

## Alabama Comprehensive Assessment Program (ACAP) Alternate

Item Specifications<br>\section*{Mathematics}

Grade 4

# Alabama Comprehensive Assessment Program <br> (ACAP) Alternate 

## Item Specifications

## 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

Page 3 of 22
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 | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations and Algebraic Thinking |
| Cluster | Solve problems with whole numbers using the four operations. |
| Standard | Determine and justify solutions for multi-step word problems, including <br> problems where remainders must be interpreted. <br> a. Write equations to show solutions for multi-step word problems with a letter <br> standing for the unknown quantity. <br> b. Determine reasonableness of answers for multi-step word problems, using <br> mental computation and estimation strategies including rounding. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.1: Solve one-step word problems involving real-life situations using <br> the four operations within 100 without regrouping and select the appropriate <br> method of computation when problem-solving. |
| Assessment <br> Limits/Content <br> Constraints | Limit to one-step word problems. <br> Limit to addition, subtraction, multiplication, division with answers of 100 or less. |
| Limit to addition and subtraction problems with no regrouping. |  |
| Item Type(s) | Use real-life situations. |
| Sample Item Stem(s) | Ram, MS, EBSR <br> Cookies. How many cookies will there be in total? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations and Algebraic Thinking |
| Cluster | Generate and analyze patterns. |
| Standard | M.AAS.4.5: Use repeating patterns to make predictions. |
| Alternate <br> Achievement <br> Standard | Limit patterns to numbers or shapes. <br> Assessment <br> Limits/Content <br> Constraints <br> Limit predicted elements to 3 or less. <br> DOK(s) <br> Item Type(s) <br> Sample Item Stem(s) |
| Here is a pattern of shapes: triangle, circle, square, triangle, circle, |  |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations with Numbers: Base Ten |
| Cluster | Generalize place value understanding for multi-digit whole numbers. <br> Standard <br> Use place value understanding to compare two multi-digit numbers using $>,=$, <br> and symbols. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.6: Compare whole number values to 50 using symbols (e.g., $<,>,=$ ). |
| Assessment <br> Limits/Content <br> Constraints | Limit to whole number values of 50 or less. <br> Limit symbols to $>,<,=$. |
| DOK(s) <br> Item Type(s) <br> Sample Item Stem(s) | Here is a number sentence: four blank four. Which symbol correctly completes <br> the sentence? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations with Numbers: Base Ten |
| Cluster | Generalize place value understanding for multi-digit whole numbers. |
| Standard | Round multi-digit whole numbers to any place using place value understanding. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.9: Round a whole number from 1 to $\mathbf{4 9}$ to the nearest ten (using a <br> number line and hundreds chart.) |
| Assessment <br> Limits/Content <br> Constraints | Limit numbers to be rounded to 1 through 49. <br> Limit rounding to the nearest 10. |
| DOK(s) | Provide number line or hundreds chart. |
| Item Type(s) | MC |
| Sample Item Stem(s) | Here is the number forty-three on a hundreds chart. What is forty-three rounded <br> to the nearest ten? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations with Numbers: Base Ten |
| Cluster | Use place value understanding and properties of operations to perform <br> multi-digit arithmetic with whole numbers. |
| Standard | Use place value strategies to fluently add and subtract multi-digit whole <br> numbers and connect strategies to the standard algorithm. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.11: Add and subtract one- and two-digit numbers up to 49 with <br> regrouping using concrete manipulatives and visual models. |
| Assessment <br> Limits/Content <br> Constraints | Limit numbers to 1 through 49. <br> Include regrouping. |
| DOK(s) | Include concrete objects or visual models. |
| Item Type(s) | MC |
| Sample Item Stem(s) | Here is a subtraction problem: twenty minus five equals blank. Here is a model of <br> twenty using tens rods. Here is a model of five using blocks. What does twenty <br> minus five equal? |


| Grade | 4 |
| :---: | :---: |
| Content Area | Operations with Numbers: Fractions |
| Cluster | Extend understanding of fraction equivalence and ordering. |
| Standard | Compare two fractions with different numerators and different denominators using concrete models, benchmarks ( $0,1 / 2,1$ ), common denominators, and/or common numerators, recording the comparisons with symbols $\rangle,=$, or $\langle$, and justifying the conclusions. <br> a. Explain that comparison of two fractions is valid only when the two fractions refer to the same whole. |
| Alternate Achievement Standard | M.AAS.4.13: Identify and compare models of a whole (1), one half ( $1 / 2$ ), one third ( $1 / 3$ ), and one fourth ( $1 / 4$ ) using models, manipulatives, number lines, and a clock. |
| Assessment Limits/Content Constraints | Limit to one (1) whole, $1 / 2,1 / 3$, and $1 / 4$. <br> Use models, manipulatives, number lines, or clocks. |
| DOK(s) | 1 or 2 |
| Item Type(s) | MC, MS |
| Sample Item Stem(s) | Here are three models of fractions. Which model represents one-half? |

## ACAP Alternate Item Specifications <br> 2022-2023 Mathematics

| Grade | 4 |
| :--- | :--- |
| Content Area | Operations with Numbers: Fractions |
| Cluster | Build fractions from unit fractions by applying and extending previous <br> understandings of operations on whole numbers. |
| Standard | Model and justify decompositions of fractions and explain addition and <br> subtraction of fractions as joining or separating parts referring to the same <br> whole. <br> a. Decompose a fraction as a sum of unit fractions and as a sum of fractions <br> with the same denominator in more than one way using area models, length <br> models, and equations. |
|  | b. Add and subtract fractions and mixed numbers with like denominators using <br> fraction equivalence, properties of operations, and the relationship between <br> addition and subtraction. <br> c. Solve word problems involving addition and subtraction of fractions and <br> mixed numbers having like denominators using drawings, visual fraction <br> models, and equations to represent the problem. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.15: Model decomposing fractions having like denominators, using <br> visual fraction models (limit to half and fourths). |
| Assessment <br> Limits/Content <br> Constraints | Limit to halves and fourths. <br> Use visual fraction models. |
| DOK(s) | 2 or 3 |
| Item Type(s) | MC, MS |
| Sample Item Stem(s) | Here is a fraction model of a sum of two fractions: one-half. Which equation <br> represents the sum shown in the fraction model? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Operations with Numbers: Fractions |
| Cluster | Understand decimal notation for fractions and compare decimal fractions. |
| Standard | Express, model, and explain the equivalence between fractions with <br> denominators of 10 and 100. <br> a. Use fraction equivalency to add two fractions with denominators of $\mathbf{1 0}$ and <br> 100. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.17: Model equivalence between fractions of a whole, halves and <br> fourths using visual models. |
| Assessment <br> Limits/Content <br> Constraints <br> DOK(s) | Limit to one (1) whole, halves, and fourths. <br> Include visual models. |
| Item Type(s) | 1 or 2 |
| Sample Item Stem(s) | MC, MS, EBSR <br> Here is a whole rectangle. Which model shows how many fourths are in a whole |


| Grade | 4 |
| :---: | :---: |
| Content Area | Operations with Numbers: Fractions |
| Cluster | Understand decimal notation for fractions and compare decimal fractions. |
| Standard | Use visual models and reasoning to compare two decimals to hundredths (referring to the same whole), recording comparisons using symbols $>$, $=$, or $<$, and justifying the conclusions. |
| Alternate Achievement Standard | M.AAS.4.19: Compare fractions of a whole, halves and fourths using symbols ( $>,<,=$ ). |
| Assessment <br> Limits/Content <br> Constraints | Limit to one (1) whole, halves, and fourths. Limit to two elements. Limit symbols to $>,<$, and $=$. <br> May use models. |
| DOK(s) | 1 or 2 |
| Item Type(s) | MC |
| Sample Item Stem(s) | Here are two fractions: one-half blank one-fourth. Which symbol goes in the blank to correctly compare the two fractions? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Data Analysis |
| Cluster | Represent and interpret data. |
| Standard | Interpret data in graphs (picture, bar, and line plots) to solve problems using <br> numbers and operations. <br> Create a line plot to display a data set of measurements in fractions of a unit <br> (1/2,1/4,1/8). <br> Solve problems involving addition and subtraction of fractions using <br> information presented in line plots. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.20: Using vocalization, sign language, augmentative communication, <br> or assistive technology, represent and interpret data on a picture or bar graph <br> when given a model or a graph to complete. |
| Assessment <br> Limits/Content <br> Constraints | Limit to picture graphs or bar graphs. <br> Limit categories to 3 or less. |
| DOK(s) | Limit category data to 20 or less. |
| Item Type(s) | 2 or 3 |
| Sample Item Stem(s) | Ash and Tommy recorded the number of each flower type in the garden on the <br> bar graph. The bar graph is titled "Garden Flowers." The axes labels are "Number <br> of Flowers" and "Flower Type." Ash and Tommy saw four roses. Which graph <br> shows the correct bar? |

## ALTERNATE

| Grade | 4 |
| :---: | :---: |
| Content Area | Data Analysis |
| Cluster | Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. |
| Standard | Select and use an appropriate unit of measurement for a given attribute (length, mass, liquid volume, time) within one system of units: metric - $\mathrm{km}, \mathrm{m}, \mathrm{cm} ; \mathbf{k g}, \mathrm{g}$, $\mathrm{I}, \mathrm{ml}$; customary - lb, oz; time - hr, min, sec. <br> a. Within one system of units, express measurements of a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. |
| Alternate Achievement Standard | M.AAS.4.21: Given an object, determine the appropriate measurement tool and units of measure using vocalization, sign language, augmentative communication, or assistive technology. |
| Assessment Limits/Content Constraints | Limit measurement tools and units of measurement for length to ruler, yard stick, and measuring tape/inches and feet; liquid measurement to measuring cup; mass or weight to scale/pounds and ounces; time to clock (digital and analog)/hour, half hour, and quarter hour. <br> May use visuals and real-life scenarios. |
| DOK(s) | 1 or 2 |
| Item Type(s) | MC, MS, EBSR |
| Sample Item Stem(s) | Tyson needs to measure the length and width of a door. Which tool should Tyson use to measure the door? |

## ACAP Alternate Item Specifications <br> 2022-2023 Mathematics

## ALTERNATE

\(\left.$$
\begin{array}{|l|l|}\hline \text { Grade } & \text { 4 } \\
\hline \text { Content Area } & \text { Data Analysis } \\
\hline \text { Cluster } & \begin{array}{l}\text { Solve problems involving measurement and conversion of measurements from a } \\
\text { larger unit to a smaller unit. }\end{array} \\
\hline \text { Standard } & \begin{array}{l}\text { Use the four operations to solve measurement word problems with distance, } \\
\text { intervals of time, liquid volume, mass of objects, and money. } \\
\text { a. Solve measurement problems involving simple fractions or decimals. } \\
\text { b. Solve measurement problems that require expressing measurements given in } \\
\text { a larger unit in terms of a smaller unit. } \\
\text { c. Represent measurement quantities using diagrams such as number line } \\
\text { diagrams that feature a measurement scale. }\end{array} \\
\hline \begin{array}{l}\text { Alternate } \\
\text { Achievement } \\
\text { Standard }\end{array} & \begin{array}{l}\text { M.AAS.4.22: Using vocalization, sign language, augmentative communication, or } \\
\text { assistive technology, tell time on a digital and analog clock (to the hour, half } \\
\text { hour, quarter hour). }\end{array}
$$ <br>
\hline M.AAS.4.22a: Measure mass, volume, or lengths of an object when given a <br>

measurement tool.\end{array}\right\}\)| M.AAS.4.22b: Using vocalization, sign language, augmentative communication, |
| :--- |
| or assistive technology, identify and determine the value of penny, nickel, dime, |
| and quarter. |


| Grade | 4 |
| :--- | :--- |
| Content Area | Data Analysis |
| Cluster | Solve problems involving measurement and conversion of measurements from a <br> larger unit to a smaller unit. |
| Standard | Apply area and perimeter formulas for rectangles in real-world and <br> mathematical situations. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.23: Determine the area of a square or rectangle by counting units of <br> measurement (e.g., unit squares). |
| Assessment <br> Limits/Content <br> Constraints | Limit shapes to squares and rectangles. <br> Limit area to 20 or less. <br> Include visuals such as grid lines, unit squares, or blocks. |
| DOK(s) | 1 or 2 |
| Item Type(s) | MC |
| Sample Item Stem(s) | Here are unit squares set on a rectangle. What is the area of the rectangle in <br> square units? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Data Analysis |
| Cluster | Geometric measurement: understand concepts of angle and measure angles. |
| Standard | Identify an angle as a geometric shape formed wherever two rays share a <br> common endpoint. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.24: Recognize and identify angles in geometric shapes as larger or <br> smaller. |
| Assessment <br> Limits/Content <br> Constraints | Limit shapes to squares, rectangles, or triangles. |
| Limit comparisons to angles that are visibly larger or smaller than each other. <br> Item Type(s) <br> Sample Item Stem(s) | Here is a triangle. The triangle has angles A, B, and C. Which angle is larger than <br> angle C? |


| Grade | $\mathbf{4}$ |
| :--- | :--- |
| Content Area | Geometry |
| Cluster | Draw and identify lines and angles, and identify shapes by properties of their <br> lines and angles. |
| Standard | Draw points, lines, line segments, rays, angles (right, acute, obtuse), and <br> perpendicular and parallel lines, and identify these in two-dimensional figures. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.27: Recognize parallel lines, intersecting lines, and angles (right, acute, <br> obtuse). |
| Assessment <br> Limits/Content <br> Constraints | Limit lines to parallel and intersecting. |
| DOK(s) | 1 or 2 |
| Item Type(s) | MC |
| Sample Item Stem(s) | Here is an angle. Which type of angle is this? |


| Grade | 4 |
| :--- | :--- |
| Content Area | Geometry <br> Cluster <br> lines and angles. |
| Standard | Identify two-dimensional figures based on the presence or absence of parallel <br> or perpendicular lines or the presence or absence of angles of a specified size. <br> a. Describe right triangles as a category, and identify right triangles. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.28: Using vocalization, sign language, augmentative communication, <br> or assistive technology, describe the defining attributes of two-dimensional <br> shapes (e.g., number of sides, number of angles). |
| Assessment <br> Limits/Content <br> Constraints | Limit attributes to number of sides and number of angles. <br> DOK(s) <br> Item Type(s) <br> Sample Item Stem(s) |
| Here are four shapes. Which two shapes have four sides? |  |

## ALTERNATE

| Grade | 4 |
| :--- | :--- |
| Content Area | Geometry |
| Cluster | Draw and identify lines and angles and identify shapes by properties of their <br> lines and angles. |
| Standard | Define a line of symmetry for a two-dimensional figure as a line across the figure <br> such that the figure can be folded along the line into matching parts. <br> a. Identify line-symmetric figures and draw lines of symmetry. |
| Alternate <br> Achievement <br> Standard | M.AAS.4.29: Given a drawing of a shape with a line drawn across the shape, <br> identify if it is divided symmetrically. |
| Assessment <br> Limits/Content <br> Constraints <br> DOK(s) <br> Item Type(s) | Limit shapes to circles, triangles, squares, or rectangles. |
| Sample Item Stem(s) | Here are three shapes. Which shape is divided in half with a line of symmetry? |

