ACAP
Alabama Comprehensive Assessment Program

ALTERNATE

Alabama Comprehensive Assessment Program (ACAP) *Alternate*

Item Specifications

Mathematics

Grade 6

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Mathematics

The *Alabama Comprehensive Assessment Program* (ACAP) *Alternate* item specifications are based on the development of alternate assessments that measure the 2019 *Alabama Alternate Achievement Standards*: *Math*. The item specifications define the purpose of the *ACAP Alternate* and provide important information regarding the content to be measured. The item specifications also serve as a road map to guide Alabama educators in the development and subsequent review of items that best measure the 2019 *Alabama Alternate Achievement Standards*: *Math* for a given grade and subject area. Each item specification is aligned to the given Alabama content area, cluster, and standard and includes the following key information:

- Course of Study Standard
- Alternate Achievement Standard
- Content limits/constraints
- Recommended depth of knowledge (DOK) or cognitive levels
- Sample item stem information

Definitions

Course of Study Standards: The Course of Study Standards are a set of content curriculum statements that define what general education students should know and be able to do at a given grade level.

Alternate Achievement Standards: The 2019 *Alabama Alternate Achievement Standards*: *Math* are directly aligned to the 2019 Alabama Course of Study Standards. The 2019 *Alabama Alternate*

Achievement Standards: *Math* define what students with the most significant support needs should understand (know) and be able to do at the conclusion of a course or grade.

Alabama Content Areas: Alabama content areas are large groups of related clusters and content standards. Because mathematics is a connected subject, standards from different Alabama content areas may sometimes be closely related.

Standards: Standards define what students should understand (know) and be able to do at the conclusion of a course or grade.

Assessment Limits/Content Constraints: Assessment limits and/or content constraints define the range of content knowledge and the degree of difficulty allowable when items are written to measure a given standard.

Depth of Knowledge (DOK): Depth of knowledge involves the cognitive complexity or the nature of thinking required for a given item. Depth of knowledge levels are used in the development of items for cognitive demand. Therefore, when developing items for depth of knowledge, the item should be as demanding cognitively as what the actual standard expects. The depth of knowledge includes three levels, from the lowest (basic recall) to the highest (strategic thinking). The *ACAP Alternate* assessment items are written to one of three cognitive levels of complexity:

- Level 1: Recall
- Level 2: Application of a Skill/Concept
- Level 3: Strategic Thinking

Item Types: The *ACAP Alternate* assessments are composed of various item types. These item types are described in the following section.

Context: Context provides information regarding the types of stimulus materials that can be used in the items. If a context is allowable, it means that the item may have context. If context is required, then the item measuring the given standard must have context. If no context is noted, then the items measuring the given standard should not have context.

Sample Stem Information: This statement explains what students are expected to do when they respond to a given item.

Item Types

The *Alabama Comprehensive Assessment Program* (ACAP) *Alternate* assessments are composed of various item types. These item types are described below.

Multiple-Choice (MC) Items: MC items have three answer choices, including two distractors and one correct answer. Distractors for mathematics represent common misconceptions, incorrect logic, incorrect application of an algorithm, computational errors, etc. A correct response to an MC item is worth one score point in the mathematics *ACAP Alternate.*

Performance Task Items:

Multiple-Select (MS) Items: MS items are similar in structure to MC items. However, unlike an MC item, an MS item has four options and more than one correct answer. In other words, multiple responses are required for a given item. A correct response to an MS item is worth two score points in the mathematics *ACAP Alternate*.

Two-Part Multiple-Choice Items: Two-Part Multiple-Choice Items have two questions. The questions may require the student to identify the sides and then angles of a shape, perform computations, identify information of a graph or chart, etc. A correct response to a Two-Part MC item is worth two score points in the mathematics *ACAP Alternate* when both parts are correct.

Item Specifications

Item specifications are one of the key requirements for a high-quality, legally defensible, standards-based assessment. Item specifications help define important characteristics of the items (i.e., test questions) developed for each Alternate Achievement Standard. These item specifications provide guidelines to help clarify the focus of what is to be assessed, what items may include, and what items may not include (i.e., assessment limits). Item specifications are used by item writers, item editors, and item reviewers as a common reference throughout the item-development process, from initial writing to final approval. These mathematics item specifications are based on the 2019 *Alabama Alternate Achievement Standards*: *Math*.

Grade	**6**
Content Area	**Proportional Reasoning**
Cluster	**Develop an understanding of ratio concepts and use reasoning about ratios to solve problems.**
Standard	**Use appropriate notations [a/b, a to b, a:b] to represent a proportional relationship between quantities and use ratio language to describe the relationship between quantities.**
Alternate Achievement Standard	**M.AAS.6.1: Demonstrate a simple ratio relationship using ratio notation given a real-world problem.**
Assessment Limits/Content Constraints	Limit to terms of a ratio that are whole numbers.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	In a classroom, there are seventeen students and two teachers. What is the ratio of students to teachers?

Grade	**6**
Content Area	**Number Systems and Operations**
Cluster	**Use prior knowledge of multiplication and division to divide fractions.**
Standard	**Interpret and compute quotients of fractions using visual models and equations to represent problems.** **a. Use quotients of fractions to analyze and solve problems.**
Alternate Achievement Standard	**M.AAS.6.4: Use models to divide fractions (limit to unit fractions).**
Assessment Limits/Content Constraints	Limit to unit fractions (fractions with a numerator of 1) divided by whole numbers. Avoid fractions that need to be simplified.
DOK(s)	2 or 3
Item Type(s)	MC, EBSR
Sample Item Stem(s)	This model shows the quotient of one-fourth divided by three. What is the quotient of one-fourth divided by three?

Grade	**6**
Content Area	**Number Systems and Operations**
Cluster	**Compute multi-digit numbers fluently and determine common factors and multiples.**
Standard	**Fluently divide multi-digit whole numbers using a standard algorithm to solve real-world and mathematical problems.**
Alternate Achievement Standard	**M.AAS.6.5: Apply the concepts of dividing multi-digit numbers without remainders to real-world problems.**
Assessment Limits/Content Constraints	Limit to a maximum of three-digit numbers divided by single-digits without remainders. Provide a visual model whenever possible. Must contain real-world context.
DOK(s)	2 or 3
Item Type(s)	MC
Sample Item Stem(s)	Here are forty snacks that David is dividing among four friends. How many snacks does each friend get?

Grade	**6**
Content Area	**Number Systems and Operations**
Cluster	**Compute multi-digit numbers fluently and determine common factors and multiples.**
Standard	**Add, subtract, multiply, and divide decimals using a standard algorithm.**
Alternate Achievement Standard	**M.AAS.6.6: Solve two-factor multiplication problems with products up to 100 (whole numbers only).**
Assessment Limits/Content Constraints	Limit to two-digit whole numbers multiplied by one-digit whole numbers.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a multiplication problem: twelve times nine equals blank. What does twelve times nine equal?

Grade	**6**
Content Area	**Number Systems and Operations**
Cluster	**Apply knowledge of the number system to represent and use rational numbers in a variety of forms.**
Standard	**Use signed numbers to describe quantities that have opposite directions or values and to represent quantities in real-world contexts.**
Alternate Achievement Standard	**M.AAS.6.9: Describe quantities with positive and negative numbers (e.g., temperature, sea level, etc.).**
Assessment Limits/Content Constraints	Limit to integers. Provide a visual model whenever possible.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here are three thermometers. Which thermometer shows a negative temperature?

Grade	**6**
Content Area	**Number Systems and Operations**
Cluster	**Apply knowledge of the number system to represent and use rational numbers in a variety of forms.**
Standard	**Find the position of pairs of integers and other rational numbers on the coordinate plane.** **a. Identify quadrant locations of ordered pairs on the coordinate plane based on the signs of the *x* and *y* coordinates.** **b. Identify (*a*, *b*) and (*a*, –*b*) as reflections across the *x*-axis.** **c. Identify (*a*, *b*) and (–*a*, *b*) as reflections across the *y*-axis.** **d. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane, including finding distances between points with the same first or second coordinate.**
Alternate Achievement Standard	**M.AAS.6.11: Graph or identify ordered pairs in the first quadrant of the coordinate plane between 0 and 5, limited to whole numbers.**
Assessment Limits/Content Constraints	Limit to points in the first quadrant with whole-number coordinates between 1 and 5.
DOK(s)	1 or 2
Item Type(s)	MC, MS
Sample Item Stem(s)	Here is point P on a graph. What are the coordinates of point P?

Grade	**6**
Content Area	**Algebra and Functions**
Cluster	**Apply knowledge of arithmetic to read, write, and evaluate algebraic expressions.**
Standard	**Write, evaluate, and compare expressions involving whole-number exponents.**
Alternate Achievement Standard	**M.AAS.6.14: Match an algebraic expression with one variable to its real-world situation.**
Assessment Limits/Content Constraints	Limit to algebraic expressions with whole-number coefficients and integer constants.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	A taxi service charges a ten-dollar fee plus two dollars per mile. Which expression can be used to calculate the cost of a ride with this taxi service?

Grade	**6**
Content Area	**Algebra and Functions**
Cluster	**Apply knowledge of arithmetic to read, write, and evaluate algebraic expressions.**
Standard	**Write, read, and evaluate expressions in which letters represent numbers in real-world contexts.** **a. Interpret a variable as an unknown value for any number in a specified set, depending on the context.** **b. Write expressions to represent verbal statements and real-world scenarios.** **c. Identify parts of an expression using mathematical terms such as sum, term, product, factor, quotient, and coefficient.** **d. Evaluate expressions (which may include absolute value and whole-number exponents) with respect to order of operations.**
Alternate Achievement Standard	**M.AAS.6.15: Evaluate algebraic expressions when given specific values for the variables (e.g., x + 2, where x = 4)**
Assessment Limits/Content Constraints	Limit to expressions requiring one-step addition, subtraction, multiplication, or division. Limit to whole numbers. Limit the variable to a one-digit number.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is the expression *x* plus five. What is the value of the expression when *x* equals three?

Grade	**6**
Content Area	**Algebra and Functions**
Cluster	**Use equations and inequalities to represent and solve real-world or mathematical problems.**
Standard	**Determine whether a value is a solution to an equation or inequality by using substitution to conclude whether a given value makes the equation or inequality true.**
Alternate Achievement Standard	**M.AAS.6.19: Match equations and inequalities to real-world situations.**
Assessment Limits/Content Constraints	Limit to one-step equations and one-step inequalities with whole-number coefficients or integer constants.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Gerardo had a number of pennies. He received three more pennies and now has a total of thirteen pennies. Which equation represents how many pennies Gerardo has in all?

Grade	**6**
Content Area	**Algebra and Functions**
Cluster	**Identify and analyze relationships between independent and dependent variables.**
Standard	**Identify, represent, and analyze two quantities that change in relationship to one another in real-world or mathematical situations.** **a. Use tables, graphs, and equations to represent the relationship between independent and dependent variables.**
Alternate Achievement Standard	**M.AAS.6.21: Identify the independent and dependent variables among two quantities that change in relationship to one another in real-world situations (e.g., purchase total depends on number of items purchased).**
Assessment Limits/Content Constraints	Limit to whole numbers.
DOK(s)	1 or 2
Item Type(s)	MC, EBSR
Sample Item Stem(s)	The cost of six cups of hot cocoa is six dollars. Which variable is dependent?

Grade	**6**
Content Area	**Data Analysis, Statistics, and Probability**
Cluster	**Use real-world and mathematical problems to analyze data and demonstrate an understanding of statistical variability and measures of center.**
Standard	**Calculate, interpret, and compare measures of center (mean, median, mode) and variability (range and interquartile range) in real-world data sets.** **a. Determine which measure of center best represents a real-world data set.** **b. Interpret the measures of center and variability in the context of a problem.**
Alternate Achievement Standard	**M.AAS.6.23: Find the range and median (when given an odd number of data points) and mean (involving one- or two-digit numbers) in real-world situations.**
Assessment Limits/Content Constraints	Limit to an odd number of data points and a maximum of seven data points.
DOK(s)	2 or 3
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Here is a list of the distances, in miles, that Sammy rode his bicycle each day. What is the median distance that Sammy rode his bicycle?

Grade	**6**
Content Area	**Data Analysis, Statistics, and Probability**
Cluster	**Use real-world and mathematical problems to analyze data and demonstrate an understanding of statistical variability and measures of center.**
Standard	**Represent numerical data graphically, using dot plots, line plots, histograms, stem and leaf plots, and box plots.** **a. Analyze the graphical representation of data by describing the center, spread, shape (including approximately symmetric or skewed), and unusual features (including gaps, peaks, clusters, and extreme values).** **b. Use graphical representations of real-world data to describe the context from which they were collected.**
Alternate Achievement Standard	**M.AAS.6.24: Interpret graphical representations of a data set (e.g., line plot, dot plots, bar graphs, stem and leaf plots, or line graphs).**
Assessment Limits/Content Constraints	Limit to a maximum of five data entries for bar graphs and line graphs. Limit to a maximum of 15 data points for line plots, dot plots, and stem and leaf plots.
DOK(s)	1 or 2
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Here is a dot plot that shows the numbers of pencils in some students' desks. Each dot represents one student. Which number of pencils is the most common?

Grade	**6**
Content Area	**Geometry and Measurement**
Cluster	**Graph polygons in the coordinate plane to solve real-world and mathematical problems.**
Standard	**Graph polygons in the coordinate plane given coordinates of the vertices to solve real-world and mathematical problems.** **a. Determine missing vertices of a rectangle with the same x-coordinate or the same y-coordinate when graphed in the coordinate plane.** **b. Use coordinates to find the length of a side between points having the same x-coordinate or the same y-coordinate.**
Alternate Achievement Standard	**M.AAS.6.25: Graph squares, rectangles, and triangles in the first quadrant of the coordinate plane.**
Assessment Limits/Content Constraints	Limit to squares, rectangles, and triangles in the first quadrant. Limit coordinate plane to 0–10 on both axes.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is part of a rectangle on the coordinate plane. Here are three of the rectangle’s vertices. What are the coordinates of the missing vertex?

Grade	**6**
Content Area	**Geometry and Measurement**
Cluster	**Solve real-world and mathematical problems to determine area, surface area, and volume.**
Standard	**Determine the surface area of three-dimensional figures by representing them with nets composed of rectangles and triangles to solve real-world and mathematical problems.**
Alternate Achievement Standard	**M.AAS.6.27: Calculate problems involving perimeter of squares, triangles, rectangles, and other polygons with sides up to 10 units and calculate problems involving the area of rectangles and squares with sides up to 10 units (whole numbers only).**
Assessment Limits/Content Constraints	Limit to squares, triangles, rectangles, and regular pentagons. Limit side lengths to whole numbers less than or equal to 10 units.
DOK(s)	2 or 3
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Here is a rectangle with two side lengths labeled. What is the perimeter of the rectangle?

Grade	**6**
Content Area	**Geometry and Measurement**
Cluster	**Solve real-world and mathematical problems to determine area, surface area, and volume.**
Standard	**Apply previous understanding of volume of right rectangular prisms to those with fractional edge lengths to solve real-world and mathematical problems.** **a. Use models (cubes or drawings) and the volume formulas (V = lwh and V = Bh) to find and compare volumes of right rectangular prisms.**
Alternate Achievement Standard	**M.AAS.6.28: Solve real-world and mathematical problems involving the volume of cubes and rectangular prisms.**
Assessment Limits/Content Constraints	Limit to cubes and rectangular prisms with whole-number side lengths.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a rectangular prism that is going to be filled with unit cubes. How many unit cubes are needed to fill the rectangular prism?