



A L T E R N A T E

***Alabama Comprehensive Assessment
Program (ACAP) Alternate***

Item Specifications

Mathematics

Grade 7

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(ACAP) Alternate***

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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 for mathematics 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	7
Content Area	Proportional Reasoning
Cluster	Analyze proportional relationships and use them to solve real-world and mathematical problems.
Standard	Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions.
Alternate Achievement Standard	M.AAS.7.1: Calculate a unit rate (limited to whole numbers under 100).
Assessment Limits/Content Constraints	Limit to whole-number unit rates (quotient).
DOK(s)	1 or 2
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Sara sold fourteen dollars' worth of pens. She sold seven pens. What was the cost per pen?

Grade	7
Content Area	Proportional Reasoning
Cluster	Analyze proportional relationships and use them to solve real-world and mathematical problems.
Standard	<p>Represent a relationship between two quantities and determine whether the two quantities are related proportionally.</p> <p>a. Use equivalent ratios displayed in a table or in a graph of the relationship in the coordinate plane to determine whether a relationship between two quantities is proportional.</p> <p>b. Identify the constant of proportionality (unit rate) and express the proportional relationship using multiple representations including tables, graphs, equations, diagrams, and verbal descriptions.</p> <p>c. Explain in context the meaning of a point (x, y) on the graph of a proportional relationship, with special attention to the points $(0,0)$ and $(1, r)$ where r is the unit rate.</p>
Alternate Achievement Standard	M.AAS.7.2: Use a ratio to model or describe a real-world relationship.
Assessment Limits/Content Constraints	<p>Exclude answer choices where student has to simplify the ratio.</p> <p>Include context.</p>
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	In a movie theater, there are fifteen adults and twenty-eight children. What is the ratio of adults to children?

Grade	7
Content Area	Proportional Reasoning
Cluster	Analyze proportional relationships and use them to solve real-world and mathematical problems.
Standard	Solve multi-step percent problems in context using proportional reasoning, including simple interest, tax, gratuities, commissions, fees, markups and markdowns, percent increase, and percent decrease.
Alternate Achievement Standard	M.AAS.7.3: Calculate 10%, 20%, 25%, and 50% of a number up to 100.
Assessment Limits/Content Constraints	Limit to whole-number answers.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Jack has one hundred dollars. What is fifty percent of one hundred dollars?

Grade	7
Content Area	Proportional Reasoning
Cluster	Analyze proportional relationships and use them to solve real-world and mathematical problems.
Standard	<p>Apply and extend knowledge of operations of whole numbers, fractions, and decimals to add, subtract, multiply, and divide rational numbers including integers, signed fractions, and decimals.</p> <p>a. Identify and explain situations where the sum of opposite quantities is 0 and opposite quantities are defined as additive inverses.</p> <p>b. Interpret the sum of two or more rational numbers, by using a number line and in real-world contexts.</p> <p>c. Explain subtraction of rational numbers as addition of additive inverses.</p> <p>d. Use a number line to demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>e. Extend strategies of multiplication to rational numbers to develop rules for multiplying signed numbers, showing that the properties of the operations are preserved.</p> <p>f. Divide integers and explain that division by zero is undefined. Interpret the quotient of integers (with a non-zero divisor) as a rational number.</p> <p>g. Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats.</p>
Alternate Achievement Standard	M.AAS.7.4: Add and subtract integers up to 15.
Assessment Limits/Content Constraints	Must NOT include context.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is an addition problem: three plus five. What is the answer to three plus five?

Grade	7
Content Area	Number Systems and Operations
Cluster	Apply and extend prior knowledge of addition, subtraction, multiplication, and division to operations with rational numbers.
Standard	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
Alternate Achievement Standard	M.AAS.7.5: Solve multiplication problems up to fifteen with whole number factors.
Assessment Limits/Content Constraints	Limit to whole-number factors with a product less than or equal to fifteen.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a multiplication problem: three times one equals blank. What is the product of three times one?

Grade	7
Content Area	Algebra and Functions
Cluster	Create equivalent expressions using the properties of operations.
Standard	Generate expressions in equivalent forms based on context and explain how the quantities are related.
Alternate Achievement Standard	M.AAS.7.7: Match equivalent expressions using the properties of operations. M.AAS.7.7a: Identify a pattern in a sequence of whole numbers with a whole number common difference (e.g., when skip counting by 5, the whole number common difference is 5).
Assessment Limits/Content Constraints	Limit to a whole-number common difference.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a sequence of numbers: two, four, six, eight. What is the common difference of the values in the sequence?

Grade	7
Content Area	Algebra and Functions
Cluster	Create equivalent expressions using the properties of operations.
Standard	Solve multi-step real-world and mathematical problems involving rational numbers (integers, signed fractions, and decimals), converting between forms as needed. Assess the reasonableness of answers using mental computation and estimation strategies.
Alternate Achievement Standard	M.AAS.7.8: Add and subtract integers in a real-world situation.
Assessment Limits/Content Constraints	Limit to whole-number terms and whole-number answers. When subtracting, avoid problems where regrouping is needed. Must include context.
DOK(s)	1 or 2
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Josefina has twenty-five dollars and gives five dollars to her brother. How much money does Josefina have left?

Grade	7
Content Area	Algebra and Functions
Subcategory	Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.
Standard	<p>Use variables to represent quantities in real-world or mathematical problems and construct algebraic expressions, equations, and inequalities to solve problems by reasoning about the quantities.</p> <p>a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.</p> <p>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality, and interpret it in the context of the problem.</p>
Alternate Achievement Standard	M.AAS.7.9: Use the properties of operations to solve one-step equations and inequalities from real-world and mathematical problems.
Assessment Limits/Content Constraints	Must include context.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	A box with x number of paper clips is equally divided among eight students. Each student receives ten paper clips. Here is an equation: x divided by eight equals ten. How many paper clips did the box have?

Grade	7
Content Area	Algebra and Functions
Cluster	Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.
Standard	<p>Examine a sample of a population to generalize information about the population.</p> <p>a. Differentiate between a sample and a population.</p> <p>b. Compare sampling techniques to determine whether a sample is random and thus representative of a population, explaining that random sampling tends to produce representative samples and support valid inferences.</p> <p>c. Determine whether conclusions and generalizations can be made about a population based on a sample.</p> <p>d. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest, generating multiple samples to gauge variation and making predictions or conclusions about the population.</p> <p>e. Informally explain situations in which statistical bias may exist.</p>
Alternate Achievement Standard	M.AAS.7.10: 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	<p>Limit to an odd number of data points in ascending or descending order when finding the median.</p> <p>Limit to an odd number of ordered data points.</p> <p>Limit values to one- or two-digit numbers.</p>
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here are Mai's test scores in her science class: 35, 35, 40, 45, 50. What is Mai's median test score?

Grade	7
Content Area	Data Analysis, Statistics, and Probability
Cluster	Make inferences about a population using random sampling.
Standard	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.
Alternate Achievement Standard	M.AAS.7.11: Make inferences from graphical representations of a data set (e.g., line plots, dot plots, histograms, bar graphs, stem and leaf plots, or line graphs).
Assessment Limits/Content Constraints	Limit to no more than ten data entries for line graphs, histograms, and bar graphs. Limit to no more than twenty-five data points for line plots, dot plots, and stem and leaf plots.
DOK(s)	2 or 3
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Here is a dot plot of the number of minutes students take to eat breakfast. Which number of minutes is the least common response?

Grade	7
Content Area	Data Analysis, Statistics, and Probability
Cluster	Make inferences about a population using random sampling.
Standard	Make informal comparative inferences about two populations using measures of center and variability and/or mean absolute deviation in context.
Alternate Achievement Standard	M.AAS.7.12: Compare two sets of data within a single data display such as a picture graph, line plot, or bar graph.
Assessment Limits/Content Constraints	Limit to no more than ten data entries.
DOK(s)	2 or 3
Item Type(s)	MC, EBSR
Sample Item Stem(s)	Students in class A and class B are asked about the number of pages they read per week. Here is a bar graph with the results. How many more students in class A read twenty pages than did students in class B?

Grade	7
Content Area	Data Analysis, Statistics, and Probability
Cluster	Investigate probability models.
Standard	<p>Define and develop a probability model, including models that may or may not be uniform, where uniform models assign equal probability to all outcomes and non-uniform models involve events that are not equally likely.</p> <p>a. Collect and use data to predict probabilities of events.</p> <p>b. Compare probabilities from a model to observed frequencies, explaining possible sources of discrepancy.</p>
Alternate Achievement Standard	M.AAS.7.14: Describe the probability of events occurring as possible or impossible.
Assessment Limits/Content Constraints	Limit to probabilities described as possible or impossible, i.e., do not ask students to compute the value of a specific probability.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here are three spinners. On which spinner is it impossible for the arrow to land on the number two?

Grade	7
Content Area	Data Analysis, Statistics, and Probability
Cluster	Investigate probability models.
Standard	<p>Approximate the probability of an event using data generated by a simulation (experimental probability) and compare it to the theoretical probability.</p> <p>a. Observe the relative frequency of an event over the long run, using simulation or technology, and use those results to predict approximate relative frequency.</p>
Alternate Achievement Standard	M.AAS.7.15: Given a data set that represents a series of events, identify the event most likely to occur.
Assessment Limits/Content Constraints	Limit to events where one event is significantly more likely to occur than all other events.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a data table showing the numbers on which Martha landed on a spinner. Based on the table and the spinner, what number will Martha likely land on if she spins the spinner?

Grade	7
Content Area	Geometry and Measurement
Cluster	Construct and describe geometric figures, analyzing relationships among them.
Standard	Construct geometric shapes (freehand, using a ruler and a protractor, and using technology), given a written description or measurement constraints with an emphasis on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
Alternate Achievement Standard	M.AAS.7.18: Construct and analyze a geometric figure using manipulatives.
Assessment Limits/Content Constraints	Emphasize triangles and quadrilaterals.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here are three triangle figures. Which triangle is a right triangle?

Grade	7
Content Area	Geometry and Measurement
Cluster	Construct and describe geometric figures, analyzing relationships among them.
Standard	Describe the two-dimensional figures created by slicing three-dimensional figures into plane sections.
Alternate Achievement Standard	M.AAS.7.19: Match two similar geometric shapes that are proportional in size and orientation.
Assessment Limits/Content Constraints	Limit to similar shapes with the same orientation and with labeled angle measures or side lengths.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here is a shape. Which figure shows a proportional shape?

Grade	7
Content Area	Geometry and Measurement
Cluster	Construct and describe geometric figures, analyzing relationships among them.
Standard	<p>Explain the relationships among circumference, diameter, area, and radius of a circle to demonstrate understanding of formulas for the area and circumference of a circle.</p> <p>a. Informally derive the formula for area of a circle.</p> <p>b. Solve area and circumference problems in real-world and mathematical situations involving circles.</p>
Alternate Achievement Standard	M.AAS.7.20: Identify the radius, diameter, and circumference of a circle.
Assessment Limits/Content Constraints	
DOK(s)	1 or 2
Item Type(s)	MC, MS
Sample Item Stem(s)	Here is a circle with an arrow that points to a part of the circle. What is this part of the circle called?

Grade	7
Content Area	Geometry and Measurement
Cluster	Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.
Standard	Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure.
Alternate Achievement Standard	M.AAS.7.21: Classify angles as acute, obtuse, right, or straight.
Assessment Limits/Content Constraints	Mark the arc or square inside the angle in all cases, particularly on straight angles.
DOK(s)	1 or 2
Item Type(s)	MC
Sample Item Stem(s)	Here are three angles. Which angle is an obtuse angle?

Grade	7
Content Area	Geometry and Measurement
Cluster	Solve real-world and mathematical problems involving angle measure, circumference, area, surface area, and volume.
Standard	Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right rectangular prisms.
Alternate Achievement Standard	M.AAS.7.22: Determine the area of regular, two-dimensional figures. Determine the volume of rectangular prisms, limited to whole numbers.
Assessment Limits/Content Constraints	Limit to regular, two-dimensional figures when finding area. Limit side lengths to whole numbers when calculating area.
DOK(s)	2 or 3
Item Type(s)	MC
Sample Item Stem(s)	Here is a rectangle. What is the area of the rectangle?