



**Kansas Assessment Program
Technical Manual
2023**

**University of Kansas Achievement & Assessment Institute (AAI)
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I. Statewide System of Standards and Assessments

The Kansas Assessment Program (KAP), a program of the Kansas State Board of Education (hereafter “the State Board”), is mandated by the Kansas Legislature. In addition, the English language arts (ELA), mathematics, and science components of KAP also are used to comply with federal legislation on elementary and secondary education. The three main purposes of KAP, as stated in the [Kansas Assessment Examiner’s Manual 2022–2023](#) are to:

- measure specific claims related to the Kansas Standards in grades 3–8 and high school.
- report individual student scores, along with each student’s performance level.
- provide subscale and total scores that can be used with local assessment scores to assist in improving a building’s or district’s programs in ELA, mathematics, and science.

The state statutory authority behind KAP is Kan. Stat. Ann. §72-5170 (2022). According to this statute, the State Board is mandated, in part, to:

- design and adopt a school performance accreditation system based upon improvement in performance that reflects high academic standards and is measurable.
- establish curriculum standards that reflect high academic standards for the core academic areas of mathematics, science, reading, writing, and social studies.
- provide statewide assessments in the core academic areas of mathematics, science, reading, writing, and social studies, and determine performance levels on the statewide assessments.

KAP provides the summative assessment in ELA, mathematics, and science for all students in grades 3–8 and high school, except students with significant cognitive disabilities, who are eligible for alternate assessments. The original KAP technical manual (i.e., the [2015 KAP Technical Manual](#)) was developed using 2014–2015 assessment data and published in April 2016. The technical manual was then updated each year, including technical-analysis results using that year’s data and a description of new activities such as item development and standard setting. In the years with no changes to the assessment system or no new development, only the technical-analysis results were provided as an addendum. The following annual technical manuals can be found on the [KAP website](#).

- [2015 KAP Technical Manual](#)
- [2016 KAP Technical Manual](#)
- [2017 KAP Technical Manual](#)
- [2018 KAP Technical Manual Addendum](#)
- [2019 KAP Technical Manual Addendum](#)
- [2020 KAP Technical Manual](#)
- [2021 KAP Technical Manual](#)
- [2022 KAP Technical Manual](#)

The current technical manual provides updates where applicable in ELA, mathematics, and science for the 2022–2023 school year. This includes technical-analysis results using 2022 assessment data and a summary of validity evidence. All those results and evidence are to support the interpretation of test scores for intended test uses.

I.1. State Adoption of Academic Content Standards for All Students

For ELA and mathematics, the State Board adopted the Kansas Standards in 2010. The first administration of the operational KAP ELA and mathematics assessments aligned with the 2010 Kansas Standards occurred in 2015. More information about the 2010 Kansas Standards and KAP assessments can be found in Chapter 2 of [2015 KAP Technical Manual](#) and Chapter 2 of [2016 KAP Technical Manual](#). In 2017, the State Board adopted the updated version of the 2010 Kansas Standards for ELA and mathematics. The current 2023 KAP ELA and mathematics assessments reflect the updated 2017 Kansas Standards.

The State Board adopted the Kansas Standards for Science in 2013. The first administration of the operational KAP science assessments aligned with the 2013 Kansas Standards occurred in 2017. In 2018, the Kansas science standards-review committee reviewed the 2013 Kansas science standards and concluded that no updates were needed for them.

I.2. Coherent and Rigorous Academic Content Standards

Committees of Kansas educators and stakeholders provided input on the Kansas Standards. These standards supported the vision of the Kansas State Department of Education: to lead the world in the success of each student (refer to the [Kansas State Board of Education webpage](#)). The standards help schools equip students with the academic, cognitive, metacognitive, technical, and employability skills required for postsecondary success, as well as the capacity to positively affect the world around them. The Kansas Standards are Kansas’s coherent and rigorous academic content standards, which adhere to the State Board’s mission. The mission of the State Board is to prepare Kansas students for lifelong success through rigorous, quality academic instruction; career training; and character development according to each student’s gifts and talents.

The detailed process and timeline of development of the 2010 Kansas ELA and mathematics standards can be found in Chapter 2 of [2015 KAP Technical Manual](#) and Chapter 2 of [2016 KAP Technical Manual](#). The detailed process and timeline of review for the 2017 ELA and mathematics Kansas Standards and the detailed process and timeline of the development of the 2013 Kansas Standards for science can be found in chapter 1 of [2022 KAP Technical Manual](#).

I.3. Required Assessments and Intended Population

The KAP assessment measures student achievement in the subject areas of ELA, mathematics, and science. The subject areas and grades tested are ELA in grades 3–8 and 10; mathematics in grades 3–8 and 10; and science in grades 5, 8, and 11.

Kansas is committed to including all students in the KAP assessment. Students enrolled in Kansas public schools must take one of three tests: the KAP assessment, the English language proficiency assessment, or the alternate assessment. In the first year entering United States, English learners are required to take the KAP mathematics and science tests. They are not required to take the ELA assessment but must take the Kansas English Language Proficiency Assessment. In their second year in United States schools, English learners are required to take all three KAP assessments.

Eligible students with significant cognitive disabilities, typically no more than 1% of Kansas students, take the Dynamic Learning Maps® alternate assessment for ELA, mathematics, and science. Other students with Individualized Education Programs (IEP), 504 plans, or Student Intervention Team (SIT) plans take the KAP assessment but can use accommodations consistent with their personal needs profiles (PNP), which consist of their IEP, 504 plans or SIT plans. The PNP is a piece of information in a student's educational file that describes the accommodations provided to students during instruction. If an unapproved accommodation is used (e.g., reading aloud to a student on the KAP ELA test), the student test record is considered invalid. A detailed summary of accommodations for KAP can be found in Chapter V. Inclusion of All Students.

Exemptions from KAP assessments are granted to students who, during the testing window:

- move to a different school.
- experience catastrophic illness or accident.
- are serving long-term suspension.
- are truant for more than two consecutive weeks.
- are incarcerated in an adult facility.
- are in a special detention center.

II. Assessment System Operations

The development of any test requires many critical decisions regarding, for example, the content and cognitive complexity, the appropriate scope of that content for particular subject areas, and the number and type of items associated with each test. These and other design decisions are not made in isolation but in consideration of what is necessary to support the intended interpretation and use of results within and across grades. Together, these decisions guide the test-construction and evaluation process and products.

II.1. Assessment Framework of the Assessed Grades

The assessment framework hierarchically categorizes standards the 2017 Kansas Standards for English language arts (ELA) and mathematics according to similar content. Those categories are classification, domain, and cluster. *Classification* is the largest category and consists of domains. *Domain* is the next category and consists of clusters. *Cluster* is the smallest category of multiple connected standards. A test item can be aligned to only one classification, one domain, and one cluster.

The ELA standards are grouped by domain and cluster. ELA has two domains: reading and writing. Reading domain has eight clusters and writing domain has two clusters. Each grade's assessment measures all domains and clusters. Mathematics standards are grouped by classification, domain, and cluster. Mathematics has two classifications: skills and concepts, and strategic thinking and reasoning. Each grade's assessment measures all classifications but not all domains. The grade 10 mathematics assessment measures 11 domains, compared to three to five domains measured by other grades. Therefore, the domains within skills and concepts classification are grouped into conceptual categories for grade 10 mathematics to support sub-score reporting. The assessment framework of 2017 Kansas Standards for ELA and mathematics can be found in Table II-1 and Table II-2 in [2022 KAP Technical Manual](#).

The 2013 Kansas Standards for science follow a different hierarchical structure. Science standards are grouped by claims and targets for sub-score reporting purpose. Targets are sublevels of claims and groups of connected standards. Science has three claims: physical science, life science, and Earth and space science. In science, each grade's assessment assesses all claims, but not all targets. A test item can be aligned to only one claim and one target. The assessment framework of 2013 Kansas Standards for science can be found in Table II-3 in [2022 KAP Technical Manual](#).

II.2. Test Design and Development

KAP assessments are all computer based. The Achievement & Assessment Institute (AAI) worked with the Kansas State Department of Education (KSDE) to determine the content to be assessed by the KAP assessments for each subject area and grade level. The same 2022 operational forms were used in 2023 and these operational forms reflected all updated Kansas Standards (i.e., the 2017 Kansas Standards for ELA and mathematics and the 2013 Kansas Standards for science). Section II.2. Test Design and Development in [2022 KAP Technical Manual](#) provides a detailed test-development timeline for the three subjects for 2022 operational forms and Section II 2.3 Operational Test Construction in [2022 KAP Technical Manual](#) provides a detailed description of test-construction procedures and guidelines.

II.2.1. Test Blueprints

The blueprints were developed through collaboration among the AAI content team, KSDE, and educators. The detailed test blueprint for the three subjects can be found in Section II.2.1. Test Blueprints and Appendix A in [2022 KAP Technical Manual](#).

II.2.2. Test Design

In 2023, all three subjects used a fixed-form test design. Each subject had one operational form administered in two sessions. Each session offered 2-3 blocks of items that were the same but presented in a different order to deter cheating. A block includes all operational items that will be administered together in one session. According to research, item orders do not affect item performance (Hohensinn et al., 2011; Li et al., 2012), so blocks with items in a different order were still considered to be the same test form and students are considered receiving the same operational form even the item order in different blocks are different. Students were randomly assigned to one block in each session, with a designated block for students who needed accommodations in each session. Table II-1 shows the test design of the KAP assessment for each session by subject.

Table II-1. Fixed-Form Test Design of the 2023 KAP Assessment by Subject and Session

Subject	Grade	Number of Items		
		Total	Session 1	Session 2
ELA	3–8, HS	47	22	25
Mathematics	3–8	55	25	30
Mathematics	HS	56	25	31
Science	5	35	18	17
Science	8, HS	40	20	20

Note. ELA = English language arts; HS = high school.

II.3. Item Development

Section II.3. Item Development in [2022 KAP Technical Manual](#) describes the item-development processes for the 2023 KAP assessments (i.e., 2022 KAP forms). The 2023 KAP forms include field-test items which are for future KAP assessments. The next sections describe the number of field-test items on 2023 KAP forms and the process for field-test data analysis.

II.3.1. Field Testing

For all three subjects, field-test items were embedded in the operational test forms and field tested for future KAP assessments. All subjects and all grades have field-test items, except grade 10 ELA and grade 11 science.

Table II-2 displays the number of field-test items by subject and grade. Each student answered 4–8 field-test items per grade, per subject. These field-test items were assigned to students randomly. Each field-test item was taken by approximately 1,500 students.

Table II-2. Number of Field-Test Items by Subject and Grade

Grade	English Language Arts	Mathematics	Science
3	73	136	—
4	73	131	—
5	96	139	147
6	73	140	—
7	29	144	—
8	46	131	149
10	0	139	—
11	—	—	0

II.3.2. Field-Test Data Analysis

Field-test item analyses included classical item analysis and differential item functioning analysis. Items that were too easy or too difficult, that did not discriminate students’ ability well, or that had large differential item functioning were flagged according to predetermined criteria (Appendix A). Flagging statistics are intended to be used in future data review and test construction.

II.4. Test Administration

The 2023 KAP implemented the same standardized test-administration process as previous years to prevent the unintended effects of administration differences. The standardized test-administration procedures are described in the [Kansas Assessment Examiner’s Manual 2022–2023](#) (*Examiner’s Manual* hereafter). For all subjects, grades, and students, KAP is entirely computer based. The 2023 KAP testing window opened on Monday, March 20, 2023, and closed on Friday, April 28, 2023. Each test session was designed to take approximately one class period (i.e., 45–60 minutes). Thus, each test was designed to take approximately two class periods. However, all KAP tests are untimed, as enough time should be given to students to finish testing.

The test administration and security training may be conducted in three ways: through online conference, with online training materials, or through in-person regional training with a district or building test coordinator. Kansas uses a train-the-trainer model. District test coordinators received training first from KSDE and then trained building-level personnel before the local test administration. The test-administration process was the same as in previous years. Detailed information about training procedures and test-administration procedures and guidance can be found in Section II.4. Test Administration in [2022 KAP Technical Manual](#).

II.5. Monitoring Test Administration

Test-administration monitoring includes monitoring both testing and testing data. Testing monitoring also includes both local monitoring and KSDE visits. The local monitoring was the

same in 2023 as in previous years, including monitoring test process, test status, and item status. The KSDE visits have been renewed in 2023 after being canceled for several years due to COVID. The monitoring visits were held during the testing window between March 20, 2023 and April 28, 2023. Twenty-three districts, including 45 buildings and 58 classes, were monitored in-person. These districts include 10 districts that did not complete test security training on time and 13 districts that volunteered to be monitored. Twenty-three observers, including KSDE staff and members of the Kansas Assessment Advisory Council, participated in in-person monitoring. All observers followed the [KSDE test security guidelines](#). No irregularities were found during monitoring visits.

The testing-data monitoring was the same in 2023 as in previous years; the purpose was to monitor system usage and identify testing irregularities. During testing-data monitoring, no irregularities were found. Detailed information about standard procedures and protocols for test-administration monitoring can be found in Section II.5. in [2022 KAP Technical Manual](#).

II.6. Test Security

Because the test-administration conditions were the same this year, the same procedures and protocols related to test security were applied. Detailed information about these procedures and protocols can be found in Section II.6. Test Security in [2022 KAP Technical Manual](#).

III. Technical Quality: Validity

According to the *Standards for Educational and Psychological Testing* (the *Standards* hereafter), *validity* refers to “the degree to which evidence and theory support the interpretation of test scores for proposed uses of tests” (American Psychological Association [APA] et al., 2014, p. 11).

The *Standards* (APA et al., 2014) provide a framework for describing the sources of evidence that should be considered when evaluating test-score validity. These sources include evidence based on test content, response processes, internal test structure, relationships among test scores and other variables, and the consequences of testing. The validation process involves the ongoing collection of a variety of evidence to support the proposed test-score interpretations and uses. This chapter mainly describes aspects of the Kansas Assessment Program (KAP) assessments that support KAP test-score interpretations and uses.

Because validity evidence supports the intended uses of test scores, it is necessary to identify the intended validity argument regards the test score uses before providing evidence to support test validity. The KAP assessment is to provide valid scores for determining student’s progress toward meeting state achievement standards and identifying student’s relative strength and limitations for each grade level in the three subject areas of English language arts (ELA), mathematics, and science.

The gathered evidence on test content, response process, and internal structure supports the use of the KAP assessment to measure the Kansas Standards as defined in the test blueprints. Information on test reliability, fairness, accessibility, scoring, and scaling justify the use of KAP test scores for reporting students’ academic performance toward meeting state achievement standards. Validity evidence from other sources, such as comparing KAP results with National Assessment of Educational Progress (NAEP) results, uses additional data to validate the use of KAP test scores.

III.1. Validity Evidence Based on Test Content

Validity evidence based on test content refers to how well test content related to specific content domains matches what the test was intended to measure. Content evidence for KAP assessments comes from the alignment between KAP items and the Kansas Standards, from the congruence between the test and the test blueprint, and from the congruence between the test blueprint and the Kansas Standards (i.e., a balance of representation of standards). Content specialists at the Achievement and Assessment Institute (AAI) follow several steps to evaluate the content validity of the KAP assessment:

- Develop the test blueprint and specifications, and evaluate whether the blueprint represent the Kansas Standards and have enough items for sub-score reporting.
- Conduct content reviews of KAP items using a panel of content experts to see whether the items measure the intended construct or whether sources of construct-irrelevant variance exist.
- Conduct fairness reviews of KAP items to avoid bias and sensitivity issues related to specific subpopulations.
- Evaluate the alignment between KAP assessments and the Kansas Standards.

- Evaluate the degree to which the assessment addresses the depth and breadth expectations of the Kansas Standards in terms of the blueprint.

Chapter II Assessment System Operations in [2022 KAP Technical Manual](#) presented validity evidence related to the development of the test blueprint (Section II.2.1. Test Blueprint in [2022 KAP Technical Manual](#)), item and test development (Section II.2. Test Design and Development Section II.3. Item Development in [2022 KAP Technical Manual](#)), and item review (Section II.3.4. Item Review in [2022 KAP Technical Manual](#)) for the 2023 KAP assessment (i.e., 2022 KAP forms). This validity evidence was also summarized in section III.1. Validity Evidence Based on Test Content in the [2022 KAP Technical Manual](#).

The validity evidence related to alignment between KAP items and the Kansas Standards, as well as the degree to which the assessment addresses the depth and breadth of the Kansas Standards in terms of the blueprint, comes from an alignment study conducted by an independent external vendor. Several alignment studies were conducted at different times to collect validity evidence related to alignment for the 2023 KAP assessment. The descriptions of those alignment studies can be found in Section III.1.2. Alignment study recommendations in [2016 KAP Technical Manual](#) and Section III.1.2. Grade-10 Mathematics Alignment and Section III.1.3. Science Alignment in [2022 KAP Technical Manual](#). All studies indicate strong or moderate alignment between KAP assessments and Kansas Standards.

III.2. Validity Evidence Based on Response Process

Response-process evidence examines the extent to which the cognitive skills and processes that students use to answer an item match those targeted by item writers. Section III.2. Validity Evidence Based on Response process in [2022 KAP Technical Manual](#) describes validity evidence related to how cognitive skills were considered by item writers and item reviewers for each item during item development. Also, during the development of performance-level descriptors, the expectations of students' cognitive processes were stated differently in different levels of performance-level descriptors. As performance levels rise, the expectations of students' proficiency or cognitive processes also rise. Appendix C in [2022 KAP Technical Manual](#) includes the performance-level descriptors for each grade and subject.

III.3. Validity Evidence Based on Internal Structure

As described in the *Standards* (APA et al., 2014), internal-structure evidence refers to “the degree to which the relationships among test items and test components conform to the construct on which the proposed test score interpretations are based” (p. 13). Three sets of validity evidence about internal structure provide evidence that (a) the KAP assessment is essentially unidimensional, (b) the item response theory (IRT) model used for each subject showed good fit results, and (c) the test contains no or few items flagged for significant and large differential item functioning (DIF), which supports comparable measurement across groups.

For each subject and grade, the KAP assessment is fitted by an IRT unidimensional model. The evidence of all items measuring one primary construct—that is, unidimensionality—is one type of internal-structure validity evidence. Moreover, KAP dichotomous items are fitted by the two-parameter logistic (2PL) model, and the polytomous items are fitted by the graded-response model. The IRT model assumption evaluation, including model-fit, also can provide internal-

structure evidence. The evaluation of unidimensionality, as well as IRT assumptions of the KAP tests, are described in the [2022 KAP Technical Manual](#). Finally, it is expected that the internal structure of a test should be consistent for different student groups. DIF analysis identifies items that are performing differently for student groups. Thus, DIF analysis results are included as further internal-structure validity evidence.

III.3.1. Differential Item Functioning

DIF analysis evaluates items for potential bias and examines whether an item shows statistical difference between two groups of students, while controlling for student ability. Items identified with DIF during field testing would be reviewed during data review for bias and fairness issue and items identified with DIF during operational testing would be reviewed for exclusion for scoring by content experts. We used logistic regression to detect items with uniform DIF (i.e., items that are consistently more difficult across all ability levels for one group of students than the other group). The detailed method for logistic regression DIF calculation can be found in Section III.3.3. Differential Item Functioning in [2022 KAP Technical Manual](#).

For each subject and grade, we examined DIF across gender (i.e., female vs. male), race (i.e., black vs. white), and English learner (EL) status (i.e., EL vs. non-EL) using current year operational data. For all subjects and grades, 0 of 830 operational items in the three subjects were flagged for moderate or large gender-related DIF, race-related DIF, or EL-status-related DIF. All results suggested that the item-development process and procedures effectively addressed potential bias and sensitivity issues during the development phase.

III.4. Validity Evidence Based on Relations to Other Variables

As described in the *Standards*, “evidence based on relationships with other variables provides evidence about the degree to which these relationships are consistent with the construct underlying the proposed test score interpretations” (APA et al., 2014, p. 16). To provide validity evidence based on relations to other variables, we calculated the correlations among different KAP subject scores and compared the KAP and NAEP performance.

III.4.1. Relationships Among KAP Subjects

Past studies showed high correlations between subjects, which indicates that subjects share some common traits; however, the correlations should not be too high.

Table III-1 shows the correlations and disattenuated correlations (correcting for measurement errors) between subjects of the same grade, with values that range from .68 to .77 for correlations, and from .75 to .88 for disattenuated correlations. The lowest correlations among subjects are between grade 10 ELA and mathematics. The highest correlations are between grade 3 ELA and mathematics and grade 5 ELA and science. After correcting for measurement error, the lowest disattenuated correlation is still between grade 10 ELA and mathematics, and the highest disattenuated correlation is between grade 5 ELA and science. According to Cohen (1988), a correlation larger than .50 is considered a correlation with large effect size. All correlations among KAP subjects have large effect size, indicating that some common traits are shared across KAP subjects.

Table III-3. Correlations (C) and Disattenuated Correlations (DC) Among English Language Arts (ELA), Mathematics, and Science Scores

Grade	ELA vs. Mathematics		ELA vs. Science		Mathematics vs. Science	
	C	DC	C	DC	C	DC
3	.77	.83	-	-	-	-
4	.74	.80	-	-	-	-
5	.73	.80	.77	.88	.73	.81
6	.75	.82	-	-	-	-
7	.73	.80	-	-	-	-
8	.70	.77	.74	.85	.71	.81
10	.68	.75	-	-	-	-

III.4.2. Relationships Within a KAP Subject

The correlation between current-year and previous-year KAP scores of one subject for the same students should be high because similar constructs are measured across grades within a subject. Table III-2 shows the correlations and disattenuated correlations (i.e., correcting for measurement errors) between adjacent grades of the same subjects in 2023 and 2022. For the grades in which all students did not take KAP assessments in the previous year—that is, no KAP assessment for the adjacent grade in the previous year—the correlations are not calculated. Values range from .79 to .85 for correlations, and from .89 to .92 for disattenuated correlations. The correlations and disattenuated correlations between grades are very similar for one subject, and ELA correlations are slightly lower than correlations in mathematics. All correlations between adjacent grades within a subject are very high and have large effect size, indicating that similar constructs are measured within KAP subjects.

Table III-4. Correlations (C) and Disattenuated Correlations (DC) Between Adjacent Grades for English Language Arts and Mathematics

Grade	English Language Arts		Mathematics	
	C	DC	C	DC
4 vs. 3	.81	.90	.84	.89
5 vs. 4	.81	.91	.85	.91
6 vs. 5	.79	.89	.83	.90
7 vs. 6	.80	.90	.85	.92
8 vs. 7	.81	.92	.84	.91

III.4.3. Relationships Between KAP Assessment and NAEP

The state of Kansas participates in the NAEP, also known as the Nation’s Report Card. NAEP is the largest nationally representative assessment of what American students know and can do, and it serves a different role than state assessments do. NAEP assessments allow each state to be compared to national results and to evaluate progress over time. The results inform the public

about the academic achievement of elementary (grade 4) and secondary (grade 8) students in Kansas and in the United States in ELA and mathematics.

Thus, the relationship between KAP and NAEP performance is expected to be strong. Because individual NAEP scores are not available, only the trend of proficiency rates across years is compared between the two assessments. KAP and NAEP assessments use different achievement standards to judge whether a student meets proficiency. Comparing proficiency rates within a year is not as meaningful as comparing trends of proficiency rates across years. The trends of the two assessments can indicate the actual performance of Kansas students based on the two assessments measuring a similar construct. KSDE provides more information about NAEP on the [KSDE website](#).

KAP categorizes student performance by four performance levels: 1, 2, 3, and 4. The proficiency rate of KAP is the percentage of students in levels 3 and 4. NAEP categorizes student performance by three performance levels: basic, proficient, and advanced. The proficiency rate of NAEP is the percentage of students in Proficient and Advanced levels. There was no NAEP administration in 2023.¹ The evidence on the relationship between KAP and NAEP from 2015 to 2022 can be found in Section III.4.3. Relationships between KAP Assessment and NAEP in [2022 KAP Technical Manual](#). The results present the similar trend of proficiency rates among KAP, Kansas NAEP, and national NAEP, showing that performance on NAEP is not different from that on KAP.

III.5. Validity Evidence Based on Consequences of Testing

Validity evidence based on consequences refers to evidence supporting the intended uses and interpretation of test scores. A primary intended use of KAP test scores is to provide scores that complement local assessment scores and to assist in improving a building's or district's programs as stated in the [Kansas Assessment Examiner's Manual 2022–2023](#). Section IV.4. Scoring and Scaling summarizes how items and tests are scored. For a given test score, the performance level is determined by a set of established cut scores. Chapter IV. Technical Quality: Other summarizes the process of setting the cut scores and includes an example of a KAP student score report. To help educators and parents interpret KAP results, KAP also provides the [KAP Educator Guide](#) and the [KAP Parent Guide](#).

To evaluate how educators use KAP test scores, we collected data in a 2023 KAP teacher survey. A total of 45 educators (39 of them are multi-subject educators), about 0.1% of all educators in Kansas, responded to the KAP teacher survey. Among the educators who responded, 71% were classroom teachers. A total of 42 ELA, 43 mathematics, and 40 science educators evaluated whether KAP assessment results provide useful information when planning for classroom instruction for the next school year. Of the educators who responded to this question, 45% of ELA educators, 49% of mathematics educators, and 40% of science educators either agreed or strongly agreed that KAP results were useful for planning for instruction.

¹ NAEP is administered every two years. NAEP was administrated in 2022, therefore no administration in 2023.

Some educators also described other uses of KAP assessment results, in addition to planning for instruction. Those other uses include the following:

- Understanding effectiveness of instruction
 - KAP results were used to understand the effectiveness of instruction and curriculum.
- Targeted instruction
 - KAP results were used to determine interventions or group instructions for different students based on their performance.
- Student placement
 - KAP results were used for placement in advanced classes and remediation classes.

IV. Technical Quality: Other

This chapter mainly describes evidence related to the technical quality of the Kansas Assessment Program (KAP) and summarizes results of the technical analysis. Most of the analysis described in this chapter is based on 2023 assessment data. Evidence for technical quality includes test reliability, fairness and accessibility, a test-analysis summary, and trend data.

IV.1. Reliability

Reliability is a test-score-consistency index that shows the degree of test-score consistency across repeated measures. Test scores that are stable across repeated measures indicate a more reliable test. Factors leading to unstable test scores are called *measurement errors*. Measurement errors include, but are not limited to, changes in testing conditions; changes in a student's knowledge, physical condition, or mental status; and changes in testing content across multiple test administrations. Measurement errors cannot be fully removed but can be reduced. For example, standardized testing procedures reduce measurement errors caused by changing testing conditions. KAP has standardized testing procedures, and the same procedures are applied to all students; specific accommodations are provided to students with special needs. The [Kansas Assessment Examiner's Manual 2022–2023](#) describes these testing-procedure specifications.

In the context of educational achievement tests, factors such as learning, fatigue, and motivation may affect test takers at different rates for repeated measures. It is impractical to test the same content area repeatedly, as test takers cannot maintain the same knowledge, physical condition, and mental status across test administrations. Therefore, the reliability for educational measures is typically estimated rather than calculated directly. Estimated reliability coefficients range from 0 to 1. Higher values indicate more reliable tests with less measurement error.

In this section, we present reliability estimates for overall scores and subscores reported for the KAP assessments. The overall score-reliability estimates are calculated for the full sample of tested students as well as for student groups. We also include item response theory (IRT) information functions and conditional standard errors of measurement at each cut score, as well as estimates of classification consistency and accuracy for overall scores. Finally, we summarize reliability, classification consistency, and accuracy estimates for KAP subscores.

IV.1.1. Test Reliability

We used a marginal-reliability method (Green et al., 1984) to estimate test reliability. This method can estimate reliability for both fixed-form and adaptive tests. For the detailed method for marginal-reliability calculation, see Section IV.1.1. Test Reliability in [2022 KAP Technical Manual](#). As shown in Table IV-1, mathematics reliability estimated by the marginal-reliability method is above .92. Reliability estimates for English language arts (ELA) are above .88. Science has relatively lower reliability estimates because there are fewer test items (35 items for grades 5 and 8, 40 items for grade 11) compared to ELA (47 items) and mathematics (55 items for grades 5–8, 56 items for grade 10), but values are still greater than or equal to .84.

Table IV-5. Test-Reliability Estimate by Subject and Grade

Grade	English Language Arts	Mathematics	Science
3	.91	.94	
4	.90	.94	
5	.89	.93	.87
6	.89	.93	
7	.88	.93	
8	.89	.92	.84
High school	.88	.92	.87

IV.1.1.1. Student-Group Reliability

We estimated reliabilities using the marginal-reliability method, the same method based on full population, for gender groups, race groups, ethnicity groups, English learner (EL) status groups, and disability status groups.² Table IV-2, Table IV-3, and Table IV-4 present student-group reliability estimates for ELA, mathematics, and science. For ELA and mathematics, the marginal reliabilities estimated for each group were close to or above .90 across grades, ranging from .86 to .92 for ELA, and from .88 to .95 for mathematics. Science had relatively lower subgroup-reliability estimates because the subject had fewer test items compared to ELA and mathematics. Science subgroup-reliability estimates ranged from .83 to .89 across grades. For all three subjects, the variations in reliability estimates among different student groups were small.

² Economically disadvantaged status is not shared with ATS to protect the privacy of students, so this student group is not included in the comparison.

Table IV-6. Student-Group Reliability Estimates for English Language Arts

Subgroup	Grade						
	3	4	5	6	7	8	10
Gender							
Male	.91	.90	.89	.89	.88	.90	.88
Female	.91	.89	.89	.89	.88	.89	.88
Race							
NA	.92	.91	.90	.90	.89	.90	.89
Asian	.90	.88	.88	.87	.87	.87	.86
Black	.92	.91	.90	.90	.89	.90	.89
NHPI	.92	.90	.90	.90	.89	.91	.89
Other	.91	.90	.90	.89	.88	.90	.88
White	.91	.89	.89	.89	.88	.89	.88
Hispanic							
Yes	.92	.91	.90	.90	.89	.90	.89
No	.91	.89	.89	.89	.88	.89	.88
SWD							
Yes	.92	.91	.89	.90	.89	.90	.88
No	.91	.89	.89	.89	.88	.89	.88
EL							
Yes	.92	.91	.90	.90	.89	.91	.89
No	.91	.89	.89	.89	.88	.89	.88

Note. NA = Native American; NHPI = Native Hawaiian and Pacific Islander; SWD = student with disability; EL = English learner.

Table IV-7. Student-Group Reliability Estimates for Mathematics

Subgroup	Grade						
	3	4	5	6	7	8	10
Gender							
Male	.94	.94	.93	.93	.93	.92	.92
Female	.94	.94	.94	.94	.93	.92	.92
Race							
NA	.95	.95	.94	.94	.93	.92	.92
Asian	.93	.93	.90	.91	.90	.91	.88
Black	.94	.94	.94	.93	.93	.92	.92
NHPI	.95	.95	.93	.94	.93	.92	.92
Other	.94	.94	.94	.93	.93	.92	.92
White	.94	.94	.93	.93	.93	.92	.92
Hispanic							
Yes	.95	.95	.94	.94	.93	.92	.92
No	.94	.94	.93	.93	.93	.92	.92
SWD							
Yes	.94	.94	.93	.93	.93	.92	.91
No	.94	.94	.93	.93	.93	.92	.92
EL							
Yes	.95	.94	.94	.93	.93	.92	.92
No	.94	.94	.93	.93	.93	.92	.92

Note. NA = Native American; NHPI = Native Hawaiian and Pacific Islander; SWD = student with disability; EL = English learner.

Table IV-8. Student-Group Reliability Estimates for Science

Subgroup	Grade		
	5	8	11
Gender			
Male	.86	.84	.87
Female	.88	.85	.88
Race			
Native American	.88	.84	.89
Asian	.85	.83	.85
Black	.88	.85	.89
NHPI	.88	.84	.89
Other	.88	.84	.88
White	.87	.84	.87
Hispanic			
Yes	.88	.85	.89
No	.87	.84	.87
Student with disability			
Yes	.88	.84	.89
No	.87	.84	.87
English learner			
Yes	.89	.84	.89
No	.87	.84	.87

Note. NHPI = Native Hawaiian and Pacific Islander.

IV.1.2. Test Information

For KAP tests, we use IRT models to estimate students' latent ability (theta), which is then transformed to a scale score. Using IRT models, we can estimate test information functions (TIFs) for each theta value across the whole performance continuum. A TIF is computed as the sum of item information functions of all operational items in a grade for each test. We use the TIF to estimate the amount of information the test provides at each theta; the TIF is conceptually parallel to the reliability coefficient in classical test theory. Because we used the 2022 test forms in 2023 and item IRT parameters do not change, for the TIFs for theta values for three subjects, see Section IV.1.2. Test Information in [2022 KAP Technical Manual](#). The TIF values are high at the center of the theta distribution and gradually decrease toward the two ends of the theta scale, where thetas are very low or very high; this distribution results in a bell-shaped pattern. In general, among the three subjects, mathematics had the least difference between theta values with maximum TIFs and the level-3 theta cuts.

In IRT, we estimate a standard error for each value of theta, called the *conditional standard error of measurement* (CSEM). CSEMs are computed through their inverse relationship with TIFs. For reporting purposes, the CSEM is put on the scale-score metric and reported. Because we used the 2022 test forms in 2023 and item IRT parameters do not change, for the CSEMs at cut scores for levels 2, 3, and 4 of each subject and grade, see Section IV.1.2. Test Information in [2022 KAP Technical Manual](#).

IV.1.3. Classification Consistency and Accuracy

Classification consistency and accuracy indicate how accurately students are classified into performance levels. Performance-level classification consistency and accuracy are of great interest for testing programs that serve as accountability purposes. According to Livingston and Lewis (1995), *classification consistency* refers to “the agreement between the classifications based on two nonoverlapping, equally difficult forms of the test” (p. 180), and *classification accuracy* refers to “the extent to which the actual classifications of test takers on the basis of their single-form scores agree with those that would be made on the basis of their true scores, if their true scores could somehow be known” (p. 180). For the detailed calculation of both indices, see Section IV.1.3 in [2022 KAP Technical Manual](#). Indices for both classification consistency and accuracy range from 0 to 1, with 0 representing classifications that are not consistent or accurate and 1 representing perfectly consistent or accurate classifications. The higher the indices, the more consistent and accurate the classifications are

Table IV-5 presents the results for overall classification consistency and accuracy across all four performance levels, as well as for the dichotomies created by the three cut scores. For the overall KAP classification, classification-consistency indices range from .46 to .64, and classification-accuracy indices range from .70 to .82 across all grades and subjects. Classification consistency and accuracy for the KAP level-3 performance-level cut (i.e., 1, 2 vs. 3, 4) is most important because the level-3 cut is the proficiency-level cut. Classification-consistency indices range from .51 to .82, and classification-accuracy indices range from .87 to .98 across all cuts, grades, and subjects. For all subjects and grades, the level-3-cut classification-consistency index is higher than the other two cuts’ classification-consistency indices. Within the same grade, classification consistency and accuracy for the science tests are lower than for the other two subjects’ tests because science tests have fewer items.

Table IV-9. Classification Consistency and Accuracy

Subject and Grade	Cut-Score Category							
	Overall		1 vs. 2, 3, 4		1, 2 vs. 3, 4		1, 2, 3 vs. 4	
	C	A	C	A	C	A	C	A
ELA								
3	.58	.78	.68	.91	.76	.92	.73	.96
4	.56	.78	.59	.91	.74	.91	.71	.96
5	.52	.74	.64	.90	.73	.91	.71	.95
6	.55	.77	.69	.90	.71	.90	.61	.97
7	.54	.76	.68	.90	.70	.91	.62	.97
8	.57	.80	.68	.90	.70	.93	.59	.98
10	.55	.78	.68	.90	.68	.91	.58	.97
Mathematics								
3	.63	.80	.73	.94	.80	.93	.78	.95
4	.64	.82	.63	.92	.81	.93	.79	.97
5	.60	.79	.64	.89	.81	.94	.81	.97
6	.63	.81	.73	.91	.80	.94	.76	.97
7	.58	.80	.51	.87	.82	.94	.77	.98
8	.63	.82	.71	.90	.81	.95	.77	.98
10	.56	.79	.62	.87	.82	.96	.81	.98
Science								
5	.46	.70	.57	.89	.71	.90	.70	.94
8	.48	.74	.62	.87	.68	.91	.63	.96
11	.51	.75	.65	.88	.73	.92	.71	.96

Note. ELA = English language arts; C = consistency; A = accuracy.

IV.1.4. Subscore Reliability

In addition to the total test score, the scores of subsets of ELA, mathematics, and science items are reported as subscores for identifying student’s relative strengths and limitations. The number of items in each subscore varies, and some items contribute to multiple subscores. Six is the minimum number of items reported for a subscore. ELA and science have the same subscores across grades respectively, but mathematics has different subscores across grades. These subscores are reported in three categories: below proficiency, meets proficiency, and exceeds proficiency. For detailed information about the subscores in each subject, as well as the scoring procedure and rules for determining subscore categories, see Section IV.1.4. Subscore Reliability in [2022 KAP Technical Manual](#).

We conducted three analyses to determine the reliability of subscores: reliabilities, classification consistencies, and classification accuracies. Appendix B includes estimates of the marginal reliability, classification consistency, and classification accuracy for different subscores for each subject and grade. In summary, the averages of reliability estimates are approximately .62, .65, and .61 for ELA, mathematics, and science, respectively. The averages of consistency indices are approximately .36, .38, and .35 for ELA, mathematics, and science, respectively. The averages of accuracy indices are approximately .74, .76, and .74 for ELA, mathematics, and science,

respectively. The results indicate that the subscores provide reasonable, reliable results because reliability estimates are bigger than 0.6 and accuracy indices are bigger than 0.7 across three subjects. There is some variability in the reliability estimates, classification-consistency indices, and classification-accuracy indices across each subscore by subject and grade. The subscore-reliability estimates range from .51 to .71 for ELA, from .51 to .81 for mathematics, and from .55 to .66 for science. Classification-consistency indices range from .25 to .48 for ELA, from .25 to .55 for mathematics, and from .29 to .42 for science. Classification-accuracy indices range from .63 to .88 for ELA, from .60 to .88 for mathematics, and from .64 to .82 for science.

The number of items measuring each subscore affects the reliability, classification consistency, and classification accuracy, as we measured some subscores by only six items and other subscores by 47 items. We expect the estimates of reliability, classification consistency, and classification accuracy of subscores with fewer items to be low.

IV.2. Accessibility and Fairness

During the development and administration of the KAP assessment, we considered accessibility for all students and fairness across student groups in every step. We used universal design (UD) as a guide during the development of items, test formats, and the online test-delivery interface to ensure fairness and accessibility for all students. All operational items pass a bias and sensitivity review to mitigate the likelihood of content bias toward any one student group. For detailed descriptions of applying universal design in the development and administration of the KAP assessment, as well as bias and sensitivity review, see Section IV.2.2. Fairness and section II.3.4.2.3. Item Fairness-Review Process in [2022 KAP Technical Manual](#).

IV.2.1. Accessibility

According to the *Standards for Educational and Psychological Testing* (hereafter the *Standards*), “accessibility is the degree to which the items or tasks on a test enable as many test takers as possible to demonstrate their standing on the target construct without being impeded by characteristics of the item that are irrelevant to the construct being measured” (American Psychological Association [APA], 2014, p. 215). Evidence in support of an assessment’s accessibility comprises inclusion, accommodations, and UD implementation in items and test development. For detailed accessibility evidence for KAP, see Section IV.2.1. Accessibility in [2022 KAP Technical Manual](#).

The *2023 KAP teacher survey* asked teachers about the accessibility supports on KAP. Among the 45 educators (approximately 0.2% of educators in Kansas) who responded to the question about accessibility supports, 40 (89%) agreed or somewhat agreed that their students had access to all necessary accessibility supports to participate in the assessment. While the results suggest that KAP provides students with necessary accessibility supports, additional data from a larger sample of teachers is needed.

IV.2.2. Fairness

According to the *Standards*, “the central idea of fairness in testing is to identify and remove construct-irrelevant barriers to maximal performance for any examinee” (APA et al., 2014, p. 74). The *Standards* identify fairness as an issue related to the validity of test-score inferences.

Evidence supporting the assertion of fairness in an assessment comes from several stages, such as the item- and test-development stages before test administration and the differential item functioning (DIF) analysis stage after test administration. For detailed fairness evidence on applying UD during item and test development, see Section IV.2.2. Fairness in [2022 KAP Technical Manual](#). For DIF results, see section III.3.1. Differential Item Functioning. DIF analyses conducted for the current administration indicate that no items were identified with significant DIF across gender (i.e., female vs. male), race (i.e. black vs. white), and EL status (i.e., EL vs. non-EL) for all three subjects. DIF analysis examines whether an item shows any statistical difference between two groups of students after controlling for student proficiency. A lack of items with significant DIF provides evidence in support of effective fairness practices during item writing and reviewing.

IV.3. Full Performance Continuum

KAP was designed and developed to produce a reasonably precise estimation of student proficiency across the full performance continuum in each subject area and grade. TIFs across different ability levels and CSEMs at the cut scores are listed in section IV.1.2. Test Information show test precision across the full range of ability estimates and CSEMs at cut scores range from 7 to 10 for mathematics and ELA and from 10 to 12 for science with only 3 differences across cut scores. Results indicate that KAP tests can accurately estimate ability across the full theta scale, especially in the middle of the scale.

Another approach to cover the full performance continuum is to use items that cover different cognitive complexity levels and a wide range of difficulties. Achievement and Assessment Institute (AAI) content team measure KAP items' cognitive complexity levels by the depth of knowledge (DOK) framework (Webb, 1997). The blueprint specifies the expected DOK ranges for each cluster ranging from 1 to 3. When test items are written to each cluster, the items also have to reflect the expected DOK level as implied by the content to be measured. We emphasize this expectation throughout item writing and during both internal and external item reviews. Consequently, items selected for a test to meet the blueprint also meet the underlying DOK requirements. During test construction, we screen item quality through item difficulty, item total correlation, DIF, option analyses, and IRT parameters. This approach not only ensures the quality of items to be used on the test, but also provides the widest range possible for measuring student abilities. Additionally, we plot test-characteristic curves, test information, and CSEM during test construction to gauge the proficiency range of each test. Because we used the 2022 test forms in 2023, for the summary of DOK levels, classical test theory item statistics, and IRT item statistics, see Section IV.3. Full Performance Continuum in [2022 KAP Technical Manual](#).

IV.4. Scoring and Scaling

This section introduces the procedures of scoring individual items, scoring the test as a whole, and scaling. We include test results and the performance-level distribution for 2023 KAP testing; we also present the KAP performance trend for the previous five years. Finally, this section describes the quality-control procedures used to ensure the accuracy of scoring and scaling.

IV.4.1. Scoring

Item and test scoring in the 2023 administration remained the same as in previous years. For a detailed description of item and test scoring, see Section IV.4.1. Scoring in [2022 KAP Technical Manual](#).

IV.4.2. Scaling

Scaling is the process of transforming thetas or raw scores to a reporting scale. The purpose of scaling is to facilitate the use and interpretation of test scores. The scale is also the basis for reporting performance levels. We used the same scaling procedure and KAP reporting scale in 2023 as in previous years. For detailed information about scaling procedure, scale-transformation constants, and scale properties, see Section IV.4.1. in [2022 KAP Technical Manual](#).

IV.4.3. Operational Test Results

This section presents the results of the 2023 administration of the KAP, including descriptive statistics representing the number of students tested by various subgroups; the 2023 scale-score summary for all students and by subgroup; the 2023 performance-level distribution for each subject by grade; and the 2023 participation data, scale-score summary, and proficiency rates compared to those of previous years. This report includes participation rates prominently because it is critical to account for variability in participation when interpreting KAP performance within and across years.

IV.4.3.1. Student Participation

In 2023, states administered the KAP operational test in ELA, mathematics, and science in grades 3–8 and high school. At the high school level, students completed ELA and mathematics assessments in grade 10 and science assessments in grade 11. As described in section I.3. Required Assessments and Intended Population, Kansas is committed to including all students in the KAP assessment.

Table IV-6 shows the number of enrolled students and tested students, as well as participation rate by subject and grade. The definitions for the indicators are:

- *Enrolled students* are students assigned to take a KAP test.
- *Tested students* are students receiving a score report. Students receive a score report when they were not exempt (exemption rules are described in section I.3. Required Assessments and Intended Population), completed at least five items in each of the two test sections, and have logged out of the testing platform for the first section. This reporting rule has been used since 2015.
- *Participation rate* is calculated as the number of tested students divided by the number of enrolled students.

As shown in Table IV-6, more than 34,000 students were tested for each subject and grade. Across all subjects and grades, the participation rates ranged from 96% to 99%. The participation rates in elementary and middle school grades were greater than 98%, especially at elementary grades (about 99%). High school grades had a lower participation rate, with 97% for ELA, 97%

for mathematics, and 96% for science. Across all subjects and grades, the average participation rate was 98%.

Table IV-10. Number (N) and Participation Rate (PR) of Enrolled and Tested Students by Subject and Grade

Grade	English Language Arts			Mathematics			Science		
	Enrolled (N)	Tested (N)	PR (%)	Enrolled (N)	Tested (N)	PR (%)	Enrolled (N)	Tested (N)	PR (%)
3	35,503	35,097	99%	35,503	35,215	99%	-	-	-
4	35,595	35,281	99%	35,595	35,398	99%	-	-	-
5	36,053	35,646	99%	36,053	35,744	99%	36,104	35,728	99%
6	35,899	35,479	99%	35,899	35,509	99%	-	-	-
7	37,096	36,542	99%	37,096	36,607	99%	-	-	-
8	37,579	36,950	98%	37,579	37,010	98%	37,650	37,037	98%
10	38,184	36,980	97%	38,184	36,908	97%	-	-	-
11	-	-	-	-	-	-	35,754	34,366	96%

Table IV-7 shows participation rates by student group³ and by State Board of Education (SBOE) district. The participation rates by student group and by SBOE district are not subject specific. If a student participated in one subject of the KAP assessment, then the student is included in the calculation. The 286 school districts in Kansas are distributed among 10 SBOE districts. Some school districts appear in multiple SBOE districts when district boundaries extend into more than one SBOE district. The [Kansas Unified School Districts](#) document lists the school districts included in each SBOE district. Comparing participation rates of students within each subject and grade by gender, ethnicity, race, EL status, and disability status, we note the following:

- No difference in participation rates between male and female groups
- Very similar participation rates for different race groups, except in high schools
 - In high schools, black and Native Hawaiian and Pacific Islander (NHPI) students have lower participation rates than Asian and white students.
- A slightly higher participation rate for non-Hispanic students than for Hispanic students in high schools
- A slightly higher participation rate for non-ELs than for ELs in high schools
- A slightly higher participation rate for students without disabilities than for students with disabilities, especially in high schools
 - In high schools, students without disabilities have a 4% higher participation rate than students with disabilities.

The comparison of participation rates of different SBOE districts within each grade showed the following results:

- Participation rates in elementary schools are very similar across districts.
- Districts 3, 5, and 9 have slightly higher participation rates in high schools.

SBOE districts 3, 5, and 9 include a large number of school districts in the rural areas. Appendix C provides detailed demographic distribution of SBOE districts.

³ Economically disadvantaged status is not shared with ATS to protect the privacy of students, so this student group is not included in the comparison.

Table IV-11. Participation Rate by Demographic Characteristics and State Board of Education (SBOE) District

Characteristic	Grade							
	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	10 (%)	11 (%)
Gender								
Female	99	99	99	99	98	98	96	96
Male	99	99	99	99	98	98	96	96
Race								
Native American	97	98	97	97	98	98	95	96
Asian	97	98	97	99	98	97	97	98
Black	98	98	98	97	96	96	92	93
NHPI	95	98	97	98	97	98	93	91
Other	99	99	98	98	98	97	95	95
White	99	99	99	99	98	98	97	97
Hispanic								
No	99	99	99	99	98	98	97	96
Yes	99	99	98	98	98	98	95	95
Student with disability								
No	99	99	99	99	99	98	97	97
Yes	97	98	97	97	96	96	93	93
English learner								
No	99	99	99	99	98	98	96	96
Yes	98	98	98	98	97	96	93	94
SBOE district								
1	99	99	98	98	97	97	94	95
2	99	99	98	98	98	98	95	95
3	98	99	98	98	99	98	97	97
4	99	99	98	98	98	97	95	96
5	99	99	99	99	99	99	98	99
6	98	99	98	98	97	97	95	96
7	99	99	99	98	98	98	96	96
8	98	99	99	98	98	97	94	94
9	99	99	99	99	98	99	97	97
10	99	99	99	98	98	97	95	94

Note. NHPI = Native Hawaiian and Pacific Islander.

For all tested students, Table IV-8 shows the percentage of students in each student group by grade. This summary is not subject specific. If a student tested in one subject of the KAP assessment, then the student is included in the calculation. The student groups include gender, race, ethnicity, disability status, and EL status.⁴ The numbers of students in each student group were very similar across grades, except students with disabilities and ELs. There were approximately equal numbers of male and female students. The largest number tested by race group was white, and the largest number tested by ethnic group was non-Hispanic. More students without disabilities were tested than students with disabilities, and more non-ELs were tested than ELs. There was a decrease in the number of students with disabilities and ELs across grades. Lower grades had greater numbers of students with disabilities and ELs than did higher grades.

Table IV-12. Percentage of Tested Students by Demographic Characteristic and Grade

Characteristic	Grade							
	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	10 (%)	11 (%)
Gender								
Female	48.59	49.04	48.84	49.29	48.82	48.86	48.81	49.27
Male	51.41	50.96	51.16	50.71	51.18	51.14	51.19	50.73
Race								
Native American	1.77	1.95	1.96	2.07	2.17	2.28	2.56	2.81
Asian	3.04	3.06	3.02	2.99	2.97	3	3.13	3.1
Black	7.19	6.92	6.93	7	7.17	7.29	7.11	6.96
NHPI	0.37	0.3	0.34	0.34	0.35	0.32	0.27	0.27
Other	7.84	7.91	7.38	7.36	7.03	7.11	6.86	6.6
White	79.79	79.87	80.36	80.24	80.3	80.01	80.07	80.26
Hispanic								
No	78.84	78.73	78.72	78.66	78.71	78.1	78.46	79.11
Yes	21.16	21.27	21.28	21.34	21.29	21.9	21.54	20.89
SWD								
No	82.83	83.27	84.06	84.79	85.68	86.38	88.02	88.49
Yes	17.17	16.73	15.94	15.21	14.32	13.62	11.98	11.51
EL								
No	86.5	86.71	86.97	88.75	89.81	90.93	92.14	92.92
Yes	13.5	13.29	13.03	11.25	10.19	9.07	7.86	7.08

Note. NHPI = Native Hawaiian and Pacific Islander; SWD = student with disability; EL = English learner.

⁴ Economically disadvantaged status is not shared with ATS to protect the privacy of students, so this student group is not included in the comparison.

IV.4.3.2. Operational Test Results

Table IV-9, Table IV-10, and Table IV-11 present summaries of scale scores by grade for ELA, mathematics, and science. As noted previously, it is critical to consider variability in participation rates when interpreting KAP performance within and across years.

The minimum and maximum scale scores for each grade and subject were set at 220 and 380, respectively. As shown in tables IV-10 through IV-12, the mean scale scores were close to 300 in lower grades (i.e., grades 3–5 in ELA, grades 3–4 in mathematics, and grade 5 in science) and approximately 280 in higher grades. The standard deviations of scale scores were very similar across grades within each subject. Science tended to have higher standard deviations of scale scores than ELA and mathematics.

Table IV-13. Scale-Score Descriptive Statistics for English Language Arts

Grade	M^5	SD	Min.	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max.
3	293.5	27.7	220	260	270	292	314	331	380
4	297.5	28.1	220	263	276	295	316	335	380
5	293.7	29.7	220	259	272	290	314	332	380
6	289.1	28.7	220	250	269	288	308	327	380
7	287.0	29.4	220	252	264	286	307	326	380
8	278.5	27.9	220	244	256	276	298	317	380
10	282.0	29.4	220	245	258	280	301	320	380

Note. P₁₀, P₂₅, P₅₀, P₇₅, and P₉₀ = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

Table IV-14. Scale-Score Descriptive Statistics for Mathematics

Grade	M^5	SD	Min.	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max.
3	301.8	31.7	220	261	280	300	324	346	380
4	293.4	30.1	220	257	271	290	314	335	380
5	290.6	29.3	220	257	268	285	309	331	380
6	288.0	29.0	220	254	266	284	307	327	380
7	287.8	28.8	220	256	267	280	306	329	380
8	282.9	28.3	220	253	262	276	299	321	380
10	282.8	27.4	220	255	264	276	296	320	380

Note. P₁₀, P₂₅, P₅₀, P₇₅, and P₉₀ = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

Table IV-15. Scale-Score Descriptive Statistics for Science

Grade	M^5	SD	Min.	P ₁₀	P ₂₅	P ₅₀	P ₇₅	P ₉₀	Max.
5	298.9	32.0	220	263	276	295	321	343	380
8	281.5	29.0	220	246	259	278	299	319	380
11	287.6	30.3	220	254	266	282	306	329	380

Note. P₁₀, P₂₅, P₅₀, P₇₅, and P₉₀ = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

⁵ KAP does not have a vertical scale across grades. Thus cross-grade scale-score means are not comparable.

Table IV-12 provides the percentage of students achieving each performance level (i.e., levels 1 through 4) and the proficiency rate (i.e., percentage at level 3 and level 4) by subject and grade. Proficiency rates across all subjects and grades ranged from 22% to 52%. All three subjects tended to have lower proficiency rates in higher grades. A summary of the results across grades by subject follows.

- ELA
 - Level-1 percentages ranged from 18% to 36%.
 - Level-2 percentages ranged from 28% to 43%.
 - Level-3 percentages ranged from 19% to 33%.
 - Level-4 percentages ranged from 3% to 15%.
 - As grades increased, level-1 and level-2 percentages tended to increase, and level-3 and level-4 percentages tended to decrease.
- Mathematics
 - Level-1 percentages ranged from 18% to 46%.
 - Level-2 percentages ranged from 26% to 48%.
 - Level-3 percentages ranged from 14% to 31%.
 - Level-4 percentages ranged from 5% to 20%.
 - As grades increased, level-1 percentages tended to increase, and level-3 and level-4 percentages tended to decrease.
 - Level-2 percentages tended to be stable across grades.
- Science
 - Level-1 percentages ranged from 27% to 47%.
 - Level-2 percentages ranged from 28% to 29%.
 - Level-3 percentages ranged from 16% to 26%.
 - Level-4 percentages ranged from 8% to 18%.
 - As grades increased, level-1 percentages tended to increase, and level-3 and level-4 percentages tended to decrease.
 - Level-2 percentages tended to be stable across grades.

Table IV-16. Percentage of Students Achieving at Each Performance Level (PL) for English Language Arts (ELA), Mathematics, and Science

Grade	ELA PL (%)					Mathematics PL (%)					Science PL (%)				
	1	2	3	4	P	1	2	3	4	P	1	2	3	4	P
3	31	30	25	14	39	22	26	31	20	52					
4	18	38	33	11	44	18	43	26	13	39					
5	31	28	26	15	41	33	34	20	13	33	27	29	26	18	44
6	36	29	29	6	35	34	35	22	10	31					
7	36	31	26	7	33	24	48	23	6	29					
8	36	43	19	3	22	46	30	19	5	24	47	29	16	8	24
10	35	37	22	5	28	45	33	14	8	22					
11											43	28	18	11	30

Note. P = proficient (combination of performance levels 3 and 4). Column percentages may not total 100 because of rounding.

Table IV-13, Table IV-14, and Table IV-15 summarize the mean and standard deviation of the scale scores by demographic student group.⁶ For all subjects and grades, the mean scale score was above 280, and the standard deviation was around 30.

⁶ Economically disadvantaged status is not shared with ATS to protect the privacy of students, so this student group is not included in the comparison.

Table IV-17. English Language Arts Mean (M) and Standard Deviation (SD) of Scale Scores by Grade and Student Subgroup

Subgroup	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 10	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Gender														
Male	292.2	27.6	296.4	28.1	292.1	29.6	286.7	29.2	283.9	29.2	275.0	27.4	278.4	29.4
Female	294.8	27.7	298.6	28.2	295.4	29.8	291.6	28.0	290.3	29.4	282.1	28.0	285.8	29.0
Race														
NA	282.0	22.3	285.0	23.4	280.8	23.7	277.7	24.7	275.7	25.5	267.5	24.1	269.3	24.6
Asian	299.1	28.8	305.5	30.4	303.2	33.7	300.3	30.5	296.9	30.5	291.0	31.4	295.9	32.6
Black	279.4	24.0	282.9	25.2	277.7	25.9	273.5	25.7	272.1	25.9	264.7	23.5	266.1	25.4
NHPI	280.6	23.5	289.1	25.0	286.0	26.8	277.7	24.9	277.3	26.5	267.7	22.8	263.7	22.6
Other	289.6	26.6	294.3	28.1	290.3	28.7	286.2	29.9	283.5	29.1	275.4	26.9	280.3	29.6
White	295.2	27.7	299.1	27.9	295.4	29.6	290.6	28.3	288.6	29.3	279.9	27.9	283.4	29.2
Hispanic														
Yes	282.5	23.9	286.8	24.9	282.3	25.7	278.6	25.8	276.2	26.2	268.5	24.2	270.9	26.2
No	296.4	27.9	300.3	28.3	296.7	30.0	291.9	28.8	289.9	29.6	281.3	28.3	285.0	29.6
SWD														
Yes	276.6	23.4	279.4	24.7	273.2	25.5	266.4	24.4	263.9	24.1	256.3	21.7	257.9	23.2
No	296.9	27.2	301.1	27.4	297.6	28.9	293.1	27.5	290.8	28.5	281.9	27.2	285.1	28.7
EL														
Yes	278.0	21.9	281.8	22.4	276.6	23.4	270.2	22.6	265.7	21.6	256.8	18.7	255.0	19.1
No	295.8	27.7	299.8	28.2	296.2	29.7	291.4	28.5	289.3	29.3	280.5	27.8	284.1	29.1

Note. NA = Native American; NHPI = Native Hawaiian and Pacific Islander; SWD = student with disability; EL = English learner.

Table IV-18. Mathematics Mean (M) and Standard Deviation (SD) of Scale Scores by Grade and Student Subgroup

Subgroup	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8		Grade 10	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Gender														
Male	304.5	33.1	296.8	31.4	293.5	31.1	289.1	29.9	289.9	30.1	284.0	29.7	283.5	28.7
Female	298.9	29.8	289.9	28.3	287.5	26.8	286.9	28.0	285.6	27.2	281.6	26.6	282.0	26.1
Race														
NA	291.0	27.8	280.9	25.2	279.1	22.5	277.9	23.4	277.7	23.2	271.8	22.1	271.2	19.1
Asian	312.3	34.9	307.5	34.6	306.2	35.6	305.0	35.6	304.5	36.9	303.3	37.3	304.9	38.8
Black	282.4	28.2	275.6	23.6	273.2	21.9	270.1	22.4	271.9	21.3	267.8	20.7	268.2	18.5
NHPI	291.5	28.6	282.0	25.3	284.8	28.8	276.3	23.1	278.0	24.5	274.2	25.8	268.2	19.0
Other	296.5	31.1	288.2	28.8	285.7	26.2	283.7	28.2	282.7	26.8	278.1	25.9	279.7	26.8
White	303.9	31.2	295.3	29.9	292.2	29.2	289.6	28.6	289.3	28.6	284.2	28.1	283.8	27
Hispanic														
Yes	289.3	27.9	281.6	25.4	279.5	23.5	276.8	24.2	276.6	22.5	272.0	22.5	271.9	20.3
No	305.2	31.8	296.6	30.5	293.6	29.9	291.0	29.4	290.8	29.6	285.9	29.0	285.7	28.4
SWD														
Yes	282.0	30.8	275.7	26.2	272.8	23.9	267.2	22.5	268.0	20.9	264.0	20.5	264.8	17.9
No	305.8	30.3	296.9	29.6	293.9	29.0	291.7	28.4	291.0	28.6	285.8	28.2	285.1	27.6
EL														
Yes	286.0	27.5	278.7	24.9	276.8	23.0	270.5	21.5	269.1	17.6	264.3	18.3	264.3	14.7
No	304.2	31.6	295.6	30.2	292.6	29.5	290.2	29.0	289.9	29.1	284.7	28.4	284.3	27.7

Note. NA = Native American; NHPI = Native Hawaiian and Pacific Islander; SWD = student with disability; EL = English learner.

Table IV-19. Science Mean (M) and Standard Deviation (SD) of Scale Scores by Grade and Student Group

Subgroup	Grade 5		Grade 8		Grade 10	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender						
Male	301.0	33.7	284.1	30.8	288.5	32.1
Female	296.8	30.1	278.7	26.8	286.6	28.3
Race						
Native American	286.8	27.1	268.2	23.7	276.7	24.3
Asian	307.6	36.2	293.7	32.1	298.2	34.3
Black	280.3	26.9	265.9	22.1	268.9	22.6
NHPI	291.9	28.5	268.5	24.4	277.8	24.9
Others	294.6	30.0	277.3	27.6	283.6	28.4
White	300.9	31.9	283.2	29.1	289.4	30.3
Hispanic						
Yes	286.7	27.5	269.6	24.3	275.7	25.0
No	302.3	32.4	284.8	29.4	290.6	30.8
Student with disability						
Yes	281.9	29.5	263.9	24.3	268.1	23.5
No	302.1	31.5	284.2	28.7	290.0	30.2
English learner						
Yes	281.5	25.9	260.3	19.4	263.1	17.3
No	301.5	32.1	283.5	29.0	289.4	30.3

Note. NHPI = Native Hawaiian and Pacific Islander.

IV.4.3.3. Participation Trend

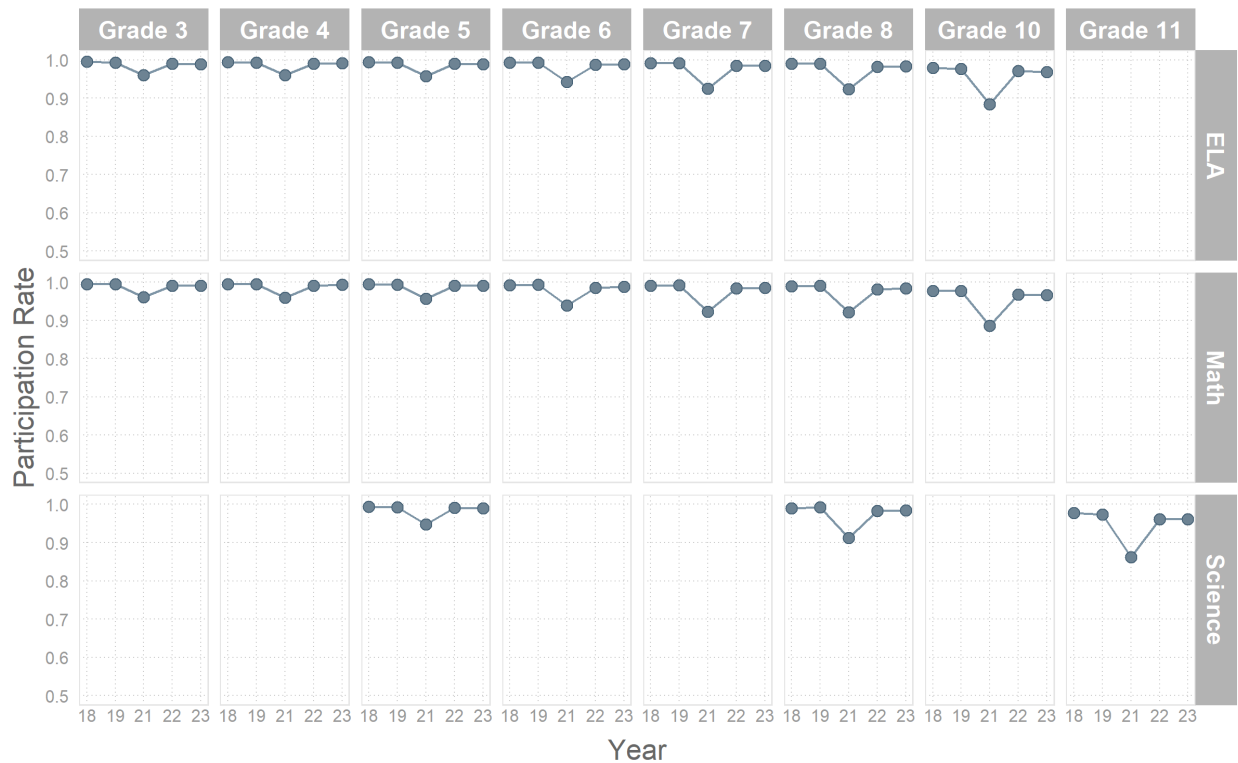
Table IV-16 presents enrollment trends for 2018–2023 for ELA, mathematics, and science. The numbers were very similar in the higher grades across years; however, grade 6 had a decrease of 1,000 enrolled students, and grade 10 had an increase of more than 1,000 enrolled students from 2022 to 2023. In grades 3, 4, and 5, there was a decrease of approximately 3,000 enrolled students from 2019–2021 per subject and grade; the number of enrolled students became stable from 2021–2023, except in grade 5 with a decrease of 1,000 enrolled students from 2021 to 2022. When comparing the enrollment numbers in a student cohort (e.g., enrollments in grade 3 in 2018, grade 4 in 2019, grade 6 in 2021, grade 7 in 2022, grade 8 in 2023), the enrollment numbers were very stable, with a slight decrease (fewer than 700 students) in 2021.

Table IV-20. Total Number of Enrolled Students by Subject and Grade for 2018–2023

Subject	Grade	2018	2019	2021	2022	2023	
English	3	37,724	37,316	35,440	35,356	35,503	
	language arts	4	38,600	37,920	35,547	35,878	35,595
		5	38,532	38,606	36,735	35,799	36,053
		6	37,655	38,537	37,225	36,953	35,899
		7	37,018	37,680	38,145	37,370	37,096
		8	37,114	37,065	38,275	38,173	37,579
		10	36,245	36,973	36,811	36,747	38,184
Mathematics	3	37,792	37,346	35,455	35,389	35,562	
	4	38,653	37,950	35,557	35,907	35,648	
	5	38,576	38,619	36,743	35,830	36,095	
	6	37,704	38,561	37,224	36,968	35,946	
	7	37,064	37,693	38,142	37,387	37,147	
	8	37,179	37,076	38,286	38,191	37,645	
	10	36,292	36,994	36,813	36,799	38,225	
Science	5	38,615	38,632	36,756	35,849	36,104	
	8	37,203	37,103	38,301	38,204	37,650	
	11	34,976	34,938	35,527	35,259	35,754	

Figure IV-1 presents the participation rates (i.e., ratio of students receiving a score report out of students enrolled) for different subjects and grades by year from 2018–2023. From 2018–2019, the participation rates were approximately 98% for all grades. There was a decrease in participation rates from 2019 to 2021,⁷ from approximately 98% to 93% in lower grades and from approximately 98% to 88% in higher grades. Then, in 2022, the participation rates increased to 98% for all grades compared to 2021 and stayed at 98% in 2023.

Figure IV-1. Participation Rates for 2018–2023 by Subject and Grade

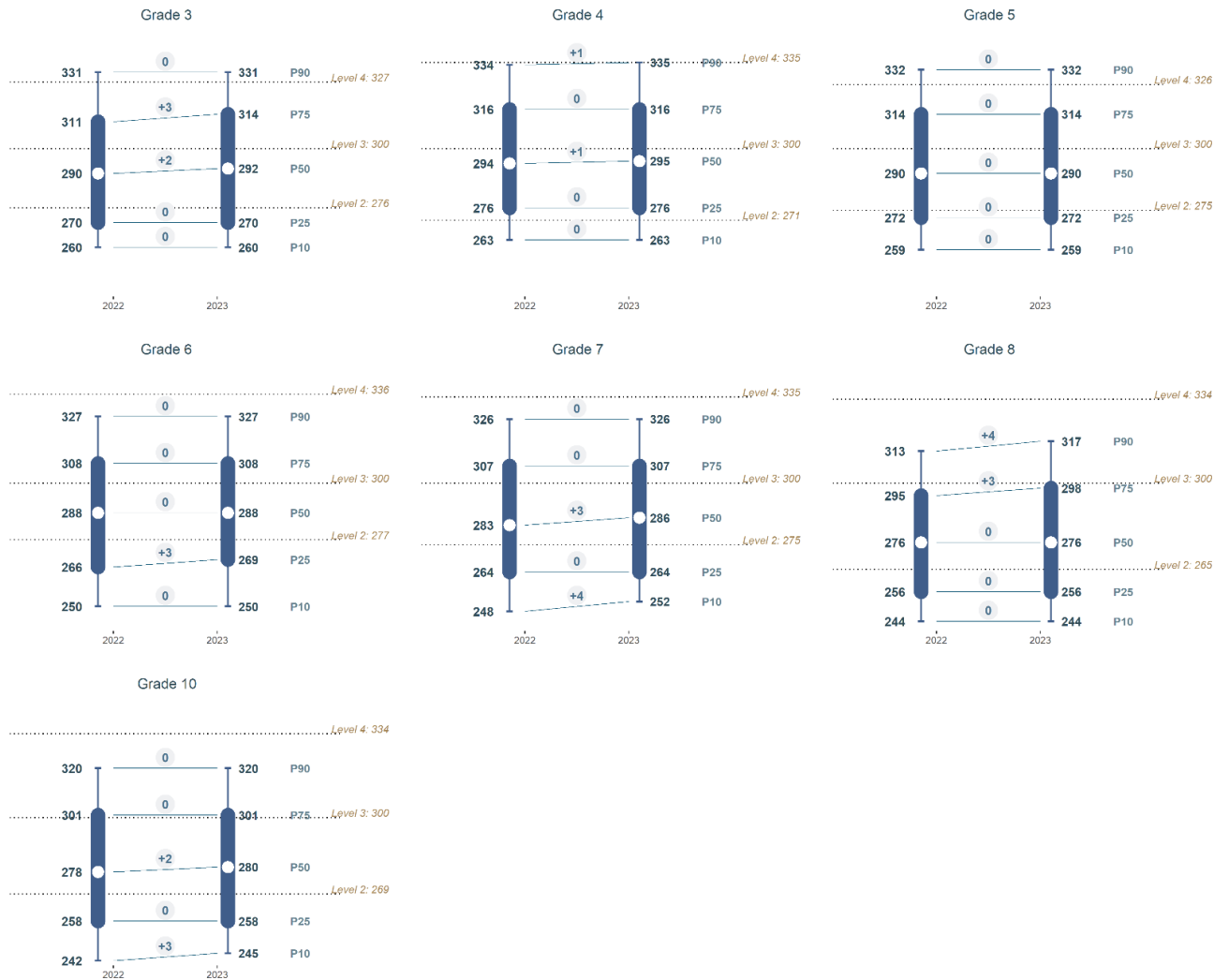


⁷ The 2020–2021 academic school year and assessment were significantly affected by the COVID-19 pandemic. For more information about 2020–2021 assessment results and the impact of COVID-19, please refer to the [KAP technical report on COVID-19 Effect in 2021](#).

IV.4.3.4. Performance Trend

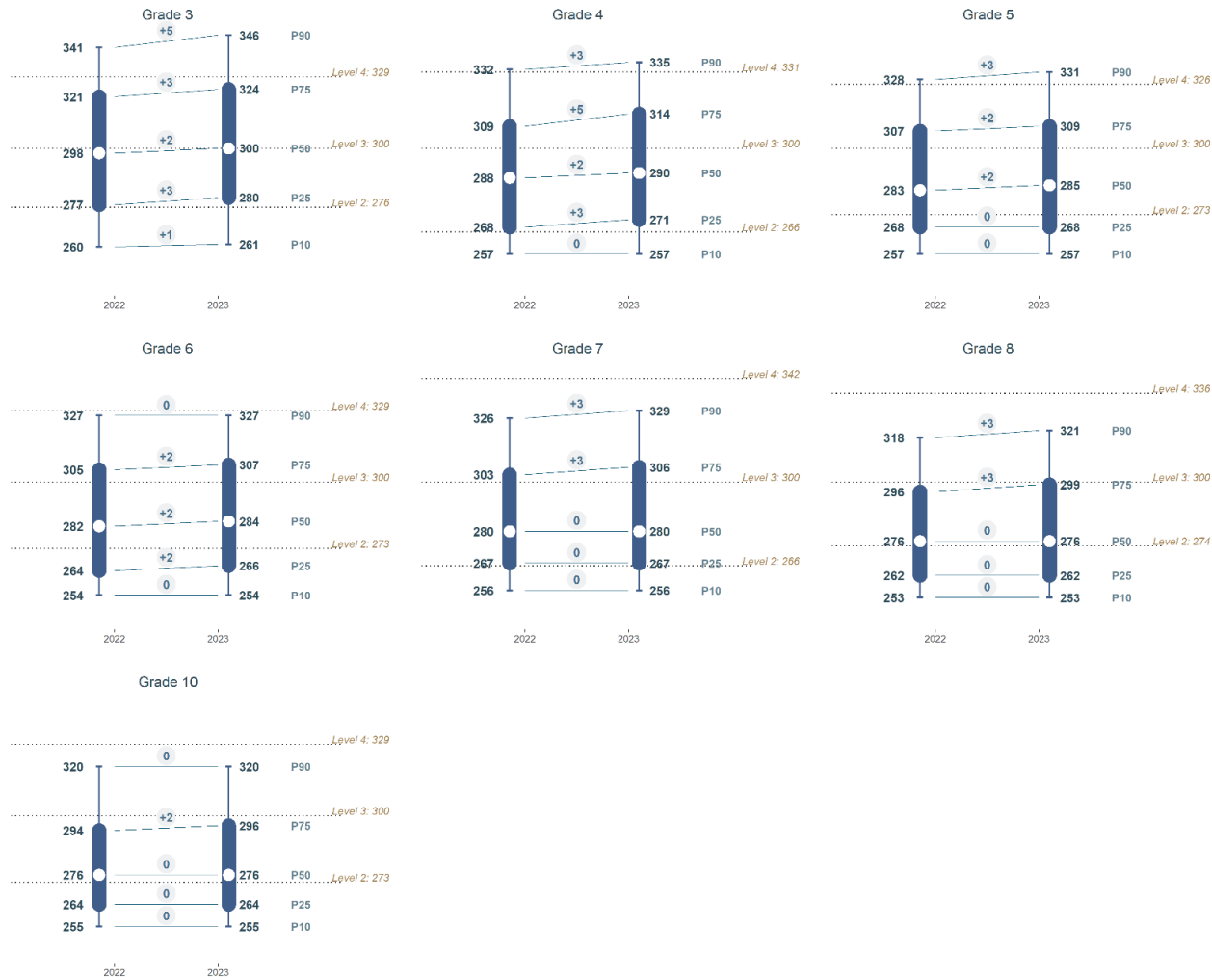
ELA, mathematics, and science scale-score trends from 2022–2023 are presented in Figure IV-2, Figure IV-3, and Figure IV-4. These trend graphs include percentiles (10th, 25th, 50th, 75th, and 90th percentiles) of scale scores in 2022 and 2023 and the changes of selected percentiles between these years. Also, three level cuts are in the graph as a reference. For ELA, there were some increases in percentiles in most grades, except grade 5. The increases were not large, ranging from 1 to 4 scale score points. Most of increases were in the higher percentiles. For mathematics, there were increases in percentiles in every grade, and grade 3 had increases in every percentile. The increases ranged from 1 to 5 scale-score points. Most increases were in the higher percentiles. For science, grade 5 and grade 11 did not have any percentile changes, and grade 8 had decreases in the 10th and 25th percentiles ranging from 4 to 5 scale-score points.

Figure IV-2. ELA Scale-Score Percentile Trend by Grade Between 2022 and 2023



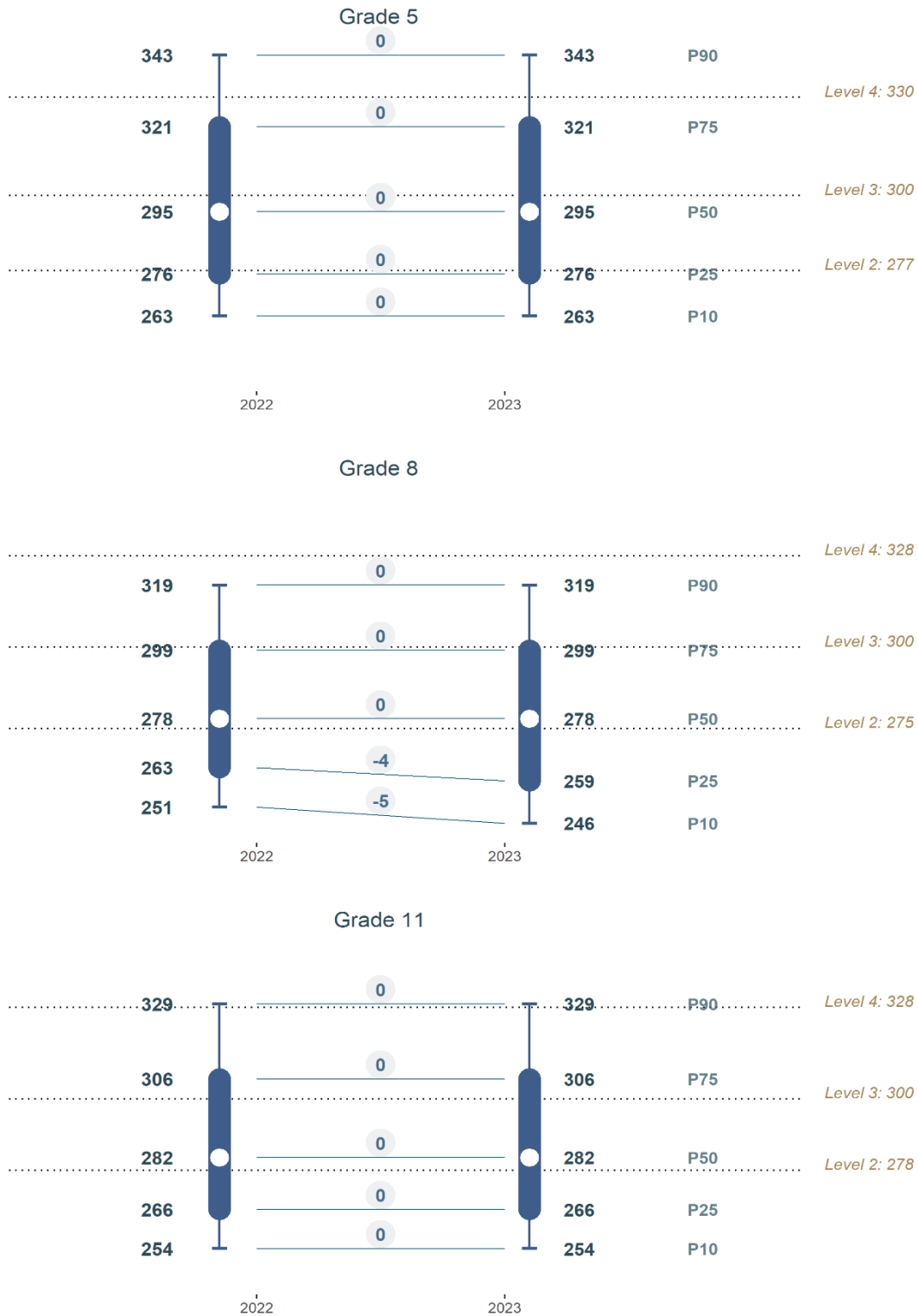
Note. P10, P25, P50, P75, and P90 = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

Figure IV-3. Mathematics Scale-Score Percentile Trend by Grade Between 2022 and 2023



Note. P10, P25, P50, P75, and P90 = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

Figure IV-4. Science Scale-Score Percentile Trend by Grade Between 2022 and 2023

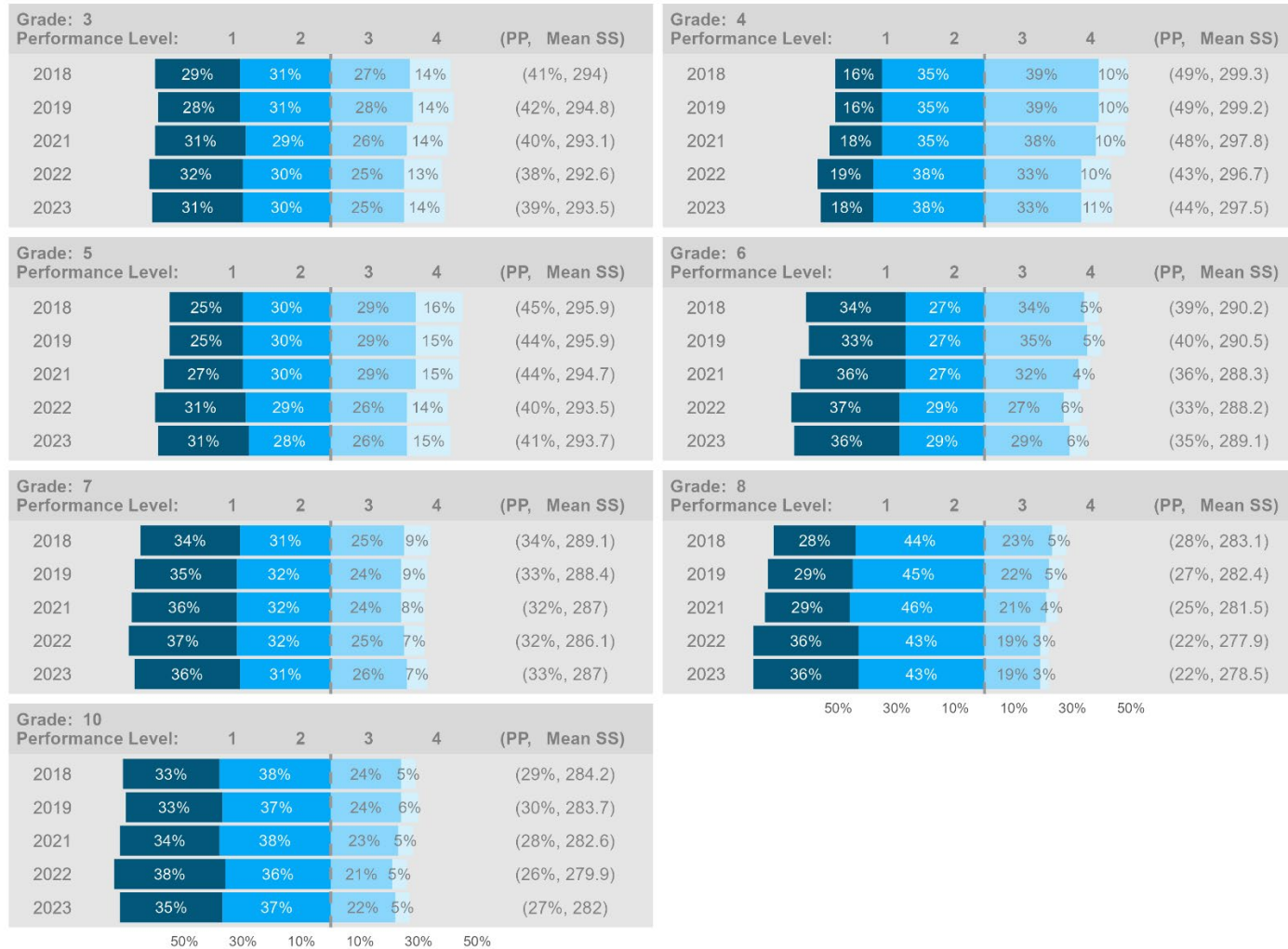


Note. P10, P25, P50, P75, and P90 = 10th, 25th, 50th, 75th, and 90th percentiles, respectively.

Figure IV-5, Figure IV-6, and Figure IV-7 present the performance-level distribution trends across years for ELA, mathematics, and science, as well as the proficiency-rate trends and average scale-score trends from 2018 to 2023. A new set of reporting-scale and performance standards were set for grade 10 mathematics in 2022; therefore, the trend starts from 2022 for grade 10 mathematics. A summary of the results across grades by subject follows.

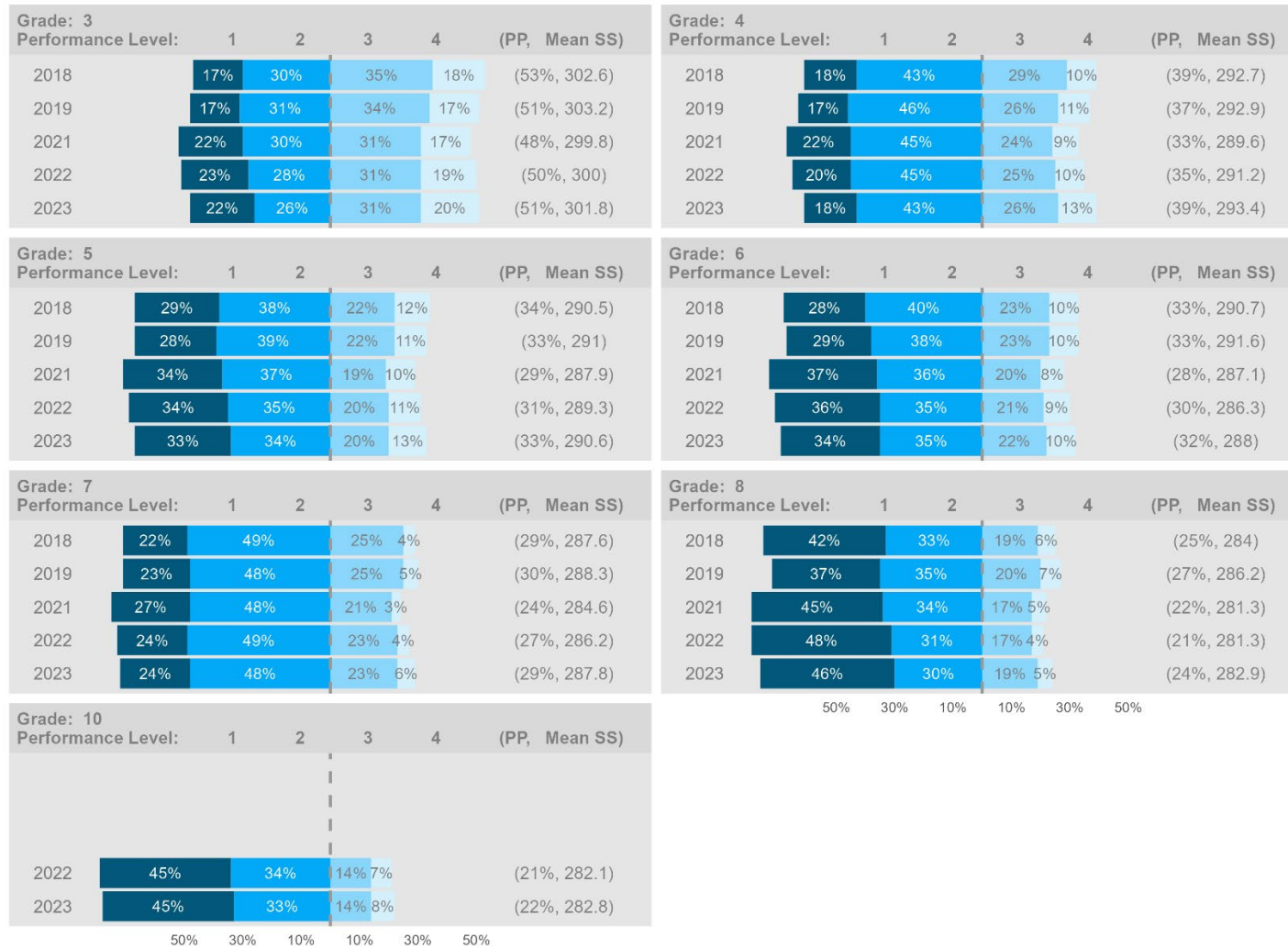
- ELA
 - There was an increase from 2018 to 2022 and a slight decrease from 2022 to 2023 in the percentage of level-1 students.
 - There was a very stable percentage of level-2 and level-3 students, with a slight increase in level 3 from 2022 to 2023.
 - There was a decrease in the percentage of level-4 students from 2018 to 2022 and an increase from 2022 to 2023.
 - There was a slight decrease in proficiency rates from 2018 to 2022 and an increase from 2022 to 2023.
 - There was a decrease in average scale scores from 2018 to 2022 and an increase from 2022 to 2023, especially in grade 10.
- Mathematics
 - There was an increase from 2018 to 2021 and a slight decrease from 2021 to 2023 in the percentage of level-1 students.
 - There was a very stable percentage of level-2 students, with a slight decrease from 2022 to 2023.
 - There was a decrease in the percentage of level-3 students from 2018 to 2022, especially in 2021 and 2022, and a slight increase in percentage of level 3 from 2022 to 2023.
 - There was a decrease in the percentage of level-4 students in 2021 and an increase in level-4 percentage in 2022 and 2023.
 - There was a decrease in proficiency rates in 2021 and an increase in proficiency rates in 2022 and 2023.
 - The average scale scores increased from 2018 to 2019, decreased from 2019 to 2021, and increased from 2021 to 2023.
- Science
 - The grade 5 performance-level distributions were similar across years, with a larger level-4 percentage in 2022 and 2023.
 - The grade 5 proficiency rates and average scale scores were similar across years.
 - For grade 8 science, there was an increase in the percentage of level-1 students, and there was a decrease in percentage of level-3 and -4 students, proficiency rate, and average scale score from 2018–2023.
 - For grade 11 science, 2018, 2019, and 2021 had very similar performance-level distributions and average scale scores, and 2022 and 2023 had very similar performance-level distributions and average scale scores. There was a decrease in proficiency rates and average scale scores in 2022.

Figure IV-5. Performance-Distribution, Proficiency-Rate, and Average Scale-Score Trend for English Language Arts for 2018–2023



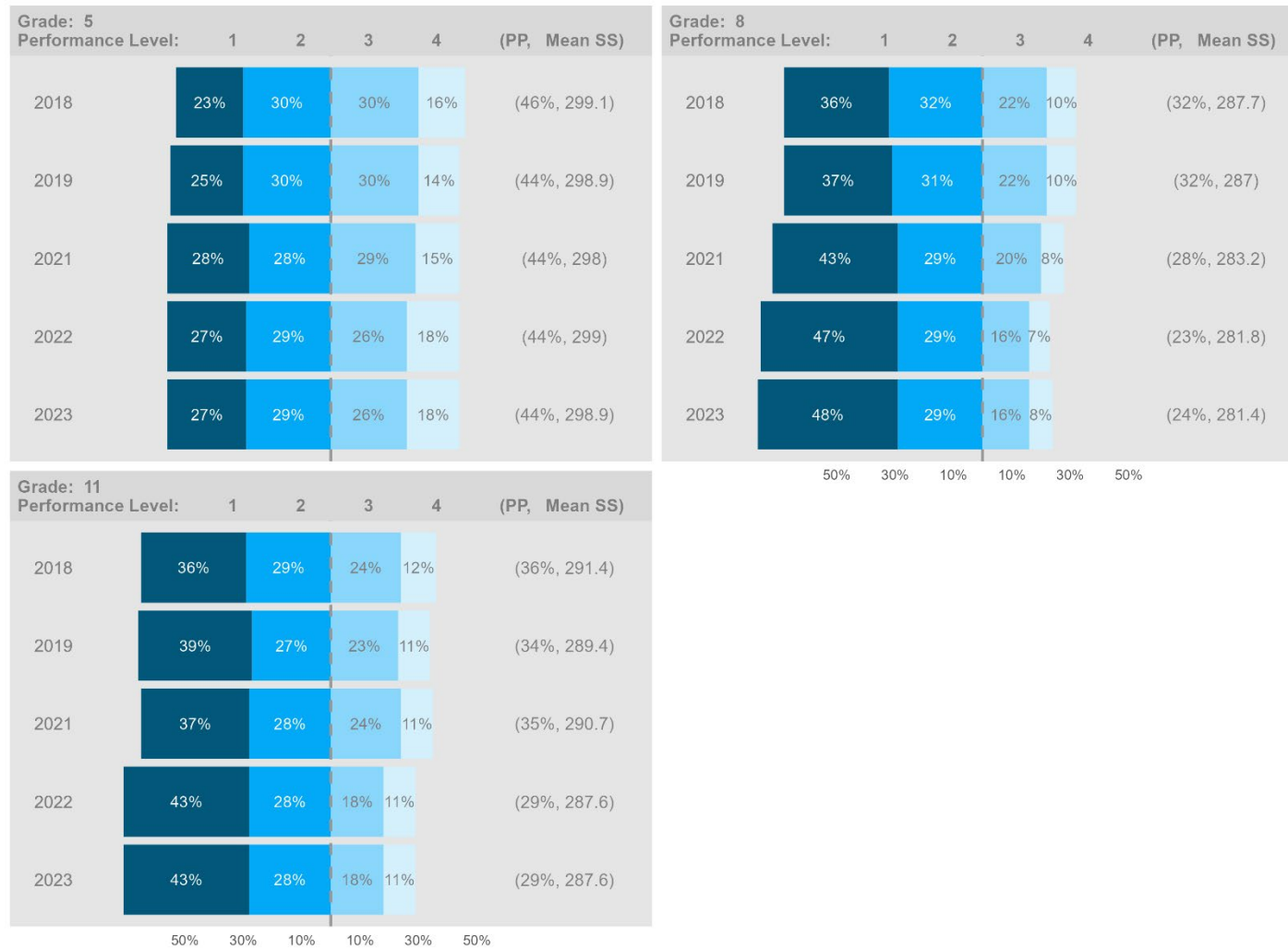
Note. PP = Proficiency Percentage; Mean SS = Mean Scale Score.

Figure IV-6. Performance-Distribution, Proficiency-Rate, and Average Scale-Score Trend for Mathematics for 2018–2023



Note. PP = Proficiency Percentage; Mean SS = Mean Scale Score.

Figure IV-7. Performance-Distribution, Proficiency-Rate, and Average Scale-Score Trend for Science for 2018–2023



Note. PP = Proficiency Percentage; Mean SS = Mean Scale Score.

IV.4.3.4.1. Monitoring the COVID-19 Effect

In 2023, we continued to monitor the effects of COVID-19 disruptions on classroom instruction as reported by teachers in the annual teacher survey. Among the 45 educators (approximately 0.2% of educators in Kansas) who responded to the instruction questions on the teacher survey, 35 ELA teachers (78%) agreed that the majority of their students have regained *some* ELA learning loss experienced during the COVID-19 pandemic, 34 mathematics teachers (76%) agreed that the majority of their students have regained *some* mathematics learning loss experienced during the COVID-19 pandemic, and 26 science teachers (58%) agreed that the majority of their students have regained *some* science learning loss experienced during the COVID-19 pandemic. Although respondents are not necessarily a representative group of Kansas educators, the outcomes combined with other sources of information suggest that Kansas students have regained some learning loss, especially in ELA and mathematics, but COVID-19 may still affect instruction and learning experiences for some students in Kansas.

IV.4.3.5. Quality-Control Checks

The scoring and reporting process of KAP test results had multiple quality-control steps. The 2023 scoring and reporting quality-control steps remained the same as in previous years. For a detailed description about quality-control checks, see Section IV.4.3.5. Quality-Control Checks in [2022 KAP Technical Manual](#).

IV.5. Multiple Assessment Forms

In large-scale assessment programs, different item sets may be used on test forms within and across years. Linking the scores from these different test forms puts the form scores on a common scale and ensures that all forms for a given grade and subject area provide comparable scores. This outcome means that students will not have an unfair advantage or disadvantage simply because they took an easier or harder test form than other students did.

All three subject areas used one operational form in 2023, and those operational forms are same as forms used in 2022, so no linking was conducted in 2023.

IV.6. Multiple Versions of an Assessment

The KAP is administered online via the Kite platform, which can be used on PCs with Windows, Macs, Chromebooks, iPads, and other tablets. All students who take the KAP must use the Kite Student Portal (described in Section II.4.2. Test-Administration Procedures in [2022 KAP Technical Manual](#)). The Kite platform can provide various accommodations for students with special needs. For details about available accommodations, please refer to section V.4. Accommodations. The one exception is that a paper-pencil braille form is provided to students who need it. No grade or subject-area test has more than 10 students taking the braille form.⁸ The braille version has the same operational items as the online version but no field-tested items. When the American Printing House (APH) translated items to braille format, it modified some formats of items to provide adequate experience for students who are blind or visually impaired,

⁸ The sample sizes of braille forms were too small to undertake a comparability study between the braille version and online version.

without introducing construct-irrelevant variance. For example, the radio buttons of the selected-response items on the online version are changed to option labels (e.g. A, B, C, and D). Moreover, APH and the AAI content team collaborate to construct test-administration notes for the braille form, which add clarifying language so that students who are blind or visually impaired can access the same information as their sighted peers.

IV.7. Technical Analysis and Ongoing Maintenance

Every year there are two to three KAP technical advisory committee meetings. Independent national technical advisor came together to monitor, review, and advice on technical decisions for KAP. This technical manual also includes a series of technical analyses that use this year’s testing data. These analyses include DIF analysis, relationships among different assessments, reliability analyses, analyses of classification consistency and accuracy, test-result summaries, and trend analyses.

In 2024–2025, a new summative assessment will be administrated with new achievement standards. Preparation work is underway, including item development, item review, field testing, psychometric-procedure planning, report design, and standard-setting planning.

V. Inclusion of All Students

This chapter presents information about the inclusion of all students in the Kansas Assessment Program (KAP), including students with disabilities and English learners (ELs). More information about accessibility supports and accommodations for KAP can be found in the [Kansas Accessibility Manual](#), [Tools and Accommodations for the Kansas Assessment Program](#), and the [Kansas Assessment Examiner's Manual 2022–2023](#).

The Kansas State Department of Education (KSDE) complies with the Elementary and Secondary Education Act (ESEA) and the Individuals with Disabilities Education Act (IDEA), both of which require all students, including students with disabilities and ELs, to participate in assessments used for accountability purposes. One of the principles of ESEA is strong accountability for educational achievement results for all students. Through this federal legislation, assessments that aim to increase accountability provide important information regarding (a) schools' success in including all students in standards-based education, (b) students' achievement of standards, and (c) improvements needed for specific groups of students. IDEA explicitly governs services provided to students with disabilities. Accountability at the individual level is provided through the Individualized Education Program (IEP), Section 504 plan, or individual learning plan (ILP). All of these plans are developed to address each student's unique needs.

V.1. Procedures for Including Students With Disabilities

Accessibility tools and accommodations that are available either within or outside the Kite[®] system allow students with disabilities to take KAP assessments. Details about different tools and accommodations are in section V.3. Accessibility Tools and section V.4. Accommodations. The inclusion of students with disabilities is achieved by providing clear guidelines for educators, so they can register their students with different needs. The [Kansas Assessment Examiner's Manual 2022–2023](#) describes step-by-step registration procedures for students who need accommodations.

V.2. Procedures for Including English Learners

As described in section I.3. Required Assessments and Intended Population, ELs are required to take the KAP assessments, although they do not have to take the English language arts (ELA) test in the first year they are registered in Kansas schools. Accessibility tools and accommodations that are available either within or outside the Kite system allow ELs to take KAP assessments. Specific accessibility tools and accommodations for ELs include directions read aloud by a synthetic voice, electronic translators and word-to-word translators (not for ELA passages), translation dictionaries, and Spanish keyword translation for mathematics and science assessments. Details about different tools and accommodations are in section V.3. Accessibility Tools and section V.4. Accommodations. The inclusion of ELs is achieved by providing clear guidelines for educators, so they can register their students with different needs. The [Kansas Assessment Examiner's Manual 2022–2023](#) describes step-by-step registration procedures for students who need accommodations.

V.3. Accessibility Tools

Accessibility tools are available for all students taking KAP assessments and vary by subject. In 2023, there is no change on available accessibility tools. For the descriptions of accessibility tools and recommendations for use, see Section V.3. Accessibility Tools in [2022 KAP Technical Manual](#).

V.4. Accommodations

Assessment accommodations are practices and procedures that provide equitable access during instruction and assessments for students with special needs. These accommodations may not alter the assessment’s validity, score interpretation, reliability, or security. They are designed to reduce or eliminate the effects of a student’s disability or English proficiency; however, they do not alter learning expectations. The KAP administration implements the same rules for using accommodations on the assessments across years. For the detailed rules and descriptions for all available KAP accommodations, see Section V.4. Accommodations in [2022 KAP Technical Manual](#).

V.4.1. Frequency of Accommodation Use

A summary of accommodation requests for the 2023 test administration is shown in Table V-1. It indicates the number of students for whom each accommodation is requested. This table summarizes accommodation selections by grade. Note that some students may receive multiple accommodations. The table shows that text-to-speech at item level (TTS: Items) is the most commonly requested accommodation option. This accommodation makes audio recordings of test items available, in addition to presenting the item on a screen.

Table V-21. Frequency of Accommodation Requests by Grade

Accommodation	Grade							
	3	4	5	6	7	8	10	11
American Sign Language (ASL)	11	14	12	19	23	13	10	12
Auditory calming	77	49	111	211	219	215	201	113
Braille form	3	1	2	1	2	3	3	5
Color contrast	6	7	15	13	17	18	25	7
Color overlay	12	12	9	27	25	25	31	18
Key word translation	134	187	289	358	403	438	519	388
Masking	7	6	4	10	8	10	13	4
Reverse contrast	0	2	4	6	2	3	11	4
Switches	4	7	7	3	6	2	4	12
TTS: Items	4,931	5,297	5,061	4,525	4,272	4,187	3,207	2,779
TTS: Items and passages	267	305	260	121	108	76	25	0
Whole-screen magnification	28	56	52	36	59	57	64	54
Total	5,480	5,943	5,826	5,330	5,144	5,047	4,113	3,396

Note: TTS = text-to-speech audio.

VI. Academic Achievement Standards and Reporting

This chapter describes updates related to achievement standards and reporting for the Kansas Assessment Program (KAP). For the subjects of English language arts (ELA) and mathematics (except for grade 10 mathematics), the KAP assessment uses the same achievement standards that were set in 2015; grade 10 mathematics uses new achievement standards that were set in 2022. For science, the assessment uses the same achievement standards that were set in 2017. The format of score reports and available resources remains unchanged from 2015 for ELA and mathematics and from 2017 for science.

VI.1. State Adoption of Academic Achievement Standards for All Students

Policy performance level descriptors (PLDs) define the KAP academic achievement standards. Although the KAP assessment is based on content standards, the assessment evaluates student performance using academic achievement standards. PLDs describe the expected academic achievement at each performance level.

Classifying student assessment performance into a given performance level means that the student meets the minimum expected knowledge and skills of that performance level. This interpretation applies to all students who participate in the KAP assessment. The policy PLDs have four levels: 1, 2, 3, and 4. Students who achieve levels 3 and 4 are considered to have met the academic expectations of postsecondary readiness; that is, they are proficient. The state adopted the new academic achievement standards defined by the policy PLDs⁹ for ELA and mathematics in grades 3–8 in 2015, for grade 10 mathematics in 2022, and for science in 2017.

VI.2. Achievement Standard Setting

For the KAP assessment, standard setting occurred in 2015 for ELA and mathematics, in 2022 for grade 10 mathematics again, and in 2017 for science. The 2023 KAP assessment continues to use the achievement standards that were set in 2015 for ELA and mathematics in grades 3–8, in 2022 for grade 10 mathematics, and in 2017 for science. For the procedures and outcomes for the 2015 ELA and mathematics standard setting, see Chapter 3 Standard Setting in the [2015 KAP Technical Manual](#). For the procedures and outcomes for the 2022 grade 10 mathematics standard setting, see Section VI.2. Achievement Standard Setting in [2022 KAP Technical Manual](#). For the procedures and outcomes for the science standard setting that occurred in 2017, see Section VI.2. Achievement Standard Setting in [2017 KAP Technical Manual](#).

VI.3. Challenging and Aligned Academic Achievement Standards

Educators set the KAP’s academic achievement standards to align with the state content standards (i.e., Kansas Standards). Section VI.3. Challenging and Aligned Academic Achievement Standards in [2022 KAP Technical Manual](#) describes the process of developing those challenging academic achievement standards aligned to content standards.

⁹ A minor language change was implemented in 2022 on policy PLDs. The language was changed from “college and career readiness” to “postsecondary readiness,” but the expectation for each achievement level remains the same.

VI.4. Reporting

For each tested subject, the KAP assessment provides separate score reports to students, schools, and districts. The information on the report include:

- Student reports: overall scale score, standard error of measurement, performance level, PLDs and subscore.
- School reports: school medium scale score, school performance level distribution, and school aggregated subscore rating.
- District reports: district medium scale score, district performance level distribution, and district aggregated subscore rating.

Examples of a KAP student score report and a KAP school/district report are included in Appendix D. These reports include students' overall and subscore performances. For a detailed description of KAP score reports, see Section VI.4. Reporting in [2022 KAP Technical Manual](#).

To help educators and parents interpret KAP results, the [KAP Educator Guide](#) and the [KAP Parent Guide](#) are also published on the [KAP website](#) so that educators and parents can access them easily. Both guides include a letter from Dr. Randy Watson, Kansas Commissioner of Education; an overview of test purposes, content, and format; descriptions of the KAP scoring process; suggestions for how to use test scores and how to improve KAP scores; and an explanation of different information presented on the score reports.

The KAP testing window started on March 20, 2023 and ended on April 28, 2023. One week after the close of the testing window, KAP ELA, mathematics, and science score reports were available for KSDE review. After KSDE approved the score reports, these reports were made available to districts and then to the parents.

References

- American Psychological Association, American Educational Research Association, & National Council on Measurement in Education (2014). *Standards for educational and psychological testing*. American Educational Research Association.
- Green, B. F., Bock, R. D., Humphreys, L. G., Linn, R. L., & Reckase, M. D. (1984). Technical guidelines for assessing computerized adaptive tests. *Journal of Educational Measurement, 21*(4), 347–360.
- Hohensinn, C., Kubinger, K. D., Reif, M., Schleicher, E., & Khorramdel, L. (2011). Analysing item position effects due to test booklet design within large-scale assessment. *Educational Research and Evaluation, 17*(6), 497–509.
<https://doi.org/10.1080/13803611.2011.632668>
- Kan. Stat. Ann. §72-5170 (2022).
https://www.ksrevisor.org/statutes/chapters/ch72/072_051_0070.html
- Kansas State Department of Education. (2017). *2017 Kansas mathematics standards: Grades K-12*.
https://ksassessments.org/sites/default/files/documents/Kansas_Assessment_Examiners_Manual.pdf
- Li, F., Cohen, A., & Shen, L. (2012). Investigating the effect of item position in computer-based tests. *Journal of Educational Measurement, 49*(4), 362–379.
<http://www.jstor.org/stable/23353876>
- Livingston, S. A., & Lewis, C. (1995). Estimating the consistency and accuracy of classifications based on test scores. *Journal of Educational Measurement, 32*(2), 179–197.
- Webb, N. L. (1997). *Criteria for alignment of expectations and assessments in mathematics and science education* (Council of Chief State School Officers and National Institute for Science Education Research Monograph No. 6) (ED 414305). ERIC.
<https://files.eric.ed.gov/fulltext/ED414305.pdf>

Appendix A: Item Statistics Flagging Criteria

Table A-1. Item Statistics Flagging Criteria

Statistic	Criteria	Rational for Flagging
Omit	Omit correlation > .1 Omit percentage > .05	Items with high percentage of omit rate indicating there might be some item issue leading to the omission.
Differential item functioning	Gender R ² change > 0.035 Race R ² change > 0.035 Ethnicity R ² change > 0.035 EL R ² change > 0.035	Item with differential item functioning indicating items might with fairness issue.
Item-total correlation	Item total correlation ≤ .25	Items with low item total correlation indicating item cannot differentiate students with different performance levels.
<i>p</i> value	<i>p</i> value < 0.2 <i>p</i> value > 0.9	Items that are either too hard or too easy could indicate items might have some issues that leading most students couldn't answer it correctly or incorrectly.
Distractors for selecting-key items	Correlation of distractors > -0.05 Percentage of selecting distractor > Percentage of selecting keyed response	Items with attractive distractor could bring construct irrelevant variance and might not be able to differentiate students with different performance levels.

Note. EL=English Learner

Appendix B: Subscore Reliability

Table B-1. English Language Arts Subscore, Reliability, Classification Consistency, and Accuracy by Grade

Grade	Subscore name	Reliability	Consistency	Accuracy
3	Overall Reading	.71	.44	.76
3	Reading: Key Ideas & Details	.65	.34	.70
3	Reading: Craft, Structure, & Language in Reading	.65	.42	.75
3	Overall Writing	.62	.33	.70
3	Writing: Text Types and Purposes	.54	.30	.69
3	Writing: Language in Writing	.60	.36	.72
4	Overall Reading	.70	.42	.74
4	Reading: Key Ideas & Details	.65	.38	.72
4	Reading: Craft, Structure, & Language in Reading	.64	.34	.69
4	Overall Writing	.58	.31	.67
4	Writing: Text Types and Purposes	.54	.30	.69
4	Writing: Language in Writing	.55	.25	.66
5	Overall Reading	.71	.44	.76
5	Reading: Key Ideas & Details	.67	.39	.73
5	Reading: Craft, Structure, & Language in Reading	.61	.38	.74
5	Overall Writing	.62	.36	.70
5	Writing: Text Types and Purposes	.55	.30	.64
5	Writing: Language in Writing	.64	.37	.75
6	Overall Reading	.70	.39	.76
6	Reading: Key Ideas & Details	.68	.38	.76
6	Reading: Craft, Structure, & Language in Reading	.57	.27	.71
6	Overall Writing	.59	.30	.66
6	Writing: Text Types and Purposes	.55	.32	.70
6	Writing: Language in Writing	.58	.37	.69
7	Overall Reading	.68	.38	.78

Grade	Subscore name	Reliability	Consistency	Accuracy
7	Reading: Key Ideas & Details	.62	.35	.76
7	Reading: Craft, Structure, & Language in Reading	.61	.35	.74
7	Overall Writing	.62	.31	.68
7	Writing: Text Types and Purposes	.62	.32	.66
7	Writing: Language in Writing	.52	.26	.63
8	Overall Reading	.66	.36	.82
8	Reading: Key Ideas & Details	.59	.30	.80
8	Reading: Craft, Structure, & Language in Reading	.62	.34	.80
8	Overall Writing	.66	.41	.81
8	Writing: Text Types and Purposes	.62	.41	.81
8	Writing: Language in Writing	.62	.43	.75
10	Overall Reading	.68	.36	.76
10	Reading: Key Ideas & Details	.65	.35	.75
10	Reading: Craft, Structure, & Language in Reading	.58	.33	.78
10	Overall Writing	.62	.35	.78
10	Writing: Text Types and Purposes	.60	.37	.80
10	Writing: Language in Writing	.55	.48	.88

Table B-2. Mathematics Subscore, Reliability, Classification Consistency, and Accuracy by Grade

Grade	Subscore name	Reliability	Consistency	Accuracy
3	SKILLS AND CONCEPTS	.80	.49	.75
3	Operations and Algebraic Thinking	.72	.41	.70
3	Geometry	.69	.36	.70
3	Number and Operations with Fractions	.63	.37	.71
3	Measurement and Data	.71	.38	.69
3	STRATEGIC THINKING AND REASONING	.56	.30	.63
4	SKILLS AND CONCEPTS	.80	.52	.80
4	Operations and Algebraic Thinking	.65	.33	.72
4	Number and Operations in Base Ten	.66	.36	.70
4	Number and Operations with Fractions	.75	.47	.77
4	Measurement and Data	.55	.26	.63
4	STRATEGIC THINKING AND REASONING	.57	.25	.60
5	SKILLS AND CONCEPTS	.78	.54	.83
5	Number and Operations in Base Ten	.67	.44	.77
5	Number and Operations with Fractions	.67	.39	.77
5	Measurement and Data	.68	.41	.75
5	STRATEGIC THINKING AND REASONING	.55	.28	.70
6	SKILLS AND CONCEPTS	.78	.51	.82
6	Geometry	.61	.28	.72
6	Statistics and Probability	.60	.35	.75
6	Ratios and Proportional Relationships	.61	.37	.75
6	The Number System	.67	.42	.76
6	Expressions and Equations	.67	.39	.77
6	STRATEGIC THINKING AND REASONING	.58	.32	.77
7	SKILLS AND CONCEPTS	.77	.52	.83

Grade	Subscore name	Reliability	Consistency	Accuracy
7	Geometry	.61	.32	.77
7	Statistics and Probability	.62	.35	.79
7	Ratios and Proportional Relationships	.57	.29	.75
7	The Number System	.67	.42	.79
7	Expressions and Equations	.67	.41	.77
7	STRATEGIC THINKING AND REASONING	.54	.27	.70
8	SKILLS AND CONCEPTS	.74	.52	.86
8	Geometry	.62	.34	.77
8	Expressions and Equations	.66	.39	.80
8	Functions	.63	.37	.79
8	STRATEGIC THINKING AND REASONING	.60	.33	.74
10	SKILLS AND CONCEPTS	.74	.55	.88
10	Geometry	.68	.43	.82
10	Statistics and Probability	.58	.36	.74
10	Algebra	.65	.43	.85
10	Functions	.51	.31	.80
10	STRATEGIC THINKING AND REASONING	.51	.25	.74

Table B-3. Science Subscore, Reliability, Classification Consistency, and Accuracy by Grade

Grade	Subscore name	Reliability	Consistency	Accuracy
5	Physical and Chemical Sciences	.64	.36	.69
5	Life Sciences	.59	.29	.64
5	Earth and Space Sciences	.66	.36	.70
8	Physical and Chemical Sciences	.57	.32	.82
8	Life Sciences	.60	.35	.77
8	Earth and Space Sciences	.55	.31	.78
11	Physical and Chemical Sciences	.62	.38	.76
11	Life Sciences	.65	.42	.76
11	Earth and Space Sciences	.58	.33	.76

Appendix C: School Board of Education District Demographic Distribution

Table C-1. Number of Students Enrolled and Their Demographic Distribution by State Board of Education District

District	N	%													
		Gender		Race						Hispanic		SWD		EL	
		Female	Male	AI	Asian	Black	NHPI	Other	White	No	Yes	No	Yes	No	Yes
1	63,367	49	51	3	3	12	1	9	73	78	22	84	16	87	13
2	63,212	49	51	2	7	11	0	6	74	75	25	89	11	84	16
3	59,687	49	51	1	6	6	0	6	81	86	14	89	11	93	7
4	83,415	49	51	2	3	10	0	8	77	77	23	86	14	87	13
5	32,749	49	51	5	1	2	0	4	89	61	39	86	14	79	21
6	37,793	49	51	2	2	9	1	11	75	81	19	83	17	93	7
7	62,698	49	51	2	3	10	0	8	76	75	25	83	17	89	11
8	39,667	49	51	2	5	16	0	10	67	71	29	84	16	85	15
9	36,245	49	51	2	0	2	0	7	88	91	9	83	17	98	2
10	58,633	49	51	2	3	11	0	8	75	77	23	83	17	89	11

Note. AI = American Indian; NHPI = Native Hawaiian and Pacific Islander; EL = English learner; SWD = student with disability.

Appendix D: Sample KAP Reports

Figure D-1. Sample KAP Student Report

STUDENT REPORT: Smith, Sean

GRADE: 10 Mathematics / STATE ID: 123456789
SCHOOL: Meadowlark School
DISTRICT: Sunflower District / #D1001

2022–2023

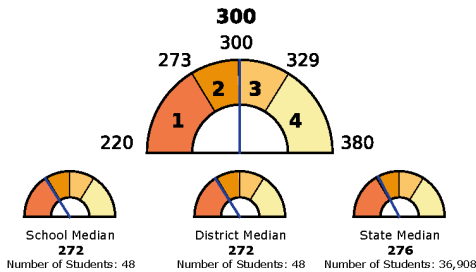


The KAP assessments measure students' understanding of the Kansas Standards at each grade. The math assessment asks students to answer computation questions and questions about data presented in word problems, equations, graphs, tables, and diagrams. Students may show what they know about mathematics by selecting or providing the right answer, sorting or ordering items, creating graphs, and labeling pictures.

Mathematics Score: Level 3



Your student's performance level from last year is not available.



Students who score at this level can typically

- ▶ determine and use the zeros of a factored quadratic expression to solve problems
- ▶ add, subtract, and multiply multivariable polynomials (expressions that include variables and exponents)
- ▶ solve quadratic, absolute value, and simple rational equations in one variable
- ▶ solve systems of two linear equations
- ▶ graph absolute value functions and interpret key features of the functions
- ▶ describe the effects of transformations on figures
- ▶ construct arguments related to geometric theorems and complete proofs
- ▶ use appropriate statistics to compare sets of data

Standard error of measurement for this report:

Student — 6.8 | School — 4.6 | District — 4.6 | State — 0.2
The standard error indicates how much a student's score might vary if the student took many equivalent versions of the test (tests with different items but covering the same knowledge and skills).

Performance Level Descriptions

Level 1: A student at Level 1 shows a limited ability to understand and use the mathematics skills and knowledge needed for postsecondary readiness.

Level 2: A student at Level 2 shows a basic ability to understand and use the mathematics skills and knowledge needed for postsecondary readiness.

Level 3: A student at Level 3 shows an effective ability to understand and use the mathematics skills and knowledge needed for postsecondary readiness.

Level 4: A student at Level 4 shows an excellent ability to understand and use the mathematics skills and knowledge needed for postsecondary readiness.

For more details about how your student performed on specific types of test questions, see the back of this report. →

STUDENT REPORT

STUDENT: Smith, Sean
STATE ID: 123456789

GRADE: 10 Mathematics

Your Student's Performance

Exceeds Meets Below Insufficient Data

SKILLS AND CONCEPTS

In this area, your students typically performed as well as students who received the minimum Level 3 score. These questions require students to apply mathematical skills and concepts and interpret and carry out mathematical procedures with precision and fluency.

Algebra

In this area, your students typically performed as well as students who received the minimum Level 3 score. These questions require students to solve complex equations, construct and interpret expressions and equations, graph equations that model data and represent relationships, and use equations to solve real-world problems.

Functions

In this area, your students typically performed below students who received the minimum Level 3 score. These questions require students to interpret, compare, and build functions to model real-world relationships.

Geometry

In this area, your students typically performed below students who received the minimum Level 3 score. These questions require students to describe the features of geometric figures, compare figures, apply geometric theorems, and solve real-world problems by applying formulas to figures.

Statistics and Probability

In this area, your students typically performed below students who received the minimum Level 3 score. These questions require students to compare and draw inferences from data sets and to calculate probability of simple and compound events.

STRATEGIC THINKING AND REASONING

In this area, your students typically performed below students who received the minimum Level 3 score. These questions require students to solve complex problems using problem-solving strategies and mathematical tools; explain their reasoning, defend their answers, and critique the reasoning of others; and analyze complex, real-world situations to construct and use mathematical models to solve problems, and to interpret results in the context of a situation.

Additional Resources

For information about the Kansas Standards, visit ksde.org.
To learn about the Kansas Assessment Program, visit ksassessments.org.

Prediction on ACT scores is not available for mathematics grade 10 in 2023.

Quantile® Measure

Your student's score: 1190Q	The Quantile measure provides a score that describes your child's level of mathematical ability and the difficulty of a skill or concept as it relates to other mathematical skills and concepts your child is learning. The score shows your child's readiness for instruction regarding a particular mathematical skill or concept.
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Figure D-2. Sample KAP School Report

SCHOOL REPORT: Meadowlark School / #1001

SUBJECT: Mathematics

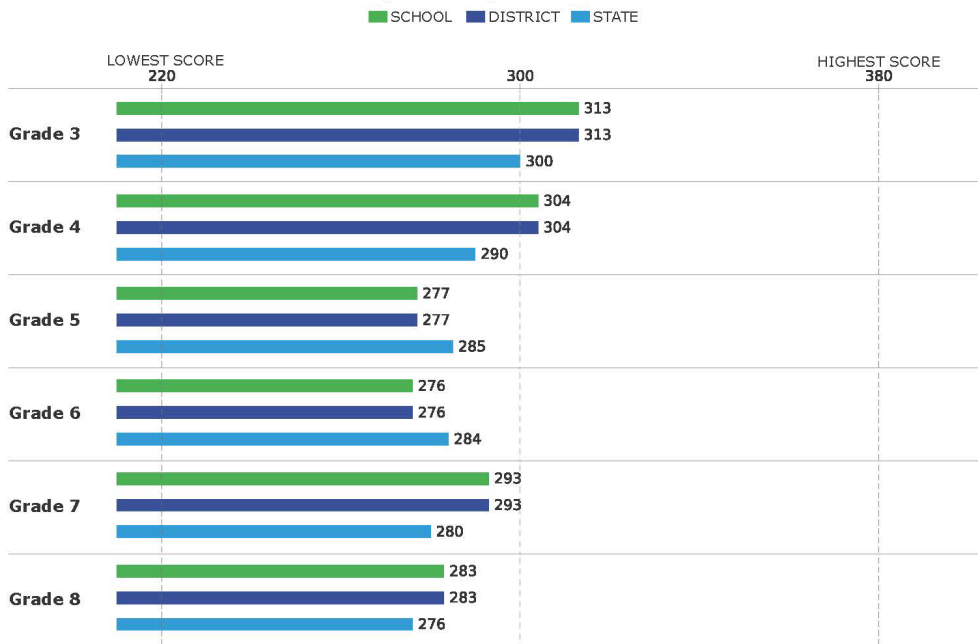
DISTRICT: Sunflower District / #D1001

2022–2023



The KAP assessments measure students' understanding of the Kansas Standards at each grade. The math assessment asks students to answer computation questions and questions about data presented in word problems, equations, graphs, tables, and diagrams. Students may show what they know about mathematics by selecting or providing the right answer, sorting or ordering items, creating graphs, and labeling pictures.

Median School, District, and State Performance



Standard error of measurement for this report:

Grade 3: School—5.5 | District—5.5 | State—0.2
 Grade 4: School—5.9 | District—5.9 | State—0.2
 Grade 5: School—4.7 | District—4.7 | State—0.2
 Grade 6: School—5.2 | District—5.2 | State—0.2
 Grade 7: School—5.3 | District—5.3 | State—0.2
 Grade 8: School—5.4 | District—5.4 | State—0.2

The standard error indicates how much a student's score might vary if the student took many equivalent versions of the test (tests with different items but covering the same knowledge and skills).

Percentage of Students in Each Performance Level, by Grade

Level 1 Level 2 Level 3 Level 4

Percentages may not add to 100% because of rounding.

Grade 3	SCHOOL	7	23	41	30
	DISTRICT	7	23	41	30
	STATE	22	26	31	20
Grade 4	SCHOOL	3	44	28	25
	DISTRICT	3	44	28	25
	STATE	18	43	26	13
Grade 5	SCHOOL	45	45	7	3
	DISTRICT	45	45	7	3
	STATE	33	34	20	13
Grade 6	SCHOOL	43	33	17	7
	DISTRICT	43	33	17	7
	STATE	34	35	22	10
Grade 7	SCHOOL	14	55	31	
	DISTRICT	14	55	31	
	STATE	24	48	23	6
Grade 8	SCHOOL	31	34	34	
	DISTRICT	31	34	34	
	STATE	46	30	19	5

Your School's Performance

+ Exceeds
 = Meets
 - Below
 X Insufficient Data

Grade	3	4	5	6	7	8
SKILLS AND CONCEPTS	=	=	-	-	-	-
Operations and Algebraic Thinking	+	=				
Number and Operations in Base Ten		=	-			
Number and Operations with Fractions	=	=	-			
Measurement and Data	=	-	-			
Ratios and Proportional Relationships				-	-	
The Number System				-	-	
Expressions and Equations				-	=	-
Functions						-
Geometry	-			-	-	-
Statistics and Probability				-	-	
STRATEGIC THINKING AND REASONING	=	=	-	-	-	-

SKILLS AND CONCEPTS

These questions require students to apply mathematical skills and concepts and interpret and carry out mathematical procedures with precision and fluency.

Operations and Algebraic Thinking

These questions require students to represent and solve problems with addition, subtraction, multiplication, and division; perform these operations with multidigit numbers; and explain patterns.

Number and Operations in Base Ten

These questions require students to demonstrate their understanding of place value by solving problems with multidigit numbers and decimals.

Number and Operations with Fractions

These questions require students to demonstrate their understanding that fractions represent parts of a whole, recognize that fractions can be written as decimals, and solve problems with fractions by applying their knowledge about working with whole numbers and decimals.

Measurement and Data

These questions require students to calculate time, volume, perimeter, area, and mass; measure angle size; convert measurements within a measurement system; represent and interpret measurement data; and use measurement skills to solve real-world problems.

Ratios and Proportional Relationships

These questions require students to use ratio reasoning and analyze proportional relationships to solve real-world and mathematical problems.

The Number System

These questions require students to divide fractions, find common factors and multiples, and perform operations with rational numbers.

Expressions and Equations

These questions require students to solve equations that have variables and exponents, analyze relationships between dependent and independent variables and between proportional relationships, and use equations to model relationships and solve real-world problems.

Functions

These questions require students to interpret, compare, and build functions to model real-world relationships.

Geometry

These questions require students to describe the features of geometric figures, compare figures, apply geometric theorems, and solve real-world problems by applying formulas to figures.

Statistics and Probability

These questions require students to compare and draw inferences from data sets and to calculate probability of simple and compound events.

STRATEGIC THINKING AND REASONING

These questions require students to solve complex problems using problem-solving strategies and mathematical tools; explain their reasoning, defend their answers, and critique the reasoning of others; and analyze complex, real-world situations to construct and use mathematical models to solve problems, and to interpret results in the context of a situation.

Your School's Performance



Exceeds

In this area, your students typically performed better than students who received the minimum Level 3 score.



Meets

In this area, your students typically performed as well as students who received the minimum Level 3 score.



Below

In this area, your students typically performed below students who received the minimum Level 3 score.



Insufficient Data

In this area, your students did not answer enough questions for accurate reporting.

Additional Resources

For information about the Kansas Standards, visit ksde.org.

To learn about the Kansas Assessment Program, visit ksassessments.org.



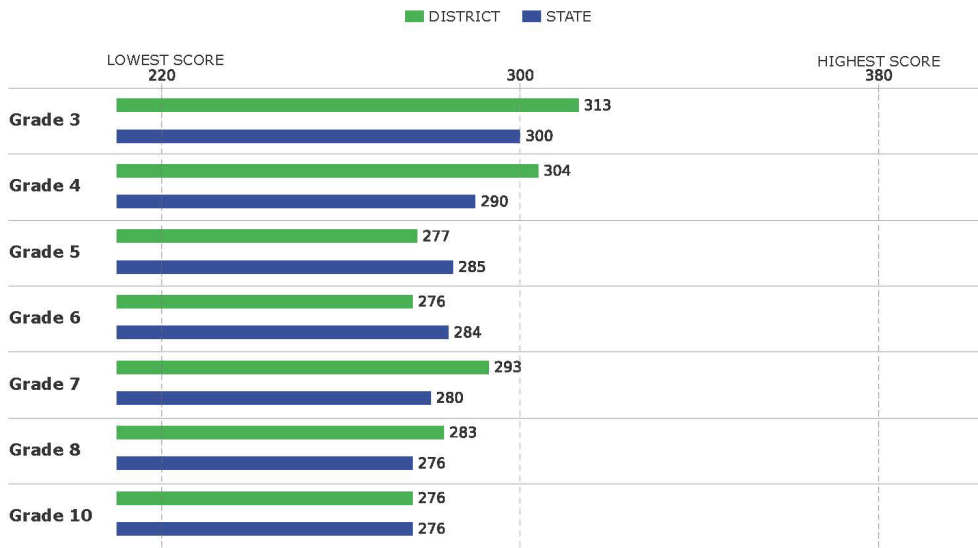
Figure D-3. Sample KAP District Report

DISTRICT REPORT: Sunflower District / #D1001
SUBJECT: Mathematics



The KAP assessments measure students' understanding of the Kansas Standards at each grade. The math assessment asks students to answer computation questions and questions about data presented in word problems, equations, graphs, tables, and diagrams. Students may show what they know about mathematics by selecting or providing the right answer, sorting or ordering items, creating graphs, and labeling pictures.

Median District and State Performance



Standard error of measurement for this report:

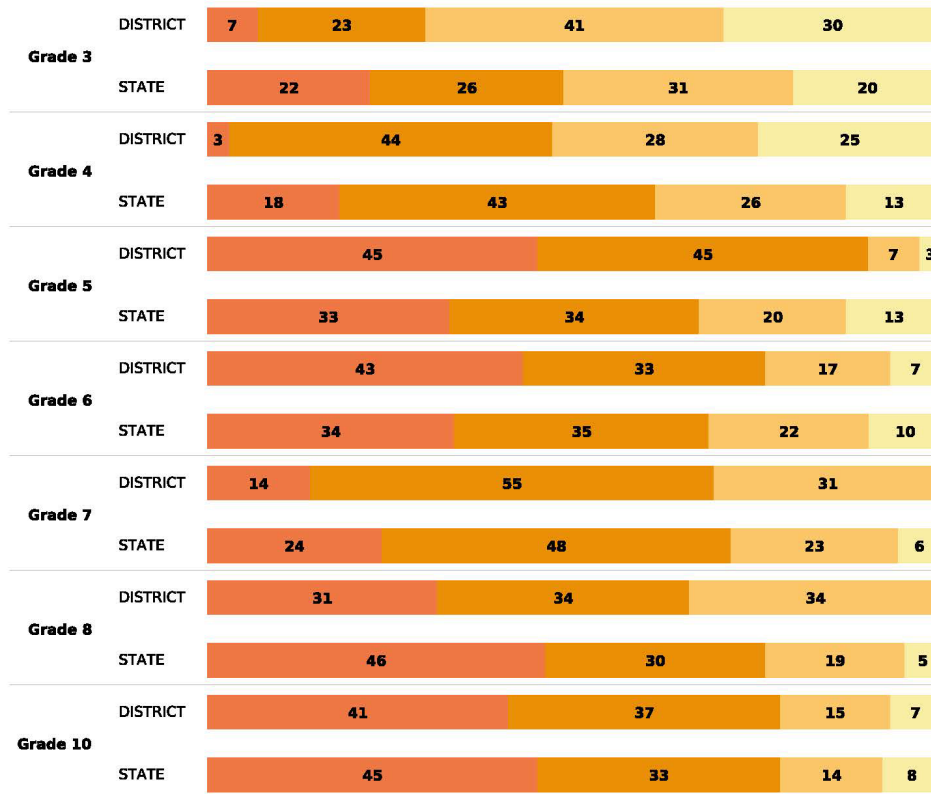
- Grade 3: District—5.5 | State—0.2
- Grade 4: District—5.9 | State—0.2
- Grade 5: District—4.7 | State—0.2
- Grade 6: District—5.2 | State—0.2
- Grade 7: District—5.3 | State—0.2
- Grade 8: District—5.4 | State—0.2
- Grade 10: District—6.8 | State—0.2

The standard error indicates how much a student's score might vary if the student took many equivalent versions of the test (tests with different items but covering the same knowledge and skills).

Percentage of Students in Each Performance Level, by Grade

Level 1 Level 2 Level 3 Level 4

Percentages may not add to 100% because of rounding.



Your District's Performance

Exceeds Meets Below Insufficient Data

Grade	3	4	5	6	7	8	10
SKILLS AND CONCEPTS							
Operations and Algebraic Thinking							
Number and Operations in Base Ten							
Number and Operations with Fractions							
Measurement and Data							
Ratios and Proportional Relationships							
The Number System							
Expressions and Equations							
Algebra							
Functions							
Geometry							
Statistics and Probability							
STRATEGIC THINKING AND REASONING							

SKILLS AND CONCEPTS

These questions require students to apply mathematical skills and concepts and interpret and carry out mathematical procedures with precision and fluency.

Operations and Algebraic Thinking

These questions require students to represent and solve problems with addition, subtraction, multiplication, and division; perform these operations with multidigit numbers; and explain patterns.

Number and Operations in Base Ten

These questions require students to demonstrate their understanding of place value by solving problems with multidigit numbers and decimals.

Number and Operations with Fractions

These questions require students to demonstrate their understanding that fractions represent parts of a whole, recognize that fractions can be written as decimals, and solve problems with fractions by applying their knowledge about working with whole numbers and decimals.

Measurement and Data

These questions require students to calculate time, volume, perimeter, area, and mass; measure angle size; convert measurements within a measurement system; represent and interpret measurement data; and use measurement skills to solve real-world problems.

Ratios and Proportional Relationships

These questions require students to use ratio reasoning and analyze proportional relationships to solve real-world and mathematical problems.

The Number System

These questions require students to divide fractions, find common factors and multiples, and perform operations with rational numbers.

Expressions and Equations

These questions require students to solve equations that have variables and exponents, analyze relationships between dependent and independent variables and between proportional relationships, and use equations to model relationships and solve real-world problems.

Algebra

These questions require students to solve complex equations, construct and interpret expressions and equations, graph equations that model data and represent relationships, and use equations to solve real-world problems.

Functions

These questions require students to interpret, compare, and build functions to model real-world relationships.

Geometry

These questions require students to describe the features of geometric figures, compare figures, apply geometric theorems, and solve real-world problems by applying formulas to figures.

Statistics and Probability

These questions require students to compare and draw inferences from data sets and to calculate probability of simple and compound events.

STRATEGIC THINKING AND REASONING

These questions require students to solve complex problems using problem-solving strategies and mathematical tools; explain their reasoning, defend their answers, and critique the reasoning of others; and analyze complex, real-world situations to construct and use mathematical models to solve problems, and to interpret results in the context of a situation.

Your District's Performance

+ Exceeds

In this area, your students typically performed better than students who received the minimum Level 3 score.

- Below

In this area, your students typically performed below students who received the minimum Level 3 score.

= Meets

In this area, your students typically performed as well as students who received the minimum Level 3 score.

⊗ Insufficient Data

In this area, your students did not answer enough questions for accurate reporting.

Additional Resources

Prediction on ACT scores is not available for mathematics grade 10 in 2023.

For information about the Kansas Standards, visit ksde.org.
To learn about the Kansas Assessment Program, visit ksassessments.org.

