	1.16	160	0.25	0.06	0.80	0.36	17	13
MA	8	573	0	0.00	-0.14	0.28	1	0.00	-0.14	0.29	0.00	0.40	0.00	163	1.00	0.02	0.89	-0.03	17	14
MA	8	596	0	0.02	-1.55	0.22	1	-0.02	-1.39	0.23	-0.16	0.32	-0.49	163	0.62	0.01	0.91	-0.02	17	15
MA	8	615	0	0.00	-0.21	0.27	1	0.00	-0.21	0.28	0.00	0.39	0.00	163	1.00	0.02	0.90	-0.04	17	16
MA	8	531	0	-0.01	0.03	0.29	1	0.01	-0.05	0.29	0.08	0.41	0.18	163	0.86	0.22	0.64	0.30	17	17
MA	8	601	0	-0.03	0.52	0.34	1	0.03	0.04	0.30	0.48	0.45	1.06	162	0.29	2.25	0.13	0.79	17	18
MA	8	618	0	0.02	-2.21	0.23	1	-0.02	-2.03	0.23	-0.18	0.33	-0.55	163	0.58	0.07	0.79	-0.17	17	19
MA	8	1138	0	-0.02	2.20	0.67	1	0.02	1.13	0.46	1.07	0.81	1.33	148	0.19	0.27	0.61	0.58	17	20
MA	8	620	0	0.00	2.05	0.61	1	0.00	2.20	0.72	-0.15	0.94	-0.16	157	0.88	0.16	0.69	-1.35	17	21
MA	8	607	0	-0.02	-0.80	0.24	1	0.02	-1.00	0.24	0.20	0.34	0.59	163	0.56	0.03	0.85	0.14	17	22
MA	8	1270	0	-0.03	0.41	0.33	1	0.03	-0.05	0.29	0.46	0.44	1.04	163	0.30	4.48	0.03	1.32	17	23
MA	8	1273	0	0.00	0.20	0.31	1	0.00	0.13	0.31	0.07	0.44	0.17	163	0.87	0.45	0.50	0.41	17	24
MA	8	576	0	0.03	0.30	0.32	1	-0.03	0.86	0.40	-0.56	0.51	-1.09	153	0.28	1.69	0.19	-1.05	17	25
MA	8	1269	0	0.00	-1.01	0.23	1	0.00	-1.01	0.24	0.00	0.33	0.00	163	1.00	0.03	0.86	0.00	17	26
MA	8	1464	0	-0.03	0.77	0.37	1	0.03	0.23	0.32	0.54	0.49	1.10	161	0.27	0.79	0.37	0.65	17	27
MA	8	582	0	-0.01	0.52	0.34	1	0.01	0.34	0.33	0.18	0.47	0.38	163	0.70	0.00	0.96	-0.10	17	28
MA	8	548	0	0.01	1.73	0.53	1	-0.01	2.20	0.72	-0.47	0.90	-0.53	148	0.60	0.00	0.97	-0.31	17	29
MA	8	598	0	0.04	-1.03	0.23	1	-0.04	-0.64	0.25	-0.39	0.35	-1.13	161	0.26	0.67	0.41	-0.37	17	30
MA	8	617	0	-0.02	-0.14	0.28	1	0.03	-0.44	0.27	0.30	0.38	0.78	163	0.44	0.01	0.91	0.12	17	31
MA	8	591	0	-0.01	1.47	0.48	1	0.01	1.23	0.47	0.24	0.67	0.36	163	0.72	0.15	0.70	0.70	17	32
MA	8	613	0	-0.02	0.51	0.22	1	0.03	0.31	0.22	0.20	0.31	0.64	163	0.52	0.22	0.64	0.23	17	33
MA	8	592	0	-0.01	-0.68	0.25	1	0.01	-0.76	0.25	0.08	0.35	0.23	163	0.82	0.90	0.34	0.41	17	34
MA	8	621	0	0.01	-1.29	0.23	1	-0.01	-1.17	0.24	-0.12	0.33	-0.37	163	0.71	0.03	0.87	-0.12	17	35
MA	8	1218	0	-0.03	2.50	0.74	1	0.03	1.03	0.43	1.47	0.85	1.72	135	0.09	1.60	0.21	1.34	17	36
MA	8	529	0	-0.01	-0.29	0.27	1	0.01	-0.36	0.27	0.08	0.38	0.20	163	0.84	0.06	0.80	0.23	17	37
MA	8	1141	0	0.00	-0.90	0.24	1	0.00	-0.90	0.24	0.00	0.34	0.00	163	1.00	0.03	0.87	-0.15	17	38
MA	8	584	0	-0.02	-0.14	0.28	1	0.03	-0.44	0.27	0.30	0.38	0.78	163	0.44	0.16	0.69	0.31	17	39
MA	8	1695	0	0.04	0.30	0.32	1	-0.04	1.23	0.47	-0.93	0.56	-1.65	140	0.10	1.58	0.21	-0.69	17	40
MA	8	566	0	-0.05	-0.06	0.29	1	0.05	-0.64	0.25	0.58	0.38	1.52	162	0.13	0.16	0.69	0.25	17	41
MA	8	1268	0	-0.01	4.48		1	0.01	2.20	0.72	2.28	1.98	1.15	110	0.25	0.57	0.45		17	42
MA	8	1465	0	0.00	0.91	0.39	1	0.00	0.86	0.40	0.05	0.56	0.10	163	0.92	0.03	0.86	0.40	17	43
MA	8	1228	0	-0.04	-0.49	0.26	1	0.05	-0.94	0.24	0.45	0.35	1.28	163	0.20	1.03	0.31	0.45	17	44
MA	8	588	0	0.01	1.73	0.53	1	-0.01	2.91	1.01	-1.18	1.14	-1.04	120	0.30	0.85	0.36	-1.84	17	45
MA	8	612	0	0.01	-0.06	0.29	1	-0.01	0.13	0.31	-0.19	0.42	-0.45	161	0.65	0.27	0.60	-0.55	17	46
MA	8	542	0	0.01	1.08	0.41	1	-0.01	1.47	0.52	-0.40	0.66	-0.60	153	0.55	0.09	0.76	-0.41	17	47
MA	8	1274	0	-0.04	-0.29	0.27	1	0.04	-0.70	0.25	0.41	0.37	1.13	163	0.26	0.27	0.60	0.32	17	48
MA	8	1467	0	-0.01	-0.43	0.26	1	0.01	-0.57	0.26	0.15	0.37	0.40	163	0.69	0.01	0.94	-0.06	17	49
MA	8	600	0	0.01	-1.60	0.22	1	-0.01	-1.49	0.23	-0.10	0.32	-0.32	163	0.75	0.00	0.96	-0.08	17	50

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
MA	8	614	0	-0.05	-1.08	0.23	1	0.06	-1.55	0.23	0.47	0.33	1.43	163	0.15	1.29	0.26	0.51	17	51
MA	8	586	0	0.00	-0.63	0.25	1	0.00	-0.63	0.25	0.00	0.36	0.00	163	1.00	0.04	0.84	-0.15	17	52
MA	8	1466	0	0.02	0.41	0.33	1	-0.02	0.86	0.40	-0.45	0.52	-0.88	155	0.38	0.44	0.51	-0.58	17	53
MA	8	608	0	0.03	-1.75	0.22	1	-0.04	-1.44	0.23	-0.31	0.32	-0.95	163	0.34	0.91	0.34	-0.38	17	54
MA	8	611	0	0.01	-0.97	0.24	1	-0.02	-0.82	0.25	-0.15	0.34	-0.43	162	0.67	0.00	0.94	-0.04	17	55
MA	8	556	0	0.00	-0.21	0.27	1	0.00	-0.21	0.28	0.00	0.39	0.00	163	1.00	0.04	0.85	-0.16	17	56
MA	8	532	0	0.06	-1.08	0.23	1	-0.07	-0.44	0.27	-0.64	0.35	-1.83	159	0.07	1.66	0.20	-0.52	17	57
MA	8	530	0	0.00	-0.96	0.24	1	0.00	-0.96	0.24	0.00	0.34	0.00	163	1.00	0.01	0.91	0.11	17	58
MA	8	603	0	0.01	-0.74	0.24	1	-0.01	-0.64	0.25	-0.10	0.35	-0.30	163	0.77	0.00	0.98	-0.07	17	59
MA	8	599	0	-0.01	0.41	0.33	1	0.01	0.23	0.32	0.18	0.46	0.39	163	0.70	0.06	0.81	0.33	17	60
MA	8	589	0	-0.02	-1.34	0.23	1	0.02	-1.49	0.23	0.15	0.32	0.47	163	0.64	0.08	0.78	0.16	17	61
MA	8	1140	0	0.01	2.49	0.74	1	-0.01	4.13		-1.63	1.97	-0.83	104	0.41	0.00	1.00		17	62

Appendix Table I.7:Science: DIF FRL

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch T	Df	Prob	Mantel Chi-sq	Prob	Size Active ITEM CUMLOR	Slices	Number
SC	5	1369	C	0.01	1.14	0.26	D	-0.01	1.32	0.24	-0.19	0.36	-0.52	243	0.60	0.43	0.51	-0.34	36	1
SC	5	1327	C	0.05	-0.12	0.20	D	-0.05	0.41	0.20	-0.53	0.28	-1.87	243	0.06	2.55	0.11	-0.59	36	2
SC	5	1365	C	-0.05	0.62	0.22	D	0.05	0.09	0.20	0.53	0.30	1.78	239	0.08	4.96	0.03	0.89	36	3
SC	5	1320	C	0.02	1.28	0.27	D	-0.02	1.73	0.28	-0.45	0.39	-1.16	243	0.25	0.56	0.45	-0.42	36	4
SC	5	1372	C	0.03	0.94	0.13	D	-0.02	1.04	0.11	-0.09	0.17	-0.56	239	0.58	0.62	0.43	-0.28	36	5
SC	5	1344	C	0.03	-0.43	0.19	D	-0.03	-0.17	0.19	-0.25	0.27	-0.93	243	0.36	1.50	0.22	-0.45	36	6
SC	5	1373	C	-0.04	-0.04	0.20	D	0.04	-0.43	0.19	0.39	0.28	1.41	243	0.16	3.12	0.08	0.57	36	7
SC	5	1324	C	-0.01	0.89	0.24	D	0.01	0.75	0.21	0.14	0.32	0.43	240	0.67	0.13	0.72	0.19	36	8
SC	5	1366	C	0.05	0.52	0.22	D	-0.05	1.21	0.24	-0.68	0.32	-2.12	242	0.04	2.18	0.14	-0.61	36	9
SC	5	1358	C	0.00	0.29	0.21	D	0.00	0.25	0.20	0.05	0.29	0.16	243	0.87	0.06	0.81	-0.13	36	10
SC	5	1349	C	0.00	0.95	0.24	D	0.00	0.99	0.23	-0.04	0.33	-0.13	242	0.89	0.05	0.82	-0.18	36	11
SC	5	1359	C	0.03	0.29	0.21	D	-0.03	0.57	0.21	-0.28	0.30	-0.96	243	0.34	0.01	0.90	-0.10	36	12
SC	5	1328	C	0.01	-0.83	0.19	D	-0.01	-0.77	0.19	-0.06	0.27	-0.23	243	0.82	0.00	1.00	0.05	36	13

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	5	1370	C	0.08	-0.43	0.19	D	-0.08	0.29	0.20	-0.71	0.28	-2.56	243	0.01	8.01	0.00	-1.03	36	14
SC	5	1361	C	-0.02	0.34	0.21	D	0.02	0.09	0.20	0.25	0.29	0.85	242	0.40	1.09	0.30	0.39	36	15
SC	5	1331	C	0.00	0.33	0.12	D	0.00	0.33	0.11	0.00	0.16	0.00	242	1.00	0.28	0.60	-0.16	36	16
SC	5	1348	C	0.05	0.38	0.21	D	-0.05	0.99	0.23	-0.61	0.31	-1.97	243	0.05	0.36	0.55	-0.25	36	17
SC	5	1994	C	0.02	-1.32	0.20	D	-0.03	-1.08	0.20	-0.24	0.28	-0.86	243	0.39	0.20	0.65	-0.20	36	18
SC	5	1533	C	-0.09	0.59	0.16	D	0.09	0.15	0.13	0.45	0.20	2.19	237	0.03	5.02	0.03	0.77	36	19
SC	5	1326	C	0.00	0.39	0.21	D	0.00	0.39	0.20	0.00	0.29	0.00	243	1.00	0.01	0.94	-0.08	36	20
SC	5	1325	C	0.05	-0.72	0.19	D	-0.05	-0.29	0.19	-0.44	0.27	-1.61	243	0.11	2.53	0.11	-0.57	36	21
SC	5	1332	C	0.02	-0.24	0.20	D	-0.02	-0.02	0.19	-0.21	0.28	-0.78	243	0.44	0.00	0.96	-0.03	36	22
SC	5	1368	C	0.03	1.20	0.26	D	-0.03	1.65	0.27	-0.45	0.38	-1.18	243	0.24	1.11	0.29	-0.64	36	23
SC	5	1347	C	-0.03	-0.50	0.19	D	0.03	-0.77	0.19	0.27	0.27	0.98	243	0.33	0.81	0.37	0.32	36	24
SC	5	1991	C	-0.01	-0.68	0.19	D	0.00	-0.73	0.19	0.05	0.27	0.17	243	0.87	0.01	0.90	-0.09	36	25
SC	5	1540	C	0.00	1.06	0.25	D	0.00	1.06	0.23	0.00	0.34	0.00	240	1.00	0.25	0.62	0.29	36	26
SC	5	1362	C	-0.01	-0.79	0.19	D	0.01	-0.92	0.20	0.13	0.27	0.46	243	0.65	0.00	0.99	-0.05	36	27
SC	5	1992	C	-0.01	-1.60	0.21	D	0.01	-1.74	0.22	0.14	0.30	0.45	242	0.65	0.04	0.84	0.14	36	28
SC	5	1318	C	0.01	1.01	0.25	D	-0.01	1.15	0.23	-0.14	0.34	-0.42	242	0.68	0.00	0.95	-0.13	36	29
SC	5	1536	C	0.00	0.80	0.17	D	0.00	0.80	0.14	0.00	0.22	0.00	238	1.00	0.06	0.80	-0.10	36	30
SC	5	1998	C	-0.01	-0.50	0.19	D	0.01	-0.58	0.19	0.08	0.27	0.29	243	0.77	0.00	0.96	0.09	36	31
SC	5	1980	C	-0.08	0.48	0.10	D	0.08	0.32	0.08	0.16	0.13	1.23	232	0.22	0.54	0.46	0.27	36	32
SC	5	1321	C	-0.01	-1.17	0.19	D	0.01	-1.24	0.20	0.08	0.28	0.27	243	0.79	0.00	1.00	-0.05	36	33
SC	5	1330	C	0.05	-0.16	0.20	D	-0.05	0.33	0.20	-0.49	0.28	-1.73	243	0.08	1.65	0.20	-0.47	36	34
SC	5	1356	C	0.00	-0.87	0.13	D	0.00	-0.87	0.14	0.00	0.19	0.00	243	1.00	0.00	0.97	0.01	36	35
SC	5	1996	C	0.02	-1.02	0.19	D	-0.02	-0.81	0.20	-0.21	0.27	-0.77	243	0.44	0.33	0.57	-0.23	36	36
SC	5	1995	C	0.02	0.16	0.21	D	-0.02	0.37	0.20	-0.20	0.29	-0.71	243	0.48	0.02	0.88	0.00	36	37
SC	5	1329	C	-0.01	0.38	0.21	D	0.01	0.25	0.20	0.14	0.29	0.46	242	0.64	0.00	0.97	-0.05	36	38
SC	5	1979	C	0.03	-0.06	0.08	D	-0.03	-0.01	0.08	-0.06	0.12	-0.48	243	0.63	0.11	0.74	0.11	36	39
SC	5	1322	C	-0.02	-1.48	0.20	D	0.02	-1.74	0.22	0.26	0.30	0.87	241	0.39	0.03	0.86	-0.01	36	40
SC	5	1999	C	0.03	-0.28	0.20	D	-0.03	-0.02	0.19	-0.25	0.28	-0.92	243	0.36	0.10	0.75	-0.14	36	41
SC	5	1367	C	0.03	-0.61	0.19	D	-0.03	-0.32	0.19	-0.29	0.27	-1.07	243	0.29	0.31	0.58	-0.21	36	42

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	5	1336	C	0.04	-0.43	0.19	D	-0.04	-0.02	0.19	-0.40	0.27	-1.47	243	0.14	1.99	0.16	-0.54	36	43
SC	5	1534	C	-0.03	1.39	0.19	D	0.03	1.18	0.17	0.20	0.26	0.79	239	0.43	2.61	0.11	-0.73	36	44
SC	5	1323	C	-0.04	-0.68	0.19	D	0.04	-1.04	0.20	0.35	0.28	1.28	243	0.20	0.66	0.42	0.32	36	45
SC	5	1364	C	-0.03	0.25	0.21	D	0.03	-0.06	0.19	0.31	0.28	1.09	242	0.28	1.71	0.19	0.46	36	46
SC	5	1997	C	0.01	-0.91	0.19	D	-0.01	-0.81	0.20	-0.10	0.27	-0.36	243	0.72	0.07	0.80	-0.12	36	47
SC	5	1993	C	-0.01	-1.28	0.20	D	0.01	-1.37	0.21	0.09	0.29	0.31	243	0.76	0.00	0.97	-0.08	36	48
SC	5	1315	C	-0.11	1.09	0.13	D	0.11	0.75	0.10	0.35	0.17	2.07	222	0.04	2.49	0.11	0.54	36	49
SC	5	1317	C	-0.05	-0.43	0.19	D	0.05	-0.92	0.20	0.49	0.28	1.79	243	0.07	4.18	0.04	0.64	36	50
SC	5	1542	C	0.00	0.12	0.20	D	0.00	0.12	0.20	0.00	0.28	0.00	243	1.00	1.19	0.28	0.40	36	51
SC	5	1333	C	0.05	-0.24	0.20	D	-0.05	0.25	0.20	-0.48	0.28	-1.73	243	0.08	1.18	0.28	-0.43	36	52
SC	5	1351	C	-0.03	0.62	0.22	D	0.03	0.25	0.20	0.37	0.30	1.25	239	0.21	0.33	0.56	0.28	36	53
SC	5	1535	C	-0.08	-0.65	0.19	D	0.08	-1.41	0.21	0.77	0.28	2.70	242	0.01	3.55	0.06	0.72	36	54
SC	5	1337	C	-0.01	0.52	0.22	D	0.01	0.41	0.20	0.12	0.30	0.39	242	0.70	0.72	0.40	0.35	36	55
SC	5	1338	C	0.07	-0.50	0.19	D	-0.07	0.13	0.20	-0.63	0.27	-2.29	243	0.02	0.82	0.36	-0.34	36	56
SC	5	1339	C	-0.02	0.47	0.22	D	0.02	0.25	0.20	0.23	0.29	0.77	241	0.44	1.96	0.16	0.51	36	57
SC	5	1537	C	-0.02	-0.39	0.19	D	0.02	-0.58	0.19	0.19	0.27	0.70	243	0.48	0.01	0.93	-0.08	36	58
SC	8	983	C	0.01	1.94	0.59	D	-0.01	3.13	1.01	-1.20	1.17	-1.02	124	0.31	0.21	0.65	-0.20	22	1
SC	8	962	C	0.01	-2.08	0.22	D	-0.01	-1.97	0.25	-0.11	0.33	-0.34	159	0.73	0.00	0.96	-0.06	22	2
SC	8	952	C	0.06	-1.65	0.22	D	-0.07	-1.06	0.25	-0.59	0.33	-1.77	158	0.08	0.98	0.32	-0.40	22	3
SC	8	951	C	-0.04	2.36	0.72	D	0.04	0.75	0.37	1.61	0.81	2.00	132	0.05	1.38	0.24	1.10	22	4
SC	8	977	C	-0.03	-0.75	0.24	D	0.03	-1.06	0.25	0.32	0.34	0.92	162	0.36	0.32	0.57	0.29	22	5
SC	8	1109	C	-0.04	-1.17	0.22	D	0.05	-1.55	0.24	0.38	0.33	1.15	161	0.25	1.74	0.19	0.54	22	6
SC	8	956	C	0.12	-2.03	0.22	D	-0.15	-0.81	0.26	-1.22	0.34	-3.62	157	0.00	6.95	0.01	-1.11	22	7
SC	8	959	C	-0.01	4.29		D	0.01	2.42	0.72	1.87	1.97	0.95	116	0.34	1.09	0.30		22	8
SC	8	955	C	-0.03	1.94	0.59	D	0.04	0.75	0.37	1.19	0.70	1.71	146	0.09	1.43	0.23	1.14	22	9
SC	8	1519	C	0.03	0.30	0.31	D	-0.03	0.89	0.39	-0.59	0.49	-1.20	151	0.23	0.74	0.39	-0.61	22	10
SC	8	1238	C	0.01	0.12	0.29	D	-0.01	0.29	0.32	-0.16	0.43	-0.38	161	0.70	0.00	0.98	0.09	22	11
SC	8	1205	C	0.01	-0.63	0.24	D	-0.02	-0.47	0.27	-0.16	0.36	-0.46	160	0.65	0.02	0.88	-0.01	22	12
SC	8	1257	C	0.06	-1.51	0.22	D	-0.07	-0.87	0.25	-0.63	0.33	-1.89	157	0.06	2.95	0.09	-0.78	22	13

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	8	932	C	0.02	-0.45	0.25	D	-0.02	-0.24	0.28	-0.21	0.38	-0.56	159	0.58	0.48	0.49	-0.49	22	14
SC	8	1111	C	0.01	1.02	0.40	D	-0.01	1.23	0.44	-0.20	0.59	-0.34	161	0.73	0.00	0.95	-0.49	22	15
SC	8	1260	C	0.04	0.04	0.28	D	-0.04	0.75	0.37	-0.71	0.46	-1.53	148	0.13	0.34	0.56	-0.54	22	16
SC	8	1265	C	0.00	-0.62	0.24	D	0.00	-0.62	0.26	0.00	0.36	0.00	161	1.00	0.00	0.99	-0.07	22	17
SC	8	953	C	0.01	-0.39	0.25	D	-0.01	-0.24	0.28	-0.15	0.38	-0.39	160	0.70	0.25	0.62	0.27	22	18
SC	8	954	C	-0.02	-0.69	0.24	D	0.02	-0.87	0.25	0.18	0.35	0.53	162	0.60	0.03	0.85	-0.14	22	19
SC	8	942	C	-0.03	-1.36	0.22	D	0.04	-1.67	0.24	0.30	0.33	0.93	160	0.36	1.36	0.24	0.46	22	20
SC	8	936	C	0.02	-0.75	0.24	D	-0.03	-0.47	0.27	-0.28	0.36	-0.78	158	0.44	0.05	0.82	-0.21	22	21
SC	8	964	C	-0.02	1.02	0.40	D	0.02	0.62	0.35	0.40	0.53	0.76	165	0.45	0.11	0.74	0.44	22	22
SC	8	937	C	0.01	-0.77	0.10	D	-0.01	-0.77	0.11	0.00	0.15	0.00	160	1.00	1.78	0.18	-0.50	22	23
SC	8	971	C	0.02	1.38	0.47	D	-0.03	3.14	1.01	-1.75	1.12	-1.57	107	0.12	1.13	0.29		22	24
SC	8	972	C	0.01	-1.33	0.22	D	-0.01	-1.25	0.25	-0.09	0.33	-0.26	159	0.79	0.00	0.95	-0.04	22	25
SC	8	1258	C	-0.07	2.35	0.72	D	0.08	0.19	0.31	2.16	0.78	2.76	120	0.01	4.93	0.03	2.48	22	26
SC	8	1524	C	0.00	-0.76	0.24	D	0.00	-0.81	0.26	0.05	0.35	0.13	161	0.89	0.00	0.98	0.06	22	27
SC	8	947	C	0.03	-0.05	0.28	D	-0.03	0.39	0.33	-0.44	0.43	-1.03	155	0.31	0.51	0.48	-0.46	22	28
SC	8	1114	C	0.00	-0.72	0.13	D	0.00	-0.72	0.14	0.00	0.19	0.00	162	1.00	1.05	0.31	0.41	22	29
SC	8	984	C	-0.02	1.63	0.52	D	0.02	1.01	0.41	0.61	0.66	0.93	160	0.36	0.49	0.48	0.77	22	30
SC	8	948	C	-0.03	-0.20	0.27	D	0.04	-0.58	0.27	0.38	0.38	1.02	161	0.31	2.06	0.15	0.76	22	31
SC	8	950	C	-0.05	-0.53	0.25	D	0.06	-1.11	0.25	0.58	0.35	1.66	161	0.10	7.64	0.01	1.22	22	32
SC	8	961	C	0.01	1.93	0.59	D	-0.01	3.10	1.01	-1.17	1.17	-1.00	121	0.32	0.03	0.87	-0.54	22	33
SC	8	987	C	-0.01	0.73	0.36	D	0.01	0.58	0.35	0.14	0.50	0.29	162	0.77	0.08	0.77	0.54	22	34
SC	8	970	C	0.01	-0.59	0.24	D	-0.02	-0.44	0.27	-0.15	0.37	-0.41	156	0.68	0.12	0.73	-0.21	22	35
SC	8	1530	C	-0.01	-0.40	0.25	D	0.01	-0.51	0.27	0.11	0.37	0.29	159	0.77	0.02	0.88	0.15	22	36
SC	8	985	C	0.02	-1.82	0.22	D	-0.03	-1.60	0.25	-0.21	0.33	-0.65	156	0.52	0.07	0.79	-0.17	22	37
SC	8	949	C	0.01	-0.98	0.23	D	-0.01	-0.86	0.26	-0.12	0.34	-0.36	156	0.72	0.02	0.89	-0.13	22	38
SC	8	981	C	0.02	-0.53	0.25	D	-0.02	-0.28	0.28	-0.24	0.37	-0.65	155	0.52	1.67	0.20	-0.66	22	39
SC	8	946	C	-0.07	-1.23	0.22	D	0.08	-1.91	0.25	0.68	0.33	2.02	156	0.05	0.35	0.55	0.30	22	40
SC	8	944	C	-0.01	0.86	0.38	D	0.01	0.71	0.37	0.15	0.53	0.28	162	0.78	0.29	0.59	-0.65	22	41
SC	8	978	C	-0.01	1.93	0.59	D	0.01	1.64	0.52	0.29	0.79	0.36	162	0.72	0.00	0.96	-0.80	22	42

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	8	945	C	-0.09	0.51	0.19	D	0.12	0.04	0.15	0.47	0.24	1.95	159	0.05	0.49	0.48	0.34	22	43
SC	8	1266	C	0.02	-1.08	0.23	D	-0.03	-0.86	0.26	-0.23	0.34	-0.67	155	0.51	1.08	0.30	-0.44	22	44
SC	8	986	C	-0.02	0.73	0.36	D	0.03	0.25	0.32	0.48	0.48	1.00	162	0.32	2.55	0.11	1.11	22	45
SC	8	967	C	0.01	0.20	0.30	D	-0.02	0.46	0.34	-0.27	0.45	-0.59	155	0.56	0.18	0.67	-0.36	22	46
SC	8	1526	C	0.04	-0.34	0.26	D	-0.05	0.25	0.32	-0.59	0.41	-1.43	149	0.16	1.14	0.28	-0.61	22	47
SC	8	969	C	-0.01	-0.87	0.23	D	0.01	-0.99	0.25	0.11	0.34	0.33	158	0.74	0.05	0.83	0.16	22	48
SC	8	980	C	0.00	1.63	0.52	D	0.00	1.63	0.52	0.00	0.74	0.00	161	1.00	0.04	0.84	-0.20	22	49
SC	8	1267	C	0.02	-0.98	0.23	D	-0.02	-0.79	0.26	-0.19	0.35	-0.55	155	0.58	0.00	0.96	-0.10	22	50
SC	8	965	C	0.02	-0.87	0.23	D	-0.02	-0.65	0.26	-0.22	0.35	-0.63	155	0.53	0.36	0.55	-0.34	22	51
SC	8	1513	C	-0.01	-1.58	0.22	D	0.01	-1.66	0.25	0.09	0.33	0.27	156	0.79	0.02	0.89	0.11	22	52
SC	8	960	C	-0.03	0.11	0.29	D	0.04	-0.36	0.28	0.47	0.40	1.18	162	0.24	0.62	0.43	0.47	22	53
SC	8	1522	C	-0.03	0.39	0.32	D	0.03	-0.04	0.30	0.42	0.43	0.97	162	0.33	0.01	0.92	0.20	22	54
SC	8	958	C	0.01	1.38	0.47	D	-0.01	1.64	0.52	-0.26	0.70	-0.37	156	0.71	0.05	0.82	-0.38	22	55
SC	8	938	C	-0.01	-0.20	0.27	D	0.01	-0.29	0.28	0.08	0.39	0.22	159	0.83	0.86	0.36	0.56	22	56
SC	8	979	C	-0.01	1.38	0.47	D	0.01	1.01	0.41	0.37	0.62	0.60	162	0.55	0.19	0.66	-0.78	22	57
SC	8	939	C	-0.06	-0.27	0.26	D	0.07	-0.92	0.25	0.65	0.37	1.78	162	0.08	0.90	0.34	0.69	22	58
SC	8	974	C	-0.01	1.62	0.52	D	0.01	1.19	0.44	0.43	0.68	0.64	162	0.52	0.03	0.85	-0.14	22	59
SC	8	1056	C	0.02	1.38	0.47	D	-0.02	2.38	0.72	-1.00	0.86	-1.16	129	0.25	0.25	0.62	-0.95	22	60
SC	8	1110	C	0.02	1.18	0.43	D	-0.02	1.96	0.60	-0.77	0.74	-1.05	139	0.30	0.12	0.73	-0.82	22	61
SC	8	1263	C	0.00	-0.20	0.27	D	0.00	-0.20	0.29	0.00	0.39	0.00	158	1.00	0.14	0.71	0.23	22	62
SC	8	1511	C	0.06	-1.62	0.22	D	-0.08	-0.99	0.25	-0.64	0.34	-1.91	154	0.06	1.03	0.31	-0.41	22	63
SC	8	975	C	-0.02	1.38	0.47	D	0.02	0.85	0.39	0.53	0.61	0.88	161	0.38	0.05	0.82	-0.08	22	64
SC	8	1054	C	-0.01	-0.93	0.23	D	0.01	-1.05	0.25	0.12	0.34	0.36	157	0.72	0.15	0.70	0.22	22	65

Appendix Table I.8:Science: DIF Gender

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	1369	5	F	-0.03	1.48	0.25	M	0.03	0.96	0.25	0.53	0.35	1.48	243	0.14	0.48	0.49	0.34	31	1

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	1327	5	F	-0.02	0.26	0.20	M	0.02	0.02	0.20	0.24	0.28	0.86	243	0.39	0.01	0.91	0.09	31	2
SC	1365	5	F	-0.06	0.62	0.21	M	0.06	0.02	0.20	0.60	0.29	2.09	243	0.04	0.35	0.55	0.25	31	3
SC	1320	5	F	-0.01	1.61	0.26	M	0.01	1.38	0.28	0.23	0.39	0.61	242	0.54	0.01	0.93	-0.13	31	4
SC	1372	5	F	0.08	0.89	0.10	M	-0.08	1.17	0.14	-0.28	0.18	-1.58	220	0.11	1.44	0.23	-0.43	31	5
SC	1344	5	F	-0.03	-0.19	0.19	M	0.03	-0.42	0.20	0.23	0.27	0.85	243	0.39	0.03	0.85	0.11	31	6
SC	1373	5	F	-0.03	-0.11	0.19	M	0.03	-0.38	0.20	0.27	0.27	0.98	243	0.33	0.02	0.89	0.09	31	7
SC	1324	5	F	0.01	0.75	0.21	M	-0.01	0.90	0.25	-0.14	0.32	-0.45	238	0.66	0.00	1.00	-0.07	31	8
SC	1366	5	F	-0.03	1.03	0.22	M	0.03	0.67	0.23	0.36	0.32	1.13	243	0.26	0.52	0.47	0.33	31	9
SC	1358	5	F	-0.05	0.54	0.20	M	0.06	-0.03	0.20	0.56	0.29	1.96	243	0.05	1.18	0.28	0.39	31	10
SC	1349	5	F	0.01	0.94	0.22	M	-0.01	1.02	0.25	-0.08	0.34	-0.25	238	0.80	0.03	0.86	-0.01	31	11
SC	1359	5	F	0.02	0.34	0.20	M	-0.02	0.56	0.23	-0.23	0.30	-0.76	239	0.45	0.32	0.57	-0.27	31	12
SC	1328	5	F	0.04	-1.00	0.20	M	-0.04	-0.61	0.19	-0.39	0.28	-1.42	243	0.16	1.26	0.26	-0.42	31	13
SC	1370	5	F	0.03	-0.19	0.19	M	-0.03	0.06	0.21	-0.24	0.28	-0.87	242	0.38	0.84	0.36	-0.35	31	14
SC	1361	5	F	-0.04	0.38	0.20	M	0.04	0.02	0.20	0.36	0.28	1.26	243	0.21	0.50	0.48	0.31	31	15
SC	1331	5	F	0.02	0.31	0.11	M	-0.02	0.36	0.12	-0.05	0.16	-0.31	240	0.75	0.02	0.88	-0.05	31	16
SC	1348	5	F	0.01	0.62	0.21	M	-0.01	0.78	0.24	-0.16	0.31	-0.50	238	0.62	4.54	0.03	-0.82	31	17
SC	1994	5	F	0.02	-1.29	0.21	M	-0.02	-1.13	0.19	-0.16	0.28	-0.55	243	0.58	0.52	0.47	-0.29	31	18
SC	1533	5	F	0.02	0.30	0.13	M	-0.02	0.40	0.15	-0.10	0.20	-0.50	239	0.62	0.03	0.86	-0.06	31	19
SC	1326	5	F	0.00	0.39	0.20	M	0.00	0.42	0.22	-0.02	0.30	-0.08	241	0.94	0.23	0.63	-0.22	31	20
SC	1325	5	F	0.01	-0.55	0.19	M	-0.01	-0.46	0.19	-0.09	0.27	-0.34	243	0.74	0.14	0.71	-0.17	31	21
SC	1332	5	F	0.03	-0.26	0.19	M	-0.03	0.02	0.20	-0.28	0.28	-0.99	242	0.32	0.34	0.56	-0.23	31	22
SC	1368	5	F	0.00	1.44	0.25	M	0.00	1.46	0.29	-0.03	0.38	-0.07	236	0.95	0.01	0.91	0.04	31	23
SC	1347	5	F	0.00	-0.64	0.19	M	0.00	-0.64	0.19	0.00	0.27	0.00	243	1.00	0.35	0.55	-0.23	31	24
SC	1991	5	F	-0.04	-0.51	0.19	M	0.04	-0.90	0.19	0.39	0.27	1.45	243	0.15	1.31	0.25	0.46	31	25
SC	1540	5	F	-0.02	1.19	0.23	M	0.02	0.90	0.25	0.29	0.34	0.87	243	0.39	0.01	0.93	-0.04	31	26
SC	1362	5	F	0.05	-1.08	0.20	M	-0.05	-0.64	0.19	-0.43	0.28	-1.56	243	0.12	0.80	0.37	-0.35	31	27
SC	1992	5	F	0.00	-1.65	0.22	M	0.00	-1.67	0.21	0.02	0.30	0.07	242	0.95	0.73	0.39	0.33	31	28
SC	1318	5	F	0.01	1.03	0.22	M	-0.01	1.15	0.26	-0.12	0.35	-0.35	236	0.73	0.02	0.89	0.18	31	29
SC	1536	5	F	0.02	0.75	0.14	M	-0.02	0.88	0.18	-0.13	0.23	-0.59	229	0.55	0.02	0.89	0.05	31	30
SC	1998	5	F	0.09	-0.96	0.20	M	-0.09	-0.11	0.20	-0.85	0.28	-3.04	243	0.00	3.37	0.07	-0.77	31	31

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	1980	5	F	0.07	0.33	0.08	M	-0.07	0.47	0.10	-0.14	0.13	-1.09	229	0.28	0.34	0.56	-0.22	31	32
SC	1321	5	F	-0.03	-1.04	0.20	M	0.03	-1.36	0.20	0.32	0.28	1.14	243	0.26	0.39	0.53	0.26	31	33
SC	1330	5	F	-0.01	0.11	0.19	M	0.00	0.06	0.21	0.05	0.28	0.17	242	0.86	0.02	0.88	0.11	31	34
SC	1356	5	F	0.03	-0.93	0.14	M	-0.03	-0.81	0.13	-0.12	0.19	-0.61	243	0.54	1.18	0.28	0.35	31	35
SC	1996	5	F	0.03	-1.08	0.20	M	-0.04	-0.76	0.19	-0.32	0.28	-1.16	243	0.25	0.49	0.48	-0.28	31	36
SC	1995	5	F	-0.05	0.50	0.20	M	0.05	0.02	0.20	0.48	0.29	1.67	243	0.10	1.58	0.21	0.42	31	37
SC	1329	5	F	-0.03	0.46	0.20	M	0.03	0.14	0.21	0.31	0.29	1.08	243	0.28	0.38	0.54	0.26	31	38
SC	1979	5	F	0.06	-0.08	0.08	M	-0.06	0.03	0.09	-0.11	0.12	-0.91	239	0.37	0.01	0.91	0.04	31	39
SC	1322	5	F	0.00	-1.60	0.22	M	0.00	-1.60	0.20	0.00	0.30	0.00	242	1.00	2.28	0.13	0.65	31	40
SC	1999	5	F	-0.05	0.07	0.19	M	0.05	-0.38	0.20	0.45	0.27	1.64	243	0.10	1.14	0.29	0.40	31	41
SC	1367	5	F	0.00	-0.47	0.19	M	0.00	-0.47	0.19	0.00	0.27	0.00	243	1.00	1.12	0.29	-0.37	31	42
SC	1336	5	F	0.00	-0.23	0.19	M	0.00	-0.23	0.20	0.00	0.27	0.00	243	1.00	0.31	0.58	0.24	31	43
SC	1534	5	F	0.00	1.27	0.17	M	0.00	1.27	0.19	0.00	0.25	0.00	240	1.00	0.12	0.73	0.13	31	44
SC	1323	5	F	-0.08	-0.51	0.19	M	0.08	-1.20	0.20	0.69	0.27	2.54	243	0.01	2.36	0.12	0.51	31	45
SC	1364	5	F	0.00	0.08	0.19	M	0.00	0.08	0.21	0.00	0.28	0.00	242	1.00	0.35	0.55	-0.25	31	46
SC	1997	5	F	0.04	-1.04	0.20	M	-0.04	-0.68	0.19	-0.36	0.28	-1.29	243	0.20	0.15	0.70	-0.17	31	47
SC	1993	5	F	0.03	-1.51	0.22	M	-0.03	-1.17	0.19	-0.34	0.29	-1.17	242	0.24	0.24	0.62	-0.23	31	48
SC	1315	5	F	-0.07	0.97	0.11	M	0.07	0.76	0.12	0.21	0.16	1.34	240	0.18	2.54	0.11	0.65	31	49
SC	1317	5	F	0.00	-0.67	0.19	M	0.00	-0.67	0.19	0.00	0.27	0.00	243	1.00	0.00	0.98	-0.03	31	50
SC	1542	5	F	-0.06	0.42	0.20	M	0.06	-0.19	0.20	0.60	0.28	2.13	243	0.03	0.64	0.42	0.31	31	51
SC	1333	5	F	-0.01	0.03	0.19	M	0.01	-0.03	0.20	0.06	0.28	0.21	243	0.84	1.34	0.25	-0.40	31	52
SC	1351	5	F	0.01	0.38	0.20	M	-0.01	0.46	0.22	-0.09	0.30	-0.30	240	0.76	0.27	0.60	0.27	31	53
SC	1535	5	F	0.01	-1.04	0.20	M	-0.01	-0.98	0.19	-0.06	0.28	-0.22	243	0.83	0.02	0.90	0.10	31	54
SC	1337	5	F	-0.03	0.62	0.21	M	0.03	0.28	0.21	0.34	0.30	1.16	243	0.25	0.01	0.92	0.09	31	55
SC	1338	5	F	0.00	-0.19	0.19	M	0.00	-0.19	0.20	0.00	0.28	0.00	243	1.00	0.57	0.45	-0.29	31	56
SC	1339	5	F	-0.01	0.42	0.20	M	0.01	0.28	0.21	0.14	0.29	0.48	242	0.63	0.02	0.89	-0.01	31	57
SC	1537	5	F	0.05	-0.70	0.19	M	-0.05	-0.27	0.20	-0.43	0.28	-1.56	243	0.12	1.60	0.21	-0.50	31	58
SC	983	8	F	0.02	1.86	0.52	M	-0.02	4.08		-2.22	1.91	-1.16	97	0.25	0.66	0.42		19	1
SC	962	8	F	0.03	-2.19	0.25	M	-0.03	-1.90	0.23	-0.29	0.34	-0.87	164	0.39	0.16	0.69	0.24	19	2
SC	952	8	F	0.04	-1.57	0.23	M	-0.04	-1.21	0.24	-0.36	0.33	-1.07	165	0.28	1.00	0.32	-0.46	19	3

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	951	8	F	-0.02	1.62	0.47	M	0.02	0.96	0.43	0.65	0.64	1.03	164	0.31	0.47	0.50	1.10	19	4
SC	977	8	F	-0.04	-0.70	0.24	M	0.04	-1.10	0.24	0.40	0.34	1.18	165	0.24	1.18	0.28	0.61	19	5
SC	1109	8	F	-0.10	-0.87	0.24	M	0.10	-1.79	0.23	0.93	0.33	2.83	165	0.01	7.74	0.01	1.26	19	6
SC	956	8	F	0.02	-1.57	0.23	M	-0.02	-1.43	0.23	-0.14	0.33	-0.42	165	0.68	0.15	0.70	-0.24	19	7
SC	959	8	F	0.00	3.30	1.01	M	0.00	2.86	1.01	0.45	1.43	0.31	165	0.75	0.20	0.65		19	8
SC	955	8	F	-0.03	1.62	0.47	M	0.03	0.79	0.40	0.83	0.62	1.34	161	0.18	0.58	0.44	1.06	19	9
SC	1519	8	F	-0.04	0.95	0.36	M	0.04	0.15	0.32	0.80	0.48	1.66	163	0.10	0.15	0.70	-0.37	19	10
SC	1238	8	F	0.01	0.16	0.28	M	-0.01	0.25	0.33	-0.10	0.44	-0.23	162	0.82	0.18	0.67	-0.32	19	11
SC	1205	8	F	-0.07	-0.21	0.26	M	0.07	-0.92	0.25	0.71	0.36	2.00	165	0.05	1.02	0.31	0.58	19	12
SC	1257	8	F	-0.02	-1.14	0.23	M	0.02	-1.32	0.23	0.18	0.33	0.55	165	0.58	0.10	0.76	0.22	19	13
SC	932	8	F	0.01	-0.40	0.25	M	-0.01	-0.30	0.28	-0.10	0.38	-0.26	164	0.79	0.06	0.81	-0.27	19	14
SC	1111	8	F	0.03	0.83	0.35	M	-0.03	1.72	0.59	-0.89	0.69	-1.29	134	0.20	0.11	0.73	-0.96	19	15
SC	1260	8	F	0.01	0.24	0.29	M	-0.01	0.50	0.36	-0.26	0.46	-0.56	158	0.58	0.09	0.77	0.37	19	16
SC	1265	8	F	-0.01	-0.58	0.24	M	0.01	-0.67	0.26	0.08	0.36	0.23	165	0.82	0.02	0.90	0.04	19	17
SC	953	8	F	-0.01	-0.27	0.26	M	0.01	-0.38	0.28	0.11	0.38	0.28	165	0.78	0.98	0.32	-0.53	19	18
SC	954	8	F	0.04	-0.98	0.23	M	-0.04	-0.53	0.27	-0.45	0.35	-1.27	163	0.21	0.48	0.49	-0.41	19	19
SC	942	8	F	-0.09	-1.09	0.23	M	0.09	-1.90	0.23	0.81	0.32	2.50	165	0.01	5.02	0.03	0.87	19	20
SC	936	8	F	-0.03	-0.46	0.25	M	0.03	-0.80	0.25	0.33	0.35	0.94	165	0.35	1.32	0.25	0.55	19	21
SC	964	8	F	-0.03	1.09	0.38	M	0.03	0.50	0.36	0.59	0.53	1.13	165	0.26	1.06	0.30	0.65	19	22
SC	937	8	F	0.27	-0.99	0.10	M	-0.26	-0.41	0.14	-0.58	0.17	-3.44	153	0.00	10.25	0.00	-1.38	19	23
SC	971	8	F	-0.02	2.59	0.72	M	0.02	1.40	0.52	1.20	0.89	1.35	149	0.18	1.76	0.18	2.62	19	24
SC	972	8	F	0.01	-1.35	0.23	M	-0.01	-1.23	0.24	-0.12	0.33	-0.36	164	0.72	0.03	0.86	-0.01	19	25
SC	1258	8	F	0.00	0.83	0.35	M	0.00	0.95	0.43	-0.12	0.55	-0.22	157	0.82	0.01	0.91	0.45	19	26
SC	1524	8	F	0.03	-0.92	0.23	M	-0.03	-0.62	0.26	-0.31	0.35	-0.87	163	0.38	0.60	0.44	-0.43	19	27
SC	947	8	F	-0.01	0.24	0.29	M	0.01	0.03	0.31	0.20	0.43	0.48	164	0.63	0.15	0.70	-0.34	19	28
SC	1114	8	F	0.08	-0.82	0.12	M	-0.08	-0.57	0.15	-0.25	0.20	-1.26	156	0.21	1.32	0.25	-0.45	19	29
SC	984	8	F	0.01	1.21	0.40	M	-0.01	1.40	0.52	-0.18	0.66	-0.28	155	0.78	0.00	0.98	-0.31	19	30
SC	948	8	F	-0.01	-0.31	0.26	M	0.01	-0.48	0.27	0.17	0.37	0.46	162	0.65	1.52	0.22	0.69	19	31
SC	950	8	F	0.05	-1.01	0.23	M	-0.05	-0.55	0.27	-0.46	0.36	-1.30	160	0.19	0.06	0.80	-0.19	19	32
SC	961	8	F	-0.01	2.56	0.72	M	0.00	2.13	0.72	0.44	1.02	0.43	162	0.67	0.01	0.94	0.38	19	33

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	987	8	F	0.03	0.38	0.30	M	-0.03	1.15	0.47	-0.77	0.56	-1.38	139	0.17	0.11	0.74	0.10	19	34
SC	970	8	F	-0.13	0.21	0.29	M	0.13	-1.18	0.24	1.39	0.37	3.71	157	0.00	2.49	0.11	0.81	19	35
SC	1530	8	F	-0.03	-0.31	0.26	M	0.03	-0.62	0.26	0.32	0.37	0.86	162	0.39	0.00	0.97	0.14	19	36
SC	985	8	F	-0.01	-1.66	0.23	M	0.01	-1.78	0.23	0.12	0.33	0.36	162	0.72	0.00	0.99	0.08	19	37
SC	949	8	F	-0.08	-0.56	0.25	M	0.08	-1.30	0.24	0.74	0.34	2.17	162	0.03	1.85	0.17	0.69	19	38
SC	981	8	F	-0.06	-0.10	0.27	M	0.06	-0.76	0.26	0.66	0.37	1.77	162	0.08	0.49	0.49	0.38	19	39
SC	946	8	F	0.02	-1.61	0.23	M	-0.02	-1.46	0.23	-0.15	0.33	-0.45	162	0.66	0.15	0.70	0.25	19	40
SC	944	8	F	0.01	0.68	0.33	M	-0.01	0.95	0.43	-0.26	0.55	-0.48	153	0.63	0.00	0.98	-0.40	19	41
SC	978	8	F	0.01	1.59	0.47	M	-0.01	2.13	0.72	-0.54	0.86	-0.63	140	0.53	0.33	0.56		19	42
SC	945	8	F	0.10	0.09	0.14	M	-0.09	0.56	0.22	-0.46	0.26	-1.81	137	0.07	0.55	0.46	-0.40	19	43
SC	1266	8	F	-0.03	-0.85	0.24	M	0.03	-1.13	0.24	0.28	0.34	0.82	162	0.41	0.11	0.74	0.21	19	44
SC	986	8	F	0.00	0.48	0.31	M	0.00	0.48	0.36	0.00	0.48	0.00	159	1.00	0.00	0.96	-0.13	19	45
SC	967	8	F	-0.01	0.38	0.30	M	0.01	0.24	0.33	0.14	0.45	0.32	161	0.75	0.00	0.98	-0.19	19	46
SC	1526	8	F	-0.03	0.13	0.28	M	0.03	-0.32	0.28	0.45	0.40	1.12	162	0.26	0.03	0.86	0.23	19	47
SC	969	8	F	0.02	-1.01	0.23	M	-0.02	-0.82	0.25	-0.19	0.34	-0.56	162	0.58	1.20	0.27	-0.59	19	48
SC	980	8	F	-0.01	1.83	0.52	M	0.01	1.39	0.52	0.44	0.73	0.60	162	0.55	0.15	0.70	0.14	19	49
SC	1267	8	F	-0.03	-0.73	0.24	M	0.03	-1.07	0.24	0.33	0.34	0.97	162	0.33	0.07	0.79	0.20	19	50
SC	965	8	F	0.02	-0.85	0.24	M	-0.02	-0.69	0.26	-0.16	0.35	-0.45	161	0.65	0.04	0.84	0.01	19	51
SC	1513	8	F	-0.04	-1.45	0.23	M	0.04	-1.78	0.23	0.33	0.33	1.02	162	0.31	0.14	0.71	0.25	19	52
SC	960	8	F	0.00	-0.10	0.27	M	0.00	-0.16	0.30	0.06	0.40	0.14	161	0.89	0.59	0.44	0.54	19	53
SC	1522	8	F	-0.01	0.21	0.29	M	0.00	0.13	0.32	0.08	0.43	0.18	161	0.86	0.10	0.75	-0.35	19	54
SC	958	8	F	0.01	1.39	0.43	M	-0.01	1.70	0.59	-0.31	0.73	-0.43	149	0.67	0.01	0.93	-0.77	19	55
SC	938	8	F	0.09	-0.68	0.24	M	-0.08	0.48	0.36	-1.16	0.44	-2.65	142	0.01	7.74	0.01	-2.04	19	56
SC	979	8	F	0.02	0.92	0.36	M	-0.02	1.70	0.60	-0.78	0.70	-1.12	135	0.27	0.41	0.52	-1.13	19	57
SC	939	8	F	0.02	-0.68	0.24	M	-0.02	-0.48	0.27	-0.20	0.36	-0.54	160	0.59	0.44	0.51	0.57	19	58
SC	974	8	F	0.00	1.39	0.43	M	0.00	1.39	0.52	0.00	0.68	0.00	157	1.00	0.02	0.88	0.31	19	59
SC	1056	8	F	0.02	1.39	0.43	M	-0.02	2.84	1.01	-1.46	1.10	-1.32	110	0.19	0.11	0.74	-0.21	19	60
SC	1110	8	F	0.02	1.21	0.40	M	-0.02	2.13	0.72	-0.91	0.83	-1.11	128	0.27	0.51	0.47	-1.27	19	61
SC	1263	8	F	-0.01	-0.17	0.26	M	0.01	-0.24	0.29	0.07	0.39	0.18	161	0.86	0.13	0.72	-0.30	19	62
SC	1511	8	F	-0.04	-1.18	0.23	M	0.04	-1.51	0.23	0.34	0.33	1.03	162	0.31	0.02	0.88	0.02	19	63

subject	Item	Grade	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	975	8	F	0.00	1.06	0.38	M	0.00	1.15	0.47	-0.09	0.60	-0.15	156	0.88	1.92	0.17	-1.31	19	64
SC	1054	8	F	0.02	-1.07	0.23	M	-0.02	-0.88	0.25	-0.19	0.34	-0.54	162	0.59	0.04	0.85	-0.01	19	65

Appendix Table I.9:Science: DIF Survey

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	5	1369	0	0.00	1.22	0.31	1	0.00	1.22	0.22	0.00	0.38	0.00	161	1.00	0.01	0.93	0.04	37	1
SC	5	1327	0	-0.01	0.17	0.25	1	0.00	0.10	0.17	0.07	0.30	0.23	158	0.82	0.19	0.66	0.18	37	2
SC	5	1365	0	-0.02	0.42	0.26	1	0.01	0.28	0.18	0.14	0.31	0.45	156	0.65	0.49	0.48	0.29	37	3
SC	5	1320	0	0.04	1.20	0.31	1	-0.02	1.66	0.25	-0.47	0.40	-1.17	182	0.24	2.69	0.10	-0.80	37	4
SC	5	1372	0	-0.08	1.13	0.15	1	0.04	0.92	0.10	0.21	0.18	1.16	148	0.25	1.56	0.21	0.46	37	5
SC	5	1344	0	-0.03	-0.19	0.24	1	0.01	-0.37	0.17	0.18	0.29	0.60	158	0.55	1.86	0.17	0.51	37	6
SC	5	1373	0	0.02	-0.31	0.24	1	-0.01	-0.17	0.17	-0.14	0.29	-0.48	160	0.64	0.15	0.70	-0.16	37	7
SC	5	1324	0	-0.04	1.11	0.30	1	0.02	0.69	0.19	0.42	0.36	1.18	146	0.24	0.52	0.47	0.34	37	8
SC	5	1366	0	0.00	0.87	0.28	1	0.00	0.87	0.20	0.00	0.34	0.00	160	1.00	0.03	0.86	-0.14	37	9
SC	5	1358	0	0.03	0.10	0.25	1	-0.02	0.35	0.18	-0.24	0.31	-0.79	164	0.43	1.11	0.29	-0.36	37	10
SC	5	1349	0	0.04	0.70	0.27	1	-0.02	1.13	0.21	-0.43	0.35	-1.25	175	0.21	0.59	0.44	-0.33	37	11
SC	5	1359	0	0.04	0.23	0.25	1	-0.02	0.58	0.19	-0.35	0.31	-1.13	167	0.26	0.99	0.32	-0.39	37	12
SC	5	1328	0	0.01	-0.82	0.24	1	0.00	-0.76	0.17	-0.06	0.29	-0.20	159	0.85	0.01	0.93	-0.02	37	13
SC	5	1370	0	-0.06	0.23	0.25	1	0.03	-0.23	0.17	0.45	0.30	1.50	153	0.14	1.17	0.28	0.38	37	14
SC	5	1361	0	-0.02	0.29	0.25	1	0.01	0.16	0.18	0.13	0.31	0.44	156	0.66	0.63	0.43	0.30	37	15
SC	5	1331	0	-0.05	0.41	0.14	1	0.02	0.31	0.10	0.11	0.17	0.63	156	0.53	0.24	0.63	0.14	37	16
SC	5	1348	0	0.04	0.49	0.26	1	-0.02	0.80	0.20	-0.31	0.33	-0.95	168	0.34	0.14	0.71	-0.18	37	17
SC	5	1994	0	0.02	-1.29	0.25	1	-0.01	-1.17	0.17	-0.13	0.30	-0.41	157	0.68	0.00	0.97	-0.04	37	18
SC	5	1533	0	-0.09	0.58	0.18	1	0.04	0.25	0.12	0.32	0.22	1.48	150	0.14	2.42	0.12	0.57	37	19
SC	5	1326	0	-0.08	0.86	0.28	1	0.04	0.16	0.18	0.70	0.33	2.11	143	0.04	2.49	0.11	0.57	37	20
SC	5	1325	0	0.02	-0.65	0.24	1	-0.01	-0.48	0.17	-0.17	0.29	-0.58	159	0.57	0.37	0.55	-0.25	37	21
SC	5	1332	0	-0.03	-0.02	0.24	1	0.01	-0.20	0.17	0.18	0.30	0.61	157	0.54	0.07	0.79	0.13	37	22

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	5	1368	0	0.00	1.40	0.33	1	0.00	1.42	0.23	-0.02	0.40	-0.05	161	0.96	0.00	0.95	-0.12	37	23
SC	5	1347	0	0.03	-0.76	0.24	1	-0.01	-0.57	0.17	-0.20	0.29	-0.67	158	0.50	0.06	0.80	-0.12	37	24
SC	5	1991	0	-0.02	-0.59	0.24	1	0.01	-0.73	0.17	0.14	0.29	0.49	159	0.63	0.02	0.88	0.11	37	25
SC	5	1540	0	0.03	0.85	0.28	1	-0.01	1.13	0.21	-0.28	0.35	-0.79	170	0.43	0.01	0.91	-0.12	37	26
SC	5	1362	0	0.03	-0.99	0.24	1	-0.02	-0.76	0.17	-0.23	0.29	-0.78	157	0.43	0.06	0.81	-0.14	37	27
SC	5	1992	0	0.04	-1.91	0.28	1	-0.02	-1.55	0.18	-0.36	0.33	-1.09	150	0.28	1.63	0.20	-0.51	37	28
SC	5	1318	0	0.07	0.63	0.27	1	-0.03	1.33	0.23	-0.70	0.35	-1.99	186	0.05	2.99	0.08	-0.83	37	29
SC	5	1536	0	0.02	0.75	0.19	1	-0.01	0.85	0.14	-0.10	0.23	-0.44	165	0.66	0.74	0.39	-0.35	37	30
SC	5	1998	0	-0.05	-0.31	0.24	1	0.02	-0.62	0.17	0.31	0.29	1.07	158	0.28	0.19	0.66	0.25	37	31
SC	5	1980	0	0.09	0.29	0.11	1	-0.04	0.42	0.08	-0.13	0.13	-0.97	164	0.33	0.69	0.41	-0.28	37	32
SC	5	1321	0	0.02	-1.29	0.25	1	-0.01	-1.17	0.17	-0.13	0.30	-0.41	157	0.68	0.05	0.83	-0.12	37	33
SC	5	1330	0	0.02	-0.02	0.24	1	-0.01	0.13	0.17	-0.14	0.30	-0.48	161	0.63	0.16	0.69	-0.18	37	34
SC	5	1356	0	-0.03	-0.80	0.16	1	0.02	-0.91	0.12	0.11	0.20	0.53	160	0.60	0.14	0.71	0.11	37	35
SC	5	1996	0	0.02	-0.99	0.24	1	-0.01	-0.85	0.17	-0.15	0.29	-0.49	158	0.62	0.02	0.89	-0.10	37	36
SC	5	1995	0	0.00	0.28	0.25	1	0.00	0.28	0.18	0.00	0.31	0.00	159	1.00	0.00	0.99	0.05	37	37
SC	5	1329	0	0.02	0.23	0.25	1	-0.01	0.41	0.18	-0.18	0.31	-0.59	163	0.56	0.65	0.42	-0.34	37	38
SC	5	1979	0	-0.19	0.13	0.11	1	0.09	-0.11	0.07	0.24	0.13	1.88	152	0.06	4.25	0.04	0.69	37	39
SC	5	1322	0	0.00	-1.62	0.26	1	0.00	-1.60	0.18	-0.02	0.32	-0.07	159	0.94	0.03	0.86	-0.16	37	40
SC	5	1999	0	0.05	-0.37	0.24	1	-0.02	-0.02	0.17	-0.34	0.29	-1.16	162	0.25	0.48	0.49	-0.25	37	41
SC	5	1367	0	0.02	-0.54	0.24	1	-0.01	-0.42	0.17	-0.11	0.29	-0.38	159	0.70	0.00	0.99	0.04	37	42
SC	5	1336	0	0.03	-0.37	0.24	1	-0.01	-0.17	0.17	-0.20	0.29	-0.67	160	0.50	0.39	0.53	-0.26	37	43
SC	5	1534	0	0.01	1.21	0.22	1	-0.01	1.29	0.16	-0.08	0.27	-0.30	162	0.77	0.21	0.65	-0.18	37	44
SC	5	1323	0	0.05	-1.11	0.24	1	-0.03	-0.76	0.17	-0.35	0.30	-1.18	156	0.24	0.50	0.48	-0.27	37	45
SC	5	1364	0	0.04	-0.08	0.24	1	-0.02	0.19	0.18	-0.26	0.30	-0.88	163	0.38	0.71	0.40	-0.31	37	46
SC	5	1997	0	-0.01	-0.76	0.24	1	0.01	-0.85	0.17	0.09	0.29	0.29	160	0.77	0.00	0.95	-0.08	37	47
SC	5	1993	0	0.07	-1.69	0.26	1	-0.03	-1.17	0.17	-0.52	0.32	-1.64	149	0.10	2.81	0.09	-0.67	37	48
SC	5	1315	0	-0.10	1.04	0.15	1	0.05	0.80	0.09	0.24	0.17	1.40	146	0.16	0.54	0.46	0.26	37	49
SC	5	1317	0	0.00	-0.69	0.24	1	0.00	-0.69	0.17	0.00	0.29	0.00	159	1.00	0.00	0.99	-0.05	37	50
SC	5	1542	0	-0.05	0.42	0.26	1	0.03	0.01	0.17	0.42	0.31	1.34	151	0.18	1.59	0.21	0.46	37	51

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	5	1333	0	0.04	-0.19	0.24	1	-0.02	0.10	0.17	-0.29	0.30	-0.97	163	0.33	0.05	0.82	0.14	37	52
SC	5	1351	0	0.06	0.10	0.25	1	-0.03	0.58	0.19	-0.48	0.31	-1.54	170	0.13	1.66	0.20	-0.56	37	53
SC	5	1535	0	0.00	-0.99	0.24	1	0.00	-1.01	0.17	0.02	0.30	0.07	159	0.94	0.00	0.96	-0.05	37	54
SC	5	1337	0	0.03	0.29	0.25	1	-0.01	0.51	0.18	-0.22	0.31	-0.70	164	0.48	0.03	0.87	-0.11	37	55
SC	5	1338	0	-0.07	0.17	0.25	1	0.04	-0.34	0.17	0.51	0.30	1.68	153	0.09	1.06	0.30	0.38	37	56
SC	5	1339	0	-0.02	0.42	0.26	1	0.01	0.28	0.18	0.14	0.31	0.45	156	0.65	0.35	0.55	0.26	37	57
SC	5	1537	0	-0.01	-0.42	0.24	1	0.00	-0.46	0.17	0.04	0.29	0.14	159	0.89	0.02	0.89	0.01	37	58
SC	8	983	0	0.00	2.36	0.72	1	0.00	2.41	0.72	-0.05	1.02	-0.05	163	0.96	0.08	0.78	0.74	24	1
SC	8	962	0	-0.06	-1.78	0.23	1	0.06	-2.31	0.25	0.53	0.34	1.58	160	0.12	1.78	0.18	0.57	24	2
SC	8	952	0	0.07	-1.68	0.23	1	-0.07	-1.05	0.24	-0.63	0.33	-1.91	162	0.06	1.76	0.18	-0.57	24	3
SC	8	951	0	-0.02	1.63	0.52	1	0.02	1.05	0.40	0.57	0.66	0.87	157	0.39	0.16	0.69	0.41	24	4
SC	8	977	0	-0.01	-0.82	0.24	1	0.01	-0.93	0.24	0.11	0.34	0.31	163	0.76	0.01	0.92	-0.04	24	5
SC	8	1109	0	-0.01	-1.32	0.23	1	0.01	-1.39	0.24	0.07	0.33	0.22	163	0.83	0.05	0.81	0.13	24	6
SC	8	956	0	0.02	-1.58	0.23	1	-0.02	-1.39	0.24	-0.19	0.33	-0.57	162	0.57	0.00	0.98	0.08	24	7
SC	8	959	0	-0.01	4.29		1	0.01	2.41	0.72	1.89	1.97	0.96	110	0.34	0.03	0.86		24	8
SC	8	955	0	-0.03	1.93	0.60	1	0.04	0.76	0.36	1.18	0.70	1.69	139	0.09	1.27	0.26	1.05	24	9
SC	8	1519	0	0.00	0.59	0.35	1	0.00	0.52	0.33	0.07	0.48	0.15	163	0.88	0.24	0.62	0.41	24	10
SC	8	1238	0	0.01	0.08	0.30	1	-0.02	0.31	0.31	-0.23	0.43	-0.53	162	0.60	0.00	0.98	-0.10	24	11
SC	8	1205	0	0.00	-0.57	0.25	1	0.00	-0.57	0.26	0.00	0.36	0.00	163	1.00	0.30	0.58	0.28	24	12
SC	8	1257	0	0.03	-1.37	0.23	1	-0.03	-1.11	0.24	-0.26	0.33	-0.80	162	0.43	0.25	0.62	-0.26	24	13
SC	8	932	0	-0.04	-0.09	0.28	1	0.05	-0.62	0.25	0.53	0.38	1.41	163	0.16	1.38	0.24	0.58	24	14
SC	8	1111	0	-0.02	1.38	0.47	1	0.02	0.90	0.38	0.48	0.61	0.80	159	0.43	0.00	0.97	0.52	24	15
SC	8	1260	0	0.03	0.08	0.30	1	-0.03	0.63	0.35	-0.55	0.46	-1.21	157	0.23	0.29	0.59	-0.51	24	16
SC	8	1265	0	0.03	-0.76	0.24	1	-0.03	-0.42	0.26	-0.34	0.36	-0.96	162	0.34	0.06	0.80	-0.17	24	17
SC	8	953	0	0.02	-0.45	0.26	1	-0.02	-0.20	0.27	-0.24	0.38	-0.65	162	0.52	0.10	0.76	-0.21	24	18
SC	8	954	0	0.04	-0.99	0.24	1	-0.05	-0.56	0.26	-0.44	0.35	-1.26	161	0.21	0.51	0.48	-0.38	24	19
SC	8	942	0	0.03	-1.63	0.23	1	-0.03	-1.33	0.24	-0.29	0.33	-0.90	162	0.37	0.00	0.97	-0.04	24	20
SC	8	936	0	-0.04	-0.38	0.26	1	0.05	-0.87	0.25	0.49	0.36	1.36	163	0.18	0.64	0.42	0.40	24	21
SC	8	964	0	-0.04	1.38	0.47	1	0.04	0.41	0.32	0.97	0.57	1.71	148	0.09	0.77	0.38	0.85	24	22

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	8	937	0	0.04	-0.81	0.11	1	-0.05	-0.72	0.11	-0.09	0.15	-0.58	163	0.56	0.96	0.33	-0.35	24	23
SC	8	971	0	0.02	1.38	0.47	1	-0.03	3.12	1.01	-1.73	1.12	-1.56	110	0.12	0.44	0.51	-0.98	24	24
SC	8	972	0	0.02	-1.42	0.23	1	-0.03	-1.18	0.24	-0.24	0.33	-0.72	161	0.48	0.56	0.46	-0.35	24	25
SC	8	1258	0	-0.03	1.38	0.47	1	0.04	0.51	0.34	0.88	0.58	1.52	151	0.13	1.12	0.29	1.70	24	26
SC	8	1524	0	-0.01	-0.76	0.24	1	0.01	-0.83	0.25	0.06	0.35	0.18	162	0.86	0.00	0.96	0.09	24	27
SC	8	947	0	0.00	0.17	0.30	1	0.00	0.11	0.30	0.06	0.43	0.14	162	0.89	0.28	0.60	-0.31	24	28
SC	8	1114	0	-0.07	-0.62	0.14	1	0.07	-0.82	0.13	0.21	0.19	1.10	162	0.27	0.62	0.43	0.32	24	29
SC	8	984	0	-0.02	1.63	0.52	1	0.02	1.01	0.41	0.62	0.66	0.93	156	0.35	1.17	0.28	1.24	24	30
SC	8	948	0	0.00	-0.38	0.26	1	0.00	-0.33	0.27	-0.05	0.38	-0.14	160	0.89	0.14	0.70	-0.27	24	31
SC	8	950	0	0.00	-0.81	0.24	1	0.00	-0.81	0.25	0.00	0.35	0.00	160	1.00	0.01	0.94	0.10	24	32
SC	8	961	0	0.00	2.36	0.72	1	0.00	2.36	0.72	0.00	1.02	0.00	161	1.00	0.00	1.00	-1.01	24	33
SC	8	987	0	0.02	0.47	0.33	1	-0.02	0.86	0.38	-0.38	0.51	-0.75	156	0.45	0.10	0.75	-0.03	24	34
SC	8	970	0	0.07	-0.88	0.24	1	-0.08	-0.01	0.29	-0.87	0.38	-2.30	152	0.02	3.78	0.05	-0.84	24	35
SC	8	1530	0	-0.03	-0.31	0.27	1	0.03	-0.61	0.26	0.30	0.37	0.80	161	0.42	0.05	0.83	0.15	24	36
SC	8	985	0	0.00	-1.71	0.23	1	-0.01	-1.69	0.24	-0.02	0.33	-0.07	160	0.94	0.02	0.90	-0.02	24	37
SC	8	949	0	0.01	-0.99	0.24	1	-0.01	-0.87	0.25	-0.13	0.34	-0.37	160	0.71	0.12	0.73	0.20	24	38
SC	8	981	0	0.02	-0.52	0.26	1	-0.02	-0.33	0.27	-0.19	0.37	-0.50	160	0.62	0.00	0.98	-0.09	24	39
SC	8	946	0	0.01	-1.58	0.23	1	-0.01	-1.46	0.24	-0.12	0.33	-0.36	160	0.72	0.07	0.79	-0.21	24	40
SC	8	944	0	-0.02	1.01	0.40	1	0.02	0.59	0.35	0.42	0.53	0.78	160	0.44	0.01	0.94	-0.31	24	41
SC	8	978	0	-0.01	1.93	0.59	1	0.01	1.63	0.52	0.30	0.79	0.38	160	0.70	0.02	0.88	-0.43	24	42
SC	8	945	0	-0.05	0.37	0.17	1	0.06	0.14	0.15	0.24	0.23	1.02	160	0.31	0.54	0.46	-0.35	24	43
SC	8	1266	0	0.05	-1.21	0.23	1	-0.05	-0.74	0.25	-0.47	0.34	-1.38	158	0.17	1.79	0.18	-0.55	24	44
SC	8	986	0	-0.01	0.59	0.35	1	0.01	0.36	0.32	0.22	0.47	0.47	161	0.64	0.00	0.97	0.16	24	45
SC	8	967	0	-0.01	0.36	0.32	1	0.01	0.26	0.31	0.10	0.45	0.23	161	0.82	0.03	0.87	-0.23	24	46
SC	8	1526	0	0.03	-0.31	0.27	1	-0.04	0.16	0.31	-0.48	0.41	-1.17	156	0.24	1.82	0.18	-0.68	24	47
SC	8	969	0	-0.03	-0.76	0.24	1	0.04	-1.11	0.24	0.34	0.34	1.00	161	0.32	0.64	0.42	0.37	24	48
SC	8	980	0	-0.01	1.93	0.59	1	0.01	1.39	0.47	0.55	0.76	0.72	156	0.47	0.02	0.90	0.56	24	49
SC	8	1267	0	-0.05	-0.64	0.25	1	0.06	-1.17	0.24	0.52	0.35	1.51	161	0.13	1.08	0.30	0.45	24	50
SC	8	965	0	-0.04	-0.58	0.25	1	0.04	-0.99	0.25	0.41	0.35	1.16	161	0.25	0.03	0.87	0.16	24	51

subject	grade	Item	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	Person Class	Obs-Exp Average	DIF Measure	DIF S.E	DIF Contrast	Joint S.E	Rasch-Welch			Mantel		Size Active ITEM		
													T	Df	Prob	Chi-sq	Prob	CUMLOR	Slices	Number
SC	8	1513	0	-0.03	-1.47	0.23	1	0.03	-1.74	0.24	0.27	0.33	0.82	160	0.42	0.44	0.51	0.31	24	52
SC	8	960	0	-0.04	0.17	0.30	1	0.04	-0.33	0.27	0.50	0.41	1.23	161	0.22	4.77	0.03	1.07	24	53
SC	8	1522	0	0.03	-0.09	0.28	1	-0.04	0.47	0.34	-0.56	0.44	-1.27	154	0.20	0.92	0.34	-0.62	24	54
SC	8	958	0	0.01	1.38	0.47	1	-0.01	1.63	0.52	-0.25	0.70	-0.36	158	0.72	0.01	0.91	0.29	24	55
SC	8	938	0	0.00	-0.25	0.27	1	0.00	-0.25	0.28	0.00	0.39	0.00	161	1.00	0.02	0.89	-0.16	24	56
SC	8	979	0	0.01	1.01	0.40	1	-0.01	1.39	0.47	-0.38	0.62	-0.62	155	0.54	0.09	0.77	-0.45	24	57
SC	8	939	0	-0.03	-0.45	0.26	1	0.03	-0.74	0.25	0.29	0.36	0.80	161	0.42	0.00	0.97	0.15	24	58
SC	8	974	0	-0.01	1.63	0.52	1	0.01	1.18	0.43	0.44	0.68	0.65	159	0.52	0.16	0.69	0.67	24	59
SC	8	1056	0	0.01	1.63	0.52	1	-0.01	2.37	0.72	-0.74	0.89	-0.83	142	0.41	0.03	0.86	-0.58	24	60
SC	8	1110	0	0.02	1.18	0.43	1	-0.02	1.94	0.60	-0.76	0.74	-1.04	143	0.30	0.00	0.95	-0.43	24	61
SC	8	1263	0	0.02	-0.31	0.27	1	-0.02	-0.10	0.29	-0.21	0.39	-0.55	159	0.58	0.03	0.87	0.15	24	62
SC	8	1511	0	0.03	-1.47	0.23	1	-0.04	-1.17	0.24	-0.31	0.33	-0.92	159	0.36	0.01	0.93	-0.03	24	63
SC	8	975	0	-0.01	1.18	0.43	1	0.01	1.01	0.41	0.17	0.59	0.29	161	0.77	0.01	0.91	-0.36	24	64
SC	8	1054	0	0.04	-1.16	0.23	1	-0.04	-0.80	0.25	-0.35	0.34	-1.04	159	0.30	0.02	0.88	0.01	24	65

Appendix J: Person By Test Information Functions

This appendix contains the Test Information Functions from Winsteps

Appendix Figure J.1: Grade 3 HL Test Information Function

Appendix Figure J.2: Grade 4 HL Test Information Function

Appendix Figure J.3: Grade 5 HL Test Information Function

Appendix Figure J.4: Grade 6 HL Test Information Function

Appendix Figure J.5 : Grade 7 HL Test Information Function

Appendix Figure J.6: Grade 8 HL Test Information Function

Appendix Figure J.7: Grade 3 MA Test Information Function

Appendix Figure J.8: Grade 4 MA Test Information Function

Appendix Figure J.9: Grade 5 MA Test Information Function

Appendix Figure J.10: Grade 6 MA Test Information Function

Appendix Figure J.11: Grade 7 MA Test Information Function

Appendix Figure J.12: Grade 8 MA Test Information Function

Appendix Figure J.13: Grade 5 SC Test Information Function

Appendix Figure J.14: Grade 8 SC Test Information Function

Appendix K: : Dimensionality Tables

This appendix contains the details of the dimensionality analysis from Winsteps

Appendix Table K.1: 2022 Grade 3 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.46	-0.69	0.95	0.91	A	9	84	-0.45	0.46	1.3	1.58	a	51	1277
1	0.45	-0.86	0.86	0.82	B	3	381	-0.34	-0.55	1.1	1.11	b	38	123
1	0.39	-1.66	0.66	0.57	C	5	94	-0.32	-0.35	1.01	1	c	25	110
1	0.38	-0.23	0.88	0.81	D	10	88	-0.31	0.20	1.12	1.36	d	37	143
1	0.37	-2.53	0.88	0.68	E	11	90	-0.3	-1.63	1.18	1.3	e	21	383
1	0.32	0.37	0.91	0.78	F	8	1026	-0.29	0.05	1.19	1.4	f	33	119
1	0.32	0.55	0.82	0.69	G	20	104	-0.29	1.56	1	1.11	g	48	1286
1	0.29	0.12	0.76	0.63	H	54	1284	-0.28	0.08	1.31	1.56	h	35	130
1	0.25	-2.44	1.01	1	I	12	91	-0.27	0.05	1.38	1.52	i	30	114
1	0.22	-0.33	0.83	0.75	J	47	145	-0.25	-0.90	1.18	1.27	j	44	156
1	0.21	-0.18	0.89	0.85	K	2	101	-0.23	0.00	1.31	1.41	k	32	1022
1	0.2	0.13	0.99	0.92	L	4	108	-0.16	-1.16	1.17	1.23	l	43	384
1	0.17	-0.61	0.96	0.91	M	6	99	-0.15	-0.46	1.08	1.09	m	49	1282
1	0.17	-1.56	0.84	0.75	N	45	150	-0.13	-1.87	0.88	0.78	n	1	93
1	0.15	0.92	1.05	0.89	O	13	87	-0.12	-0.86	1.18	1.25	o	42	1021
1	0.13	0.47	0.74	0.74	P	27	1024	-0.12	-0.19	1.13	1.2	p	52	1281
1	0.13	1.19	0.84	0.78	Q	29	1020	-0.12	-1.08	1.01	1.08	q	53	1283
1	0.13	2.04	0.88	0.51	R	31	112	-0.11	-0.11	1.17	1.25	r	41	158
1	0.12	0.30	0.94	0.89	S	18	96	-0.11	-0.56	1.11	1.13	s	56	394
1	0.12	1.78	0.82	0.59	T	50	1285	-0.08	-1.15	1.19	1.38	t	7	89
1	0.11	-0.29	0.94	0.92	U	14	92	-0.06	0.57	0.94	0.99	u	16	95
1	0.1	-0.97	0.9	0.85	V	28	117	-0.03	1.08	1.03	0.91	v	15	1023
1	0.09	0.81	0.77	0.67	W	46	138	-0.02	-0.99	1.12	1.11	w	19	107
1	0.08	-0.38	0.93	0.93	X	17	97	-0.02	-1.45	1	0.99	x	23	162
1	0.06	2.98	0.91	0.52	Y	40	127	-0.02	1.70	0.97	0.9	y	26	113
1	0.04	-1.16	0.96	0.92	Z	36	125	-0.02	-0.73	0.94	0.92	z	55	1478
1	0.03	1.37	0.97	0.89		34	379	-0.01	0.61	1.17	1.15		24	1025
1	0.01	-1.26	1.11	1.12		22	161							
1	0.01	-0.52	1.04	1.08		39	137							

Appendix Table K.2: 2022 Grade 4 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.51	553.39	1.16	1.39	A	49	63	-0.39	422.29	0.8	0.68	a	17	20
1	0.44	560.09	1.2	1.49	B	36	56	-0.35	418.57	0.84	0.73	b	2	389
1	0.41	519.82	1.28	1.4	C	45	51	-0.35	554.91	0.76	0.7	c	56	1013
1	0.33	511.22	1.13	1.17	D	33	40	-0.33	396.66	0.82	0.67	d	4	7
1	0.31	568.56	1.18	1.46	E	37	57	-0.32	436.37	0.83	0.72	e	6	64
1	0.3	530.19	1.3	1.45	F	19	23	-0.32	574.93	0.85	0.74	f	53	1014
1	0.28	515.85	1.26	1.31	G	24	36	-0.3	453.34	0.87	0.84	g	7	8
1	0.28	563.23	1.26	1.47	H	31	25	-0.3	576.24	0.81	0.66	h	55	1012
1	0.28	542.26	1.21	1.35	I	34	55	-0.29	455.38	0.9	0.85	i	5	12
1	0.28	495.09	1.12	1.13	J	52	1015	-0.29	569.31	0.81	0.73	j	38	42
1	0.27	516.76	1.15	1.21	K	20	30	-0.28	457.90	0.91	0.84	k	14	15
1	0.24	512.01	1.18	1.24	L	26	26	-0.23	577.29	1.13	1.05	l	23	24
1	0.24	576.24	1.08	1.25	M	35	41	-0.22	463.23	0.83	0.77	m	47	60
1	0.21	503.60	1.07	1.11	N	39	387	-0.21	528.09	1.15	1.12	n	15	17
1	0.2	540.73	1.11	1.16	O	40	46	-0.21	414.27	1.07	0.96	o	16	65
1	0.16	573.63	1.06	1.3	P	50	1016	-0.21	477.69	0.81	0.76	p	42	48
1	0.15	469.27	1.08	1.1	Q	27	27	-0.19	522.67	0.94	0.93	q	8	9
1	0.14	530.19	1.07	1.14	R	18	22	-0.19	458.98	1.02	0.96	r	13	16
1	0.12	517.79	1.02	1.04	S	28	37	-0.17	723.85	0.93	0.36	s	51	1017
1	0.1	560.09	0.98	0.95	T	54	1011	-0.15	423.50	0.92	0.84	t	12	14
1	0.09	459.42	1.06	1.09	U	29	38	-0.14	594.06	0.63	0.42	u	22	35
1	0.08	508.36	1.05	1.07	V	32	54	-0.14	558.13	1.1	1.18	v	43	50
1	0.06	527.04	1.04	1.1	W	46	62	-0.14	465.34	0.83	0.78	w	44	49
1	0.05	449.20	1.04	1.13	X	1	18	-0.12	587.23	0.85	0.77	x	10	11
1	0.03	512.97	0.97	0.98	Y	30	31	-0.11	569.33	0.95	0.86	y	25	1291
1	0.01	512.71	0.99	1	Z	41	47	-0.1	527.61	0.9	0.85	z	11	1019
1	0	477.69	1	0.98		21	34	-0.06	536.27	1.04	1.02		57	395
								-0.05	513.93	0.96	0.92		3	21
								-0.03	388.87	1.2	1.4		9	13
								-0.03	521.89	1.02	0.99		48	61

Appendix Table K.3: 2022 Grade 5 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading2	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.57	-2.98	1	0.63	A	2	644	-0.45	0.12	1.23	1.46	a	38	730
1	0.39	-0.66	1.09	1.06	B	57	1030	-0.44	0.31	1.44	1.7	b	18	1215
1	0.35	-0.20	0.92	0.87	C	9	690	-0.35	-0.60	1.17	1.23	c	16	627
1	0.35	0.21	0.85	0.79	D	17	722	-0.3	-0.39	1.12	1.19	d	5	633
1	0.35	-1.65	0.85	0.74	E	31	1222	-0.3	0.03	1.08	1.07	e	20	1183
1	0.29	3.17	4.81	4.63	F	35	677	-0.28	1.10	1.15	1.57	f	26	718
1	0.28	0.68	0.76	0.57	G	44	712	-0.26	-0.25	1.19	1.25	g	19	672
1	0.24	-1.17	0.87	0.86	H	41	696	-0.24	0.27	0.98	0.98	h	7	1072
1	0.24	0.86	1.07	1.07	I	48	727	-0.23	0.44	1.28	1.54	i	8	711
1	0.22	-1.44	0.9	0.85	J	12	721	-0.23	-0.78	1.03	1.03	j	40	646
1	0.2	-0.75	0.88	0.85	K	3	636	-0.2	-1.23	1.2	1.26	k	24	729
1	0.19	0.30	0.87	0.85	L	55	719	-0.18	-0.64	1.02	1.02	l	23	1186
1	0.18	0.18	0.85	0.77	M	11	713	-0.17	1.28	1.37	1.97	m	56	1208
1	0.14	-1.58	1	0.94	N	28	689	-0.16	0.40	1.26	1.42	n	4	716
1	0.12	0.04	0.94	0.91	O	49	684	-0.16	-0.53	1.05	1.09	o	15	725
1	0.08	-0.13	0.97	0.97	P	27	1193	-0.16	0.38	0.72	0.64	p	43	708
1	0.08	-0.02	0.84	0.81	Q	32	629	-0.16	-0.09	1.11	1.13	q	47	630
1	0.06	-0.04	1.1	1.1	R	13	726	-0.16	1.28	1.02	1.25	r	51	707
1	0.06	-0.87	1.02	1.01	S	39	709	-0.15	-0.32	0.99	1.04	s	29	631
1	0.06	-1.41	0.96	0.92	T	53	626	-0.13	-2.82	1.25	1.64	t	10	1074
1	0.05	0.69	1.2	1.42	U	37	702	-0.13	1.35	0.78	0.7	u	22	673
1	0.04	-0.06	0.99	0.99	V	1	642	-0.13	0.09	1.07	1.12	v	46	714
1	0.04	0.29	0.84	0.81	W	6	723	-0.08	-1.39	1.2	1.22	w	54	634
1	0.03	-0.77	0.98	0.98	X	33	728	-0.07	0.96	0.95	0.91	x	21	681
1	0.03	-1.13	1.01	0.99	Y	50	699	-0.05	-0.77	1.06	1.06	y	30	648
1	0.02	-0.85	1.03	1.06	Z	36	625	-0.04	0.96	1.08	1.09	z	34	693
1	0.02	0.72	0.75	0.67		42	637	-0.04	0.13	0.92	0.92		45	720
								-0.04	1.73	0.66	0.44		52	706
								-0.02	0.67	0.75	0.65		25	640
								-0.01	-0.25	1.15	1.23		14	724

Appendix Table K.4: 2022 Grade 6 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.59	-0.82	1.15	1.17	A	7	643	-0.35	-2.04	1.09	1.05	a	52	655
1	0.46	-0.50	0.87	0.85	B	4	1661	-0.34	-1.01	0.9	0.87	b	10	652
1	0.41	0.09	1.09	1.02	C	23	1173	-0.33	-1.28	0.79	0.73	c	42	700
1	0.41	-0.74	0.93	0.94	D	32	680	-0.29	-0.46	0.99	1.01	d	43	697
1	0.22	-0.75	1.26	1.33	E	53	1031	-0.28	0.55	0.86	0.83	e	48	1169
1	0.19	0.08	0.89	0.77	F	14	664	-0.26	-2.04	1.03	0.96	f	21	683
1	0.17	-0.14	1.19	1.35	G	26	682	-0.24	-0.22	1.02	1.11	g	29	632
1	0.17	-1.58	1.12	1.13	H	36	667	-0.23	-0.64	1.04	1.05	h	6	659
1	0.13	0.78	0.71	0.57	I	44	694	-0.23	-0.95	0.89	0.87	i	9	678
1	0.11	-1.74	0.84	0.8	J	25	653	-0.23	2.61	1.35	1.13	j	35	674
1	0.1	-0.47	1.24	1.34	K	45	676	-0.21	-0.80	1.07	1.07	k	13	662
1	0.02	-1.65	0.8	0.72	L	28	1172	-0.19	-0.02	1	1.02	l	8	665
1	0.01	0.38	0.92	0.89	M	19	1309	-0.19	0.05	0.8	0.74	m	11	639
1	0.01	0.02	1.06	0.99	N	40	666	-0.19	0.60	1.1	1.22	n	47	650
								-0.18	2.16	0.86	0.85	o	37	1170
								-0.14	-0.28	1.13	1.22	p	22	649
								-0.14	-1.03	1.11	1.14	q	30	657
								-0.13	0.01	0.99	0.95	r	3	1171
								-0.13	0.04	1.02	1.06	s	49	669
								-0.12	2.71	1.21	1.12	t	2	660
								-0.12	3.20	1.74	1.99	u	16	691
								-0.12	-0.53	0.91	0.92	v	31	1755
								-0.12	1.32	0.89	0.63	w	46	668
								-0.12	-0.19	1.11	1.17	x	51	656
								-0.11	-0.04	1.21	1.32	y	5	661
								-0.11	-1.10	1.17	1.26	z	33	1566
								-0.11	0.53	1.16	1.23		34	675
								-0.09	-0.48	1.1	1.14	Z	12	1075
								-0.09	-0.08	0.88	0.84	Y	15	647
								-0.08	0.16	0.9	0.83	X	17	688
								-0.08	1.47	0.97	0.83	W	18	687
								-0.08	0.48	0.94	0.91	V	39	679
								-0.07	1.87	1	0.75	U	50	663
								-0.05	-0.32	1	1.01	T	24	1083
								-0.05	2.16	1.05	1.33	S	27	698
								-0.05	0.58	1.18	1.35	R	38	692
								-0.04	1.32	1.16	0.93	Q	20	651
								-0.02	-0.52	1	1.04	P	1	645
								-0.01	2.16	1	0.78	O	41	701

Appendix Table K.5: 2022 Grade 7 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.61	3.12	4.01	1.84	A	37	869	-0.38	0.57	0.86	0.87	a	14	774
1	0.55	-0.02	0.91	0.86	B	49	899	-0.36	0.70	0.98	1.22	b	50	876
1	0.53	0.43	0.87	0.76	C	54	902	-0.35	-0.29	1.08	1.06	c	23	808

1	0.42	0.15	0.93	0.93	D	40	1182	-0.33	-0.60	1.01	0.92	d	34	1096
1	0.4	-0.30	0.81	0.74	E	26	803	-0.3	-2.75	1.56	2.18	e	1	1118
1	0.36	-0.53	0.79	0.73	F	11	1175	-0.27	-1.15	0.93	0.92	f	57	1032
1	0.36	0.47	0.71	0.81	G	48	839	-0.26	1.48	1.27	1.55	g	6	886
1	0.36	0.62	1.34	1.55	H	52	834	-0.26	0.00	1.22	1.39	h	38	879
1	0.32	-1.64	0.73	0.67	I	13	790	-0.23	-0.22	1.14	1.27	i	21	806
1	0.27	0.35	1.07	1.17	J	18	892	-0.22	-1.31	1.2	1.35	j	8	763
1	0.27	-0.49	0.95	0.99	K	39	897	-0.2	-0.14	0.91	0.86	k	36	811
1	0.2	1.01	1.11	0.99	L	45	872	-0.16	-2.71	1.19	1.57	l	3	888
1	0.2	0.34	0.93	0.87	M	51	770	-0.16	1.18	0.91	0.98	m	20	1178
1	0.16	2.38	1.23	0.86	N	30	903	-0.16	-0.54	1.05	1.07	n	32	930
1	0.15	0.53	0.89	0.7	O	22	878	-0.15	-1.90	1.04	1	o	7	882
1	0.14	2.04	0.65	0.3	P	44	870	-0.15	-0.64	0.95	0.93	p	15	1097
1	0.13	2.02	0.95	0.76	Q	56	822	-0.13	0.10	1.36	1.64	q	55	1104
1	0.12	1.85	0.91	0.7	R	19	843	-0.11	1.41	0.66	0.86	r	42	874
1	0.11	-0.08	0.91	1.02	S	41	891	-0.06	1.16	0.74	0.72	s	53	884
1	0.09	-1.12	1.01	1	T	2	784	-0.05	-0.49	1.04	1.14	t	35	875
1	0.09	1.23	0.86	0.81	U	43	1179	-0.04	0.53	0.98	0.9	u	4	883
1	0.09	0.73	1.06	0.79	V	46	889	-0.04	1.54	1.13	0.97	v	17	1089
1	0.07	-2.32	1.02	0.92	W	5	885	-0.04	0.76	0.99	0.91	w	33	880
1	0.06	-2.02	0.94	0.89	X	12	871	-0.03	-0.27	1.05	1.05	x	10	1098
1	0.05	-1.68	0.94	0.9	Y	31	887	-0.03	-0.88	1.15	1.13	y	27	877
1	0.04	0.35	0.96	0.96	Z	24	1088	-0.02	0.80	2.1	2.39	z	28	1185
1	0.04	-1.52	0.83	0.81		25	769	-0.01	-1.42	1.12	1.06		47	829
1	0.04	-0.36	1.1	1.19		29	777							
1	0.03	-0.80	0.98	0.98		16	1099							

Appendix Table K.6: 2022 Grade 8 HLA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.48	0.00	1.29	1.5	A	17	914	-0.44	0.41	0.72	0.74	a	19	911
1	0.39	-0.07	1.12	1.33	B	54	826	-0.42	-0.81	0.82	0.78	b	18	921
1	0.38	0.66	1.48	2.21	C	33	1105	-0.41	-2.92	1.42	1.32	c	6	929
1	0.38	-0.34	1.09	1.22	D	40	1212	-0.37	-4.18	1.57	0.87	d	2	917
1	0.36	1.15	1.07	1.3	E	48	764	-0.37	-0.46	0.79	0.75	e	31	922
1	0.35	0.30	0.87	0.92	F	51	1092	-0.36	1.70	1.45	0.96	f	47	901
1	0.33	0.35	1.28	1.43	G	36	926	-0.27	-1.80	0.8	0.71	g	12	848
1	0.31	-0.05	1.02	1	H	42	905	-0.26	1.10	1.23	1.01	h	46	1201
1	0.3	0.75	1.39	1.72	I	35	1078	-0.25	-1.06	0.98	1	i	20	833
1	0.27	-0.45	1.1	1.11	J	50	805	-0.24	-1.05	0.92	0.9	j	44	1192
1	0.27	2.19	0.79	0.89	K	53	766	-0.22	0.40	0.7	0.57	k	14	771
1	0.23	0.80	1.19	1.55	L	34	893	-0.15	-2.51	0.7	0.64	l	11	1126
1	0.2	-0.03	1.09	1.23	M	30	906	-0.15	-0.57	0.94	0.87	m	16	767
1	0.17	0.51	0.95	1.18	N	49	924	-0.15	1.05	0.91	0.79	n	25	772
1	0.13	-0.39	1.11	1.08	O	23	796	-0.14	-0.50	0.92	0.89	o	10	855
1	0.11	-0.68	1.02	1.02	P	45	1199	-0.14	0.08	0.83	0.77	p	28	761
1	0.08	-0.36	0.99	1.06	Q	3	894	-0.14	-0.50	1	1.06	q	32	1190
1	0.08	1.35	1.17	1.41	R	5	913	-0.13	-0.07	1.14	1.24	r	27	1079
1	0.08	3.94	3.27	3.27	S	13	802	-0.13	0.38	1.02	1.14	s	43	1214
1	0.08	-0.40	1.19	1.24	T	56	1034	-0.12	1.00	1.02	1.05	t	39	780
1	0.06	-0.67	1.01	0.98	U	15	785	-0.09	-2.77	1.12	1.41	u	1	909
1	0.06	-0.69	0.98	0.96	V	41	925	-0.08	0.59	1.21	1.3	v	52	920
1	0.05	-0.07	1.04	1.09	W	37	1210	-0.06	0.40	1.04	1	w	22	916
1	0.04	-0.14	0.97	0.92	X	21	912	-0.04	-2.08	1.06	1.15	x	7	904
1	0.03	-2.13	1.14	1.11	Y	8	927	-0.03	1.11	1.4	1.47	y	9	1127
1	0.02	0.27	1.16	1.2	Z	4	867	-0.03	3.52	1.4	1.08	z	24	793
1	0.01	3.21	2.48	2.26		26	810	-0.01	0.68	1.01	1.1		38	820
1	0.01	-0.85	0.92	0.89		29	910	|						
1	0.01	0.00	1.04	1.02		55	778	|						

Appendix Table K.7: 2022 Grade 3 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure3	infit mnsq	outfit mnsq	entry	number	item
1	0.48	0.55	1.25	1.42	A	5	225	-0.47	-1.70	0.88	0.78	a	52	187
1	0.47	0.41	1.04	1.13	B	49	205	-0.46	0.01	0.78	0.73	b	22	172
1	0.37	1.06	1.32	1.61	C	54	218	-0.37	0.27	1.14	1.14	c	7	169
1	0.35	1.46	1.1	1.29	D	35	211	-0.35	-2.26	0.91	0.75	d	23	198
1	0.32	-0.52	1.11	1.1	E	29	229	-0.3	-0.86	0.82	0.76	e	17	174
1	0.31	0.73	1.18	1.26	F	28	995	-0.29	-2.94	1.46	1.34	f	6	215
1	0.3	1.02	1.03	1.23	G	15	226	-0.29	0.91	0.84	0.76	g	24	368
1	0.23	0.85	1.15	1.19	H	30	374	-0.25	-1.17	0.94	0.89	h	46	188
1	0.22	0.69	1.27	1.42	I	48	223	-0.24	-0.43	0.88	0.88	i	47	214
1	0.21	1.06	1.45	1.74	J	41	224	-0.21	-1.82	1.01	1.16	j	31	184
1	0.2	-0.22	1.03	1.04	K	8	231	-0.21	-0.62	0.95	0.95	k	42	204
1	0.19	1.12	1.11	1.24	L	19	210	-0.2	0.02	0.84	0.81	l	21	212
1	0.16	0.79	1.11	1.26	M	43	230	-0.16	0.48	0.91	0.88	m	40	213
1	0.15	-0.52	1.12	1.18	N	14	173	-0.15	-0.87	0.96	0.95	n	26	193
1	0.14	0.99	0.97	1.1	O	39	209	-0.14	-0.43	0.92	0.9	o	2	182
1	0.14	1.14	0.93	0.96	P	50	217	-0.13	0.49	1.15	1.12	p	25	191
1	0.14	2.54	0.97	1.6	Q	55	185	-0.13	-1.97	0.94	0.83	q	27	189
1	0.13	-3.59	1.04	1.42	R	1	178	-0.13	2.39	0.94	0.85	r	51	1305
1	0.11	-0.78	1.1	1.14	S	37	216	-0.12	2.05	0.83	0.62	s	38	235
1	0.07	0.79	0.96	1.02	T	13	371	-0.09	1.81	1.06	1.09	t	9	219
1	0.06	-1.30	1.06	1.15	U	34	201	-0.08	3.42	0.99	0.26	u	16	233
1	0.04	-0.16	0.93	0.91	V	32	186	-0.07	1.81	1.11	1.24	v	4	1303
1	0.04	0.43	1.2	1.26	W	45	180	-0.07	2.08	0.92	0.54	w	36	234
1	0.03	0.59	0.98	1.01	X	33	1035	-0.06	0.81	1.14	1.13	x	11	221
1	0.02	-0.90	0.97	0.97	Y	20	207	-0.06	2.34	0.95	0.83	y	18	1036
1	0	-2.31	1	1.15	Z	10	202	-0.06	0.01	0.85	0.85	z	53	208
1	0	3.67	0.94	0.73		12	992	-0.02	-1.66	1.09	1.26		3	206
1	0	-1.68	0.97	1		44	190	|						

Appendix Table K.8: 2022 Grade 4 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.51	-0.39	0.82	0.8	A	52	378	-0.42	-1.13	1.1	1.21	a	33	167
1	0.38	-0.33	0.87	0.85	B	24	250	-0.36	0.36	1.22	1.3	b	18	254
1	0.34	-1.26	0.83	0.79	C	43	267	-0.36	-1.02	1.23	1.31	c	21	265
1	0.31	-1.43	0.91	0.85	D	39	1981	-0.34	0.04	1.11	1.14	d	53	241
1	0.3	-1.15	0.89	0.86	E	17	1005	-0.31	0.98	1.12	1.23	e	41	253
1	0.3	2.55	0.92	0.59	F	19	239	-0.3	-0.34	1.13	1.14	f	7	170
1	0.3	1.07	0.94	0.88	G	46	246	-0.27	0.75	1.47	1.64	g	51	243
1	0.3	2.62	0.83	0.3	H	54	252	-0.25	-0.14	1.11	1.13	h	47	373
1	0.28	-0.16	1.03	1.06	I	31	103	-0.24	0.08	1.06	1.1	i	26	1006
1	0.23	0.20	0.9	0.9	J	23	256	-0.23	-0.97	0.88	0.88	j	9	262
1	0.2	-0.75	0.93	0.91	K	5	157	-0.23	-0.50	1.08	1.1	k	55	258
1	0.2	0.02	0.79	0.77	L	48	278	-0.15	-1.44	1.03	1.11	l	11	268
1	0.16	-2.24	0.9	0.77	M	44	242	-0.15	0.50	1.04	1.02	m	22	259
1	0.15	-0.36	0.88	0.89	N	16	171	-0.15	0.14	1.12	1.1	n	37	264
1	0.15	-0.13	0.98	1	O	32	245	-0.13	-0.29	1.05	1.06	o	28	261
1	0.13	-0.55	1	1.01	P	50	377	-0.13	-0.27	0.92	0.91	p	35	277
1	0.12	-1.18	0.85	0.81	Q	1	135	-0.12	0.19	1.09	1.08	q	12	276
1	0.12	-1.74	0.92	0.92	R	2	140	-0.11	-0.03	1.05	1.09	r	25	164
1	0.12	-1.00	1	0.97	S	3	109	-0.1	3.27	0.99	0.93	s	34	1010
1	0.12	0.53	0.92	1	T	14	166	-0.07	-0.51	1.04	1.04	t	27	263
1	0.12	-0.94	0.93	0.9	U	40	271	-0.07	0.20	1.1	1.12	u	49	1007
1	0.12	-0.82	0.92	0.91	V	56	249	-0.06	0.51	1.04	1.09	v	8	1009
1	0.11	1.45	0.98	0.93	W	36	240	-0.04	-0.48	1.04	1.05	w	38	154
1	0.1	-0.26	0.93	0.91	X	6	236	-0.03	-0.05	1.01	1.03	x	45	274
1	0.1	-0.22	0.95	0.97	Y	15	247	-0.01	-0.22	1.03	1.04	y	20	165
1	0.1	0.36	0.97	0.95	Z	42	375							
1	0.09	0.07	0.95	0.96		29	168							
1	0.08	-0.30	1.02	1.05		10	238							
1	0.04	-1.55	0.97	0.95		30	163							

Appendix Table K.9: 2022 Grade 5 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.41	-0.25	1.38	1.72	A	20	414	-0.4	-0.41	0.91	0.9	a	51	1187
1	0.37	-1.10	0.93	0.92	B	2	1128	-0.39	-0.67	0.86	0.84	b	19	1130
1	0.37	-0.70	0.93	0.92	C	46	416	-0.35	0.67	1.07	1.01	c	40	443
1	0.32	-1.90	1.02	0.99	D	22	460	-0.32	-0.57	0.91	0.9	d	52	451
1	0.31	0.70	0.75	0.64	E	23	1232	-0.29	1.09	1.36	1.21	e	57	453
1	0.29	0.22	1.26	1.33	F	58	428	-0.27	0.83	1	1.01	f	13	1223
1	0.28	-1.07	0.98	1	G	37	421	-0.25	0.94	0.82	0.73	g	27	1229
1	0.21	0.80	1.32	1.34	H	7	432	-0.24	0.44	0.98	0.97	h	18	1202
1	0.21	-0.38	0.99	1	I	28	457	-0.24	-0.14	1.11	1.11	i	41	454
1	0.19	0.37	1.58	1.63	J	21	444	-0.24	-0.59	1.11	1.12	j	50	452
1	0.19	-0.22	1.1	1.11	K	36	448	-0.23	-0.80	0.96	0.97	k	6	434
1	0.17	-1.42	1.05	1.05	L	10	441	-0.23	0.14	0.9	0.86	l	33	445
1	0.16	-0.01	0.92	0.92	M	35	426	-0.21	-1.24	0.91	0.88	m	15	413
1	0.14	0.03	0.94	0.95	N	43	419	-0.2	0.14	1.1	1.12	n	55	437
1	0.14	-0.56	1.07	1.06	O	44	433	-0.2	-0.51	1.06	1.07	o	56	1121
1	0.13	-0.22	1.16	1.2	P	11	1136	-0.17	-0.86	0.95	0.94	p	9	424
1	0.13	0.50	1	1.05	Q	25	462	-0.17	-0.44	0.99	0.98	q	38	446
1	0.12	0.03	1.05	1.09	R	17	450	-0.17	-0.59	1.01	1.01	r	47	456
1	0.12	0.26	1	1.02	S	26	436	-0.16	2.20	0.85	0.54	s	24	420
1	0.12	-0.15	1.04	1.09	T	31	415	-0.14	0.16	0.95	0.95	t	16	442
1	0.08	1.42	0.89	0.8	U	54	464	-0.11	1.22	0.72	0.6	u	39	1093
1	0.07	0.94	0.92	0.99	V	30	440	-0.1	-0.03	0.83	0.78	v	3	459
1	0.05	-0.85	1	1.01	W	1	422	-0.1	-0.10	1.04	1.05	w	29	439
1	0.05	1.19	1.16	1.12	X	48	449	-0.09	-0.38	0.99	1.01	x	12	431
1	0.04	0.02	0.94	0.84	Y	49	435	-0.07	-0.28	1.13	1.19	y	42	425
1	0.03	-0.28	1.04	1.06	Z	4	455	-0.07	0.12	0.93	0.93	z	53	1058
1	0.03	1.30	1.05	1.06		8	417	-0.05	1.22	2.24	2.04		14	463
1	0.01	-2.25	1.29	1.28		45	458	-0.04	0.05	0.88	0.86		32	429
								-0.03	0.41	0.88	0.81		34	412
								-0.02	1.16	0.89	0.98		5	1217

Appendix Table K.10: 2022 Grade 6 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item7
1	0.49	0.67	0.87	0.5	A	18	1062	-0.37	0.76	1.17	1.36	a	55	466
1	0.46	-2.35	0.81	0.71	B	32	571	-0.36	-0.52	1.01	0.98	b	25	526
1	0.4	-0.21	0.68	0.49	C	17	1131	-0.34	0.76	1.42	1.67	c	27	534
1	0.36	-0.92	0.89	0.86	D	3	579	-0.34	-0.23	1.09	1.09	d	30	499
1	0.26	0.20	0.98	0.96	E	1	581	-0.33	0.10	1.32	1.44	e	8	480
1	0.24	-0.68	1	1	F	19	537	-0.32	1.30	2.01	2.67	f	21	577
1	0.24	-0.01	1.17	1.11	G	42	491	-0.31	-0.59	0.98	0.97	g	36	515
1	0.24	-0.70	1.07	1.08	H	51	1063	-0.28	-0.88	0.97	0.96	h	6	1200
1	0.23	-0.46	0.87	0.83	I	20	567	-0.25	-0.61	1.07	1.06	i	13	490
1	0.23	-0.94	0.96	0.94	J	35	550	-0.25	0.20	1.1	1.21	j	24	580
1	0.23	0.95	0.77	0.58	K	52	570	-0.19	0.95	1.12	1.36	k	47	476
1	0.2	-0.81	0.92	0.94	L	5	468	-0.18	-0.29	0.92	0.9	l	29	520
1	0.2	1.87	0.49	0.24	M	12	1251	-0.17	0.22	1.29	1.53	m	23	487
1	0.17	-0.56	0.75	0.72	N	9	469	-0.17	0.38	0.99	0.98	n	53	545
1	0.16	-0.78	0.88	0.84	O	22	1142	-0.16	-0.78	1.01	1.02	o	45	1101
1	0.16	-0.54	1.1	1.13	P	48	1203	-0.16	-0.23	0.96	0.97	p	46	572
1	0.13	1.16	0.76	0.51	Q	41	575	-0.14	0.15	1.34	1.43	q	7	551
1	0.13	-1.44	1	0.99	R	57	1254	-0.14	-0.25	1.17	1.23	r	54	517
1	0.11	-0.22	0.97	1	S	33	553	-0.11	0.15	0.94	0.95	s	26	1253
1	0.11	-0.02	1.09	1.11	T	39	574	-0.1	1.65	0.97	0.94	t	28	1225
1	0.09	-0.50	1.14	1.12	U	50	514	-0.09	0.08	1.19	1.29	u	16	484
1	0.06	-0.63	1.06	1.1	V	37	509	-0.08	-1.52	1.02	1	v	31	535
1	0.03	1.41	0.83	0.65	W	10	585	-0.07	-0.94	1.09	1.12	w	2	568
1	0.03	0.40	0.7	0.71	X	15	502	-0.07	-0.02	1.06	1.08	x	11	578
1	0.02	1.79	1.54	1.52	Y	49	524	-0.07	0.17	0.89	0.82	y	43	512
1	0.01	0.45	1.06	1.09	Z	4	470	-0.07	0.69	1.27	1.28	z	44	521
								-0.04	0.28	1.15	1.29		14	1256
								-0.03	-0.09	1.07	1.08		40	478
								-0.01	-0.96	0.99	1.01		34	563
								-0.01	-0.61	1.1	1.09		38	495
								-0.01	2.03	1.13	1.07		56	482

Appendix Table K.11: 2022 Grade 7 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.48	-0.67	1.07	1.07	A	28	549	-0.44	-0.59	1.05	1.02	a	21	498
1	0.45	0.17	1.22	1.45	B	10	477	-0.43	0.04	1.28	1.12	b	51	527
1	0.39	-0.16	1.05	1.11	C	12	506	-0.4	-1.32	0.9	0.9	c	27	536
1	0.36	0.00	1.41	1.45	D	18	1234	-0.4	0.16	2.6	2	d	31	547
1	0.33	-0.08	1.45	1.64	E	9	488	-0.39	-0.65	0.91	0.87	e	20	481
1	0.3	-0.29	1.17	1.22	F	17	486	-0.32	-1.16	0.66	0.64	f	40	562
1	0.28	-0.04	0.96	1	G	53	1244	-0.31	0.90	3.19	3.23	g	6	525
1	0.26	-0.84	1.1	1.17	H	35	493	-0.27	1.17	0.81	0.62	h	42	467
1	0.25	-0.43	0.96	0.97	I	16	559	-0.24	-0.12	1.03	1.09	i	36	561
1	0.25	-0.89	1.06	1.05	J	22	485	-0.24	0.03	1.16	1.15	j	37	492
1	0.25	0.35	1.71	2.12	K	23	1237	-0.23	1.59	1.41	1.19	k	43	471
1	0.23	1.06	1.35	1.87	L	30	501	-0.22	2.30	1.95	1.28	l	54	1264
1	0.22	-1.07	1.06	1.06	M	25	557	-0.2	-0.97	0.96	0.97	m	29	541
1	0.21	-0.20	0.91	0.9	N	38	511	-0.18	-1.01	0.9	0.87	n	46	565
1	0.2	-1.14	1.01	1	O	7	1134	-0.18	0.21	0.71	0.7	o	47	522
1	0.16	-0.67	0.8	0.75	P	2	564	-0.18	-1.70	1	0.99	p	56	1065
1	0.16	-0.96	0.99	1.01	Q	3	505	-0.16	-1.56	0.95	0.95	q	50	523
1	0.16	-1.70	1.14	1.2	R	5	508	-0.14	0.26	1.06	0.95	r	14	479
1	0.16	-0.92	0.97	0.95	S	33	503	-0.1	1.89	1.88	1.58	s	26	552
1	0.16	1.89	1.12	0.79	T	34	1252	-0.1	-1.59	0.93	0.93	t	52	1241
1	0.16	0.08	0.96	1.2	U	45	474	-0.09	-0.78	1.07	1.06	u	49	540
1	0.14	-0.29	0.98	1.03	V	1	475	-0.08	-0.64	0.95	0.92	v	13	496
1	0.11	2.61	3.47	4.46	W	19	1247	-0.08	-1.11	0.9	0.87	w	41	533
1	0.11	0.51	1.01	1.13	X	44	543	-0.07	3.72	2.27	1.35	x	32	513
1	0.1	1.30	0.29	0.1	Y	24	555	-0.04	0.04	0.97	1.01	y	15	483
1	0.06	-0.78	0.98	0.95	Z	11	494	-0.01	-1.09	0.86	0.84	z	48	489
1	0.04	2.32	0.34	0.6		8	1066							
1	0.04	-1.86	1	0.98		39	616							
1	0.04	-0.62	0.96	0.98		55	1259							
1	0.01	0.21	0.82	0.81		4	516							

Appendix Table K.12: 2022 Grade 8 MA Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.5	-0.82	1.09	1.07	A	52	530	-0.46	0.14	0.73	0.68	a	54	599
1	0.48	-0.55	1.18	1.18	B	10	1230	-0.44	-0.16	0.69	0.6	b	42	612
1	0.38	-0.55	1.12	1.16	C	21	607	-0.44	-0.26	0.94	0.9	c	44	1274
1	0.33	-0.63	1.03	1.03	D	51	532	-0.43	-1.10	0.9	0.9	d	25	1269
1	0.31	-1.17	1.07	1.07	E	14	596	-0.41	0.39	0.87	0.73	e	31	613
1	0.31	0.65	1.13	1.33	F	24	576	-0.35	-0.34	0.85	0.89	f	35	529
1	0.26	-1.43	1.03	1.04	G	32	592	-0.33	-2.20	0.99	0.94	g	18	618
1	0.26	-0.43	1.17	1.19	H	47	586	-0.32	-1.69	1	1	h	45	600
1	0.22	-0.51	1	1	I	3	593	-0.3	1.32	0.9	0.83	i	26	582
1	0.21	0.65	1.78	2.02	J	15	615	-0.27	-0.26	0.92	0.88	j	8	1236
1	0.21	-0.34	0.73	0.74	K	22	1270	-0.22	-0.34	1.05	1.04	k	9	569
1	0.21	-0.26	1.01	1.03	L	50	556	-0.21	1.09	3.44	3.7	l	53	603
1	0.18	0.14	1.29	1.29	M	29	617	-0.2	0.44	0.73	0.62	m	12	590
1	0.17	0.09	0.96	0.98	N	23	1273	-0.2	3.63	1.58	0.52	n	56	1140
1	0.16	2.20	1.08	2.01	O	20	620	-0.19	-0.12	1.26	1.3	o	6	604
1	0.13	-0.12	1.16	1.27	P	5	544	-0.19	1.60	0.97	0.59	p	30	591
1	0.13	0.41	0.48	0.37	Q	19	1138	-0.17	-0.78	0.91	0.88	q	36	1141
1	0.12	1.77	0.77	1	R	41	588	-0.14	0.38	0.35	0.19	r	11	1135
1	0.1	0.03	0.99	0.93	S	1	602	-0.14	0.38	1.33	1.45	s	13	573
1	0.09	0.44	2.52	2.67	T	7	597	-0.12	-0.15	0.63	0.63	t	4	583
1	0.08	0.20	1.05	1.09	U	16	531	-0.11	0.90	0.59	0.48	u	34	1218
1	0.08	1.20	0.29	0.24	V	39	1268	-0.11	-1.56	0.95	0.93	v	46	614
1	0.08	-0.78	0.99	0.99	W	40	1228	-0.08	0.14	0.93	1.07	w	17	601
1	0.06	1.96	0.92	1.01	X	27	548	-0.02	-0.21	1	0.95	x	38	566
1	0.06	-0.96	1.04	1.03	Y	55	589	-0.02	-1.23	1.05	1.05	y	48	608
1	0.04	-0.67	1.16	1.17	Z	33	621	-0.01	-0.47	1.19	1.22	z	28	598
1	0.04	-0.39	0.86	0.89		37	584	-0.01	2.20	2.27	2.62		43	542
1	0.03	-0.96	0.97	0.97		49	611							
1	0.02	-0.92	0.88	0.87		2	594							

Appendix Table K.13: 2022 Grade 5 SC Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.52	-1.42	1.3	1.39	A	16	1331	-0.45	0.79	1.2	1.71	a	17	1348
1	0.52	-1.30	2.98	2.65	B	30	1980	-0.42	-0.38	0.9	0.97	b	23	1347
1	0.47	-0.60	2.08	1.8	C	5	1372	-0.39	-0.01	1.05	1.15	c	50	1338
1	0.42	-0.80	2.21	1.96	D	45	1315	-0.35	0.16	0.94	1.08	d	47	1333
1	0.36	-0.30	0.63	0.65	E	29	1998	-0.33	0.46	1	1.12	e	3	1365
1	0.34	0.36	1.61	1.38	F	28	1536	-0.32	-0.10	0.97	1.03	f	6	1344
1	0.26	-0.55	0.62	0.65	G	43	1997	-0.26	-0.41	0.9	0.94	g	46	1317
1	0.25	-1.85	0.63	0.84	H	33	1356	-0.25	1.58	1.08	1.5	h	4	1320
1	0.22	1.17	0.84	0.69	I	27	1318	-0.24	-0.78	0.69	0.76	i	18	1994
1	0.15	1.06	0.93	0.87	J	11	1349	-0.24	0.03	0.99	1.08	j	38	1999
1	0.14	-1.00	0.4	0.47	K	37	1322	-0.23	0.51	1.02	1.09	k	19	1326
1	0.13	-0.85	0.46	0.53	L	44	1993	-0.23	0.58	1.05	1.24	l	49	1337
1	0.11	-0.43	0.72	0.74	M	24	1991	-0.21	-0.24	0.89	0.95	m	39	1367
1	0.1	1.51	0.95	0.96	N	22	1368	-0.21	0.47	0.98	1.04	n	51	1339
1	0.08	-0.50	0.71	0.72	O	13	1328	-0.2	-0.55	0.73	0.81	o	41	1323
1	0.06	-0.55	0.64	0.67	P	25	1362	-0.17	-0.06	0.97	1.02	p	7	1373
1	0.06	0.23	0.88	0.86	Q	42	1364	-0.14	0.40	1.02	1.1	q	10	1358
1	0.05	0.23	0.94	0.93	R	32	1330	-0.12	0.29	0.92	0.95	r	2	1327
1	0.03	0.56	0.91	0.93	S	12	1359	-0.11	1.31	1.01	1.09	s	1	1369
1	0.02	-0.59	0.65	0.71	T	34	1996	-0.11	0.96	1.02	1.23	t	9	1366
1	0.02	0.53	0.86	0.92	U	48	1351	-0.11	0.34	0.98	1.01	u	15	1361
								-0.11	0.44	0.9	0.92	v	36	1329
								-10	-0.04	0.79	0.85	w	40	1336
								-0.09	0.40	0.99	1.01	x	35	1995
								-0.08	-1.03	0.47	0.55	y	26	1992
								-0.07	-0.78	0.61	0.68	z	31	1321
								-0.04	0.27	0.82	0.88	y	20	1325
								-0.03	0.91	0.97	0.93	x	8	1324
								-0.03	0.04	0.88	0.91	w	21	1332
								-0.01	0.09	0.85	0.84	v	14	1370

Appendix Table K.14: 2022 Grade 8 SC Dimensionality

Contrast	Loading	Measure	infit mnsq	outfit mnsq	entry	number	item	loading	measure	infit mnsq	outfit mnsq	entry	number	item
1	0.55	-1.17	0.93	0.91	A	37	946	-0.49	-1.41	1.2	1.22	a	33	970
1	0.37	0.77	2.2	2.2	B	13	932	-0.42	-1.24	1.13	1.16	b	35	949
1	0.37	-0.64	0.8	0.74	C	52	939	-0.38	-1.35	1.14	1.14	c	24	972
1	0.35	1.46	0.94	0.63	D	55	1110	-0.33	-1.88	1.1	1.13	d	19	942
1	0.31	-1.09	0.99	1.02	E	46	1267	-0.31	-1.13	1.11	1.1	e	6	1109
1	0.28	-0.08	0.72	0.59	F	40	945	-0.31	-0.61	1.19	1.22	f	11	1205
1	0.26	0.07	0.53	0.43	G	14	1111	-0.29	-0.34	0.93	0.96	g	10	1238
1	0.26	0.53	0.66	0.42	H	25	1258	-0.28	-0.76	1.15	1.28	h	41	1266
1	0.22	-0.69	0.84	0.78	I	22	937	-0.27	0.96	0.6	0.58	i	54	1056
1	0.2	-0.37	1.35	1.55	J	27	1114	-0.24	-1.88	1.07	1.09	j	12	1257
1	0.19	1.47	1.24	1.2	K	28	984	-0.22	-0.60	1.01	1.06	k	17	953
1	0.18	-0.47	1.13	1.23	L	18	954	-0.21	-0.76	1.37	1.47	l	3	952
1	0.18	0.38	0.77	0.64	M	21	964	-0.2	0.02	1.33	1.33	m	29	948
1	0.18	-0.76	0.89	0.83	N	47	965	-0.17	0.68	0.73	0.71	n	9	955
1	0.18	0.77	0.66	0.51	O	53	974	-0.16	-0.91	0.98	0.98	o	30	950
1	0.16	0.68	1.34	1.34	P	43	967	-0.14	1.32	0.86	0.96	p	49	958
1	0.15	-0.76	0.92	0.88	Q	20	936	-0.13	-1.20	1.08	1.11	q	7	956
1	0.14	0.07	0.63	0.47	R	32	987	-0.13	2.36	1.05	0.97	r	31	961
1	0.14	1.47	0.74	0.4	S	39	978	-0.12	0.60	1.11	1	s	42	986
1	0.14	0.13	1.15	1.14	T	48	960	-0.1	3.06	1	1.03	t	8	959
1	0.13	0.38	1.01	0.89	U	15	1260	-0.1	0.25	0.67	0.53	u	38	944
1	0.12	-1.95	0.87	0.83	V	2	962	-0.09	0.07	1.08	1.16	v	26	947
1	0.11	-0.60	0.82	0.72	W	50	938	-0.06	2.36	2.04	1.89	w	45	980
1	0.11	0.07	1.23	1.38	X	56	1263	-0.06	0.86	0.75	0.64	x	51	979
1	0.09	-1.51	0.99	0.98	Y	58	1054	-0.02	-1.13	0.95	0.97	y	5	977
1	0.08	0.77	0.83	0.87	Z	57	975	-0.01	0.19	0.56	0.5	z	4	951
1	0.05	2.06	0.76	0.52		1	983							
1	0.05	-0.51	1.19	1.23		44	969							
1	0.03	3.49	4.63	5.74		23	971							
1	0.02	-0.64	1.13	1.2		16	1265							
1	0.02	-0.34	1.09	1.33		36	981							
1	0	-1.61	1.01	1		34	985							