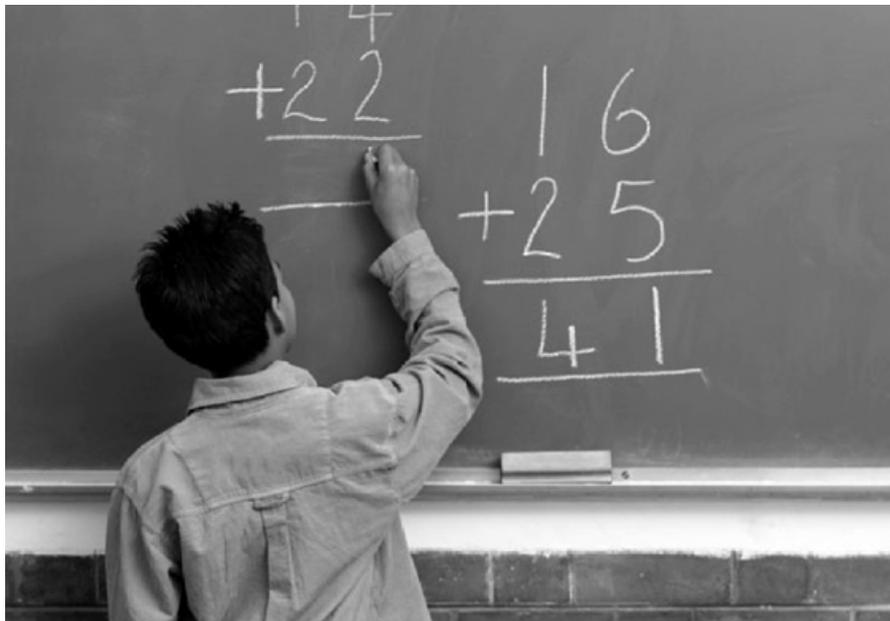


**OKLAHOMA SCHOOL TESTING PROGRAM  
OKLAHOMA MODIFIED ALTERNATE  
ASSESSMENT PROGRAM**

# **Test and Item Specifications**

Mathematics  
Grade 5



2012-2013 Edition

Oklahoma State Department of Education  
Oklahoma City, Oklahoma

Revised  
March 2013

# OKLAHOMA MODIFIED ALTERNATE ASSESSMENT PROGRAM

## TEST AND ITEM SPECIFICATIONS

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### *Purpose*

The purpose of this test is to measure Oklahoma fifth-grade students' level of proficiency in mathematics. On the Grade 5 Mathematics Test, students are required to respond to a variety of items linked to the fifth-grade mathematics content standards identified in the *Oklahoma College, Career, and Citizen Ready (C<sup>3</sup>) Standards*. All Mathematics test forms will assess the identified standards and objectives listed below. The following standards and objectives are intended to summarize the knowledge as identified in in *Oklahoma C<sup>3</sup> Standards*.

<b>Oklahoma C<sup>3</sup> Standards Grade 5 Content Standards and Objectives</b>
<b>Algebraic Reasoning: Patterns and Relationships</b> <ul style="list-style-type: none"> <li>• Algebra Patterns (1.1)</li> <li>• Equations (1.2)</li> <li>• Number Properties (1.3)</li> </ul>
<b>Number Sense and Operation</b> <ul style="list-style-type: none"> <li>• Number Sense (2.1)</li> <li>• Number Operations (2.2)</li> </ul>
<b>Geometry</b> <ul style="list-style-type: none"> <li>• Circles and Polygons (3.1)</li> <li>• Angles (3.2)</li> </ul>
<b>Measurement</b> <ul style="list-style-type: none"> <li>• Measurement (4.1)</li> <li>• Money (4.2)</li> </ul>
<b>Data Analysis</b> <ul style="list-style-type: none"> <li>• Data Analysis (5.1)</li> <li>• Probability (5.2)</li> <li>• Central Tendency (5.3)</li> </ul>



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### ***General Considerations***

It is necessary to create test items that are reliable, fair, and targeted to the *Oklahoma C<sup>3</sup>* standards listed on the following pages. There are some general considerations and procedures for effective item development. These considerations include, but are not limited to, the following:

1. Each test form contains items assessing all content standards listed in the Test Blueprint for fifth-grade mathematics.
2. Test items that assess each standard are not limited to one particular type of response format.
3. Test questions attempt to focus on content that is authentic and that fifth-grade students can relate to and understand.
4. Test items are worded precisely and clearly.
5. All items are reviewed to eliminate language that shows bias or is otherwise likely to disadvantage a particular group of students. That is, items do not display unfair representations of gender, race, disability, culture, or religion, nor do items contain elements that are offensive to any such group.
6. All answer choices in multiple-choice items (the key and all distractors) are similar in length and syntax. Students should not be able to rule out a wrong answer or identify a correct response solely because it looks or sounds different from the other answer choices. Distractors are created so that students reason their way to the correct answer rather than simply identify incorrect responses because of a distractor's obviously inappropriate nature. Distractors should always be plausible (but incorrect) in the context of the item stem. Correct responses are approximately equally distributed among As, Bs, and Cs.

### ***Universal Test Design Considerations***

Universal design, as applied to assessments, is a concept that allows the widest possible range of students to participate in assessments and may even reduce the need for accommodations and alternative assessments by expanding access to the tests themselves. In the Oklahoma Modified Alternate Assessment Program, modifications have been made to some items that simplify and clarify instructions and provide maximum readability, comprehensibility, and legibility.

**Universal Modifications**

- Minimize the number of questions on the page (limit to 2 or 3).
- Use a larger font size.
- Provide only three answer options instead of four.
- Highlight the main points in the question or passage by underlining and using boldface.
- Allow for the same accommodations as in the standard assessment.
- Avoid questions that require students to select the better/best answer.
- Be consistent in wording of directions across grades and subjects.
- Minimize the use of pronouns and prepositional phrases.
- Avoid the use of multiple-meaning words and words that can function as more than part of speech.
- Enlarge art when possible.
- Simplify art when possible, (i.e. remove unnecessary labels, use less gray scale, use thicker lines when outlining, etc.).
- Box informational text in an item.
- Bullet information when possible (e.g. bullet detailed information or processes).
- Reduce reading load of stem, stimuli, and answer options when possible.
- Use Verdana font.
- Revise answer options to address parallelism and minimize outliers.

**Mathematics Items**

- Allow for read-aloud and calculators format.
- For lower grades, display numbers on all sides of figures for questions about perimeter.
- Unless required by standard, avoid items with negative and positive answer choices that use the same number.
- Place any items with coordinate grids on one page.
- For lower grades, use grids for questions.
- Be consistent with qualifiers in the stem and answer choices.
- Avoid questions that use best or closest.
- Avoid complicated art.
- List coordinate grids in answer options vertically with plenty of space between the answer options to make the grid more accessible to the visually impaired (however, avoid spanning item over two pages).
- Simplify reading load, including vocabulary, when possible.
- Eliminate stimuli sets.
- Delete one part of a compound answer choice when possible.
- Delete griddable items, negative items, and items that cannot be modified based on guidelines.

- Delete extraneous information including irrelevant material and unnecessary words in items or graphics.
- Simplify complex sentence structure and vocabulary in item and answer choices without eliminating math vocabulary.
- Change passive voice to active voice when appropriate.
- Add precise language to provide additional context for clarification.
- Use consistent language within an item in order to focus student attention on what is being asked.
- Revise text as necessary to maintain the authenticity and logic of the item due to modifications.
- Use bullets to clearly organize complex items into smaller, meaningful parts.
- Direct student attention to graphics.
- Simplify visual complexity of graphics.
- Provide new text and/or reorganize existing text within the question to explain or clarify the graphic.
- Provide additional graphics to support text, emphasize ideas, and facilitate comprehension.
- Reduce the number of variables and simplify digits in item when appropriate.
- Limit the number of steps and/or operations in multi-step problems.
- Provide appropriate formula and/or conversion near the item.
- Provide explicit directions to explain a process such as measuring (as long as it does not impact reading load).

Below is an example of an OCCT item followed by a modified version of the item. The modified version of the item was created using the modification list on pages 3 and 4.

**OCCT Oklahoma C<sup>3</sup> 4.1b Sample Item:**

Depth of Knowledge: 2

Correct Answer: C

**Wade built a fence around a rectangular section of his backyard. The length of the section is 20 feet and the width is 5 feet. What is the perimeter of the fenced section?**

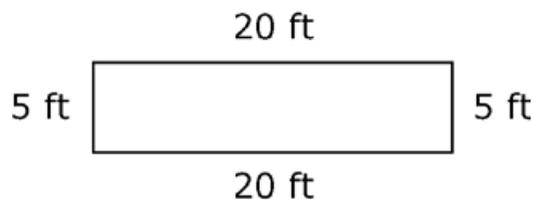
- A** 10 feet
- B** 40 feet
- C** 50 feet
- D** 100 feet

**Modified OMAAP Oklahoma C<sup>3</sup> 4.1b Sample Item:**

Depth of Knowledge: 2

Correct Answer: B

**Wade built a rectangular fence.**



**What is the perimeter of the fence Wade built?**

$$\text{Perimeter} = 2l + 2w$$

- (A)** 40 feet
- (B)** 50 feet
- (C)** 100 feet

### *Multiple-Choice Item Rules*

- All items clearly indicate what is expected in a response and help students focus on their response.
- Each multiple-choice item has a stem (question, statement, or incomplete statement, and/or graphic component) and three answer (or completion) options, only one of which is correct.
- Multiple-choice item stems present a complete problem so that students know what to do before looking at the answer choices; students should not need to read all answer choices before knowing what is expected.

In summary, mathematics-test items assess whether students understand mathematical concepts and procedures, communicate their understandings effectively in mathematical terms, approach problems, and develop viable solutions.

All items developed using these specifications are reviewed by Oklahoma educators and approved by the Oklahoma State Department of Education. The distribution of newly developed or modified items is based on content and process alignment, difficulty, cognitive ability, percentage of art/graphics, and grade level appropriateness as determined by an annual Item Development Plan approved by the Oklahoma State Department of Education.

### *Test Structure, Format, and Scoring*

The test will consist of 40–43 operational multiple-choice items, which will be written at a level two grade levels below a fifth-grade audience and will include three responses from which to choose: the correct answer and two distractors.

Each multiple-choice item is scored as correct or incorrect. The student’s raw score is converted to a scaled score using the number correct scoring method.

### *Test Alignment with Oklahoma C<sup>3</sup> Standards*

<b>Criteria for Aligning the Test with the <i>Oklahoma C<sup>3</sup></i> Standards and Objectives</b>	
<b>1. Categorical Concurrence</b>	The test is constructed so that there are at least six items measuring each <i>Oklahoma C<sup>3</sup></i> standard, with the content category consistent with the related standard. The number of items, six, is based on estimating the number of items that could produce a reasonably reliable estimate of a student’s mastery of the content measured.
<b>2. Depth of Knowledge Consistency</b>	The test is constructed using items from a variety of Depth of Knowledge levels that are consistent with the processes students need in order to demonstrate proficiency for each <i>Oklahoma C<sup>3</sup></i> objective.
<b>3. Range of Knowledge Correspondence</b>	The test is constructed so that at least 50% of the objectives for a <i>Oklahoma C<sup>3</sup></i> standard have at least one corresponding assessment item.
<b>4. Balance of Representation</b>	The test is constructed according to the Test Blueprint, which reflects the degree of representation given on the test to each <i>Oklahoma C<sup>3</sup></i> standard and objective in terms of the percentage of total test items measuring each standard and the number of test items measuring each objective.
<b>5. Source of Challenge</b>	Each test item is constructed in such a way that the major cognitive demand comes directly from the targeted <i>Oklahoma C<sup>3</sup></i> objective or concept being assessed, not from specialized knowledge or cultural background that the test-taker may bring to the testing situation.

**Oklahoma School Testing Program**  
**Oklahoma Modified Alternative Assessment Program**  
**Grade 5 Mathematics**  
**Test Blueprint**  
**2012-2013 School Year**

The Test Blueprints reflect the degree to which each *Oklahoma C<sup>3</sup>* standard and objective is represented on the test. The overall distribution of operational items in a test form is intended to look as follows:

<i>Oklahoma C<sup>3</sup></i> Standards & Objectives	Ideal Number of Items for Alignment to <i>Oklahoma C<sup>3</sup></i> *	Ideal <sup>1</sup> Percentage of Items
<b>Algebraic Reasoning: Patterns and Relationships</b>	<b>10–11</b>	<b>23%–26%</b>
Algebra Patterns (1.1)	3–5	
Equations (1.2)	2–4	
Number Properties (1.3)	2–4	
<b>Number Sense and Operation</b>	<b>12–13</b>	<b>28%–30%</b>
Number Sense (2.1)	5–7	
Number Operations (2.2)	5–7	
<b>Geometry</b>	<b>6–7</b>	<b>14%–16%</b>
Circles and Polygons (3.1)	3–4	
Angles (3.2)	2–3	
<b>Measurement</b>	<b>6–7</b>	<b>14%–16%</b>
Measurement (4.1)	3–4	
Money (4.2)	2–3	
<b>Data Analysis</b>	<b>6–7</b>	<b>14–16%</b>
Data Analysis (5.1)	1–3	
Probability (5.2)	1–3	
Central Tendency (5.3)	1–3	
<b>Total Test</b>	<b>40–43<sup>2</sup></b>	<b>100%</b>

<sup>1</sup> Percentages are approximations and may result in a sum other than 100 due to rounding.

<sup>2</sup> The actual number of items scored for a student may be slightly lower pending a review of item statistics. Student performance on the multiple-choice test will be reported at the standard level.

\* Student performance on the multiple-choice test will be reported at the standard level. A minimum of 6 items are required to report a standard. While the actual numbers of items on the test may not match the blueprint exactly, each future test will move toward closer alignment with the ideal blueprint.

### *Overview of Item Specifications*

For each *Oklahoma C<sup>3</sup>* standard, item specifications are organized under the following headings:

- *Oklahoma C<sup>3</sup>* Standard and *Oklahoma C<sup>3</sup>* Objective
- Item Specifications
  - a. Emphasis
  - b. Stimulus Attributes
  - c. Format
  - d. Content Limits
  - e. Distractor Domain
  - f. Sample Test Items

The headings “*Oklahoma C<sup>3</sup>* Standard” and “*Oklahoma C<sup>3</sup>* Objective” state the standard and objective being measured as found in the fifth-grade mathematics section of the *Oklahoma C<sup>3</sup>* Standards document.

The heading “Item Specifications” highlights important points about the item’s emphasis, stimulus attributes, format, content limits, and distractor domain. Although it is sometimes possible to score single items for more than one concept, all items in these tests are written to address a single content standard as the primary concept.

All items will assess objectives using only depth-of-knowledge levels 1, 2, or 3. Descriptions of the depth-of-knowledge levels for Mathematics are as follows:

**Level 1** requires the student to recall facts, terms, definitions, or simple procedures; perform simple algorithms; or apply formulas. One-step, well-defined, or straight algorithmic procedures should be included at this level.

**Level 2** requires the student to make some decisions as to how to approach the problem or activity. Level 2 activities include making observations and collecting data; classifying, comparing, and organizing data; and organizing and displaying data in tables, charts, and graphs.

**Level 3** requires complex reasoning, planning, developing, using evidence, and a higher level of thinking. Level 3 activities include making conjectures, drawing conclusions from observations, citing evidence, developing a logical argument for concepts, explaining phenomena in terms of concepts, and using concepts to solve nonroutine problems.

***Depth of Knowledge Assessed by Test Items***

The test will approximately reflect the following depth of knowledge distribution of items:

<b>Depth of Knowledge</b>	<b>Percentage of Items</b>
Level 1—Recall	20–25%
Level 2—Basic Reasoning	60–65%
Level 3—Complex and Extended Reasoning	10–15%

This is the ideal depth of knowledge distribution of items. There may be slight differences in the actual distribution of the upcoming testing session.

**Note about the Item Specifications and Sample Items:**

**With the exception of content limits, the item specifications give suggestions of what might be included and do not give an exhaustive list of what can be included.**

**These sample test items are not intended to be definitive in nature or construction, as the stimuli and test items may differ from one test form to another, as may their presentation.**

## Oklahoma C<sup>3</sup> Standards

### MATHEMATICS PROCESS STANDARDS

#### Grades 1–5

The National Council of Teachers of Mathematics (NCTM) has identified five process standards: Problem Solving, Communication, Reasoning and Proof, Connections, and Representation. Using these processes students are actively involved in deepening mathematical understandings which lead to increasingly sophisticated abilities required to meet mathematical challenges. Following is an outline of the five process standards and associated objectives.

**NOTE:** When examples are given there is a progression in levels of difficulty from basic to more complex skills.

#### Process Standard 1: Problem Solving

1. Use problem-solving approaches (e.g., act out situations, represent problems with drawings and lists, use concrete, pictorial, graphical, oral, written, and/or algebraic models, understand a problem, devise a plan, carry out the plan, look back).
2. Formulate problems from everyday and mathematical situations (e.g., how many forks are needed?, how many students are absent?, how can we share/divide these cookies?, how many different ways can we find to compare these fractions?).
3. Develop, test, and apply strategies to solve a variety of routine and non-routine problems (e.g., look for patterns, make a table, make a problem simpler, process of elimination, trial and error).
4. Verify and interpret results with respect to the original problem (e.g., students explain verbally why an answer makes sense, explain in a written format why an answer makes sense, verify the validity of each step taken to obtain a final result).
5. Distinguish between necessary and irrelevant information in solving problems (e.g., play games and discuss “best” clues, write riddles with sufficient information, identify unnecessary information in written story problems).

#### Process Standard 2: Communication

1. Express mathematical ideas coherently and clearly to peers, teachers, and others (e.g., with verbal ideas, models or manipulatives, pictures, or symbols).
2. Extend mathematical knowledge by considering the thinking and strategies of others (e.g., agree or disagree, rephrase another student’s explanation, analyze another student’s explanation).
3. Relate manipulatives, pictures, diagrams, and symbols to mathematical ideas.

4. Represent, discuss, write, and read mathematical ideas and concepts. Start by relating everyday language to mathematical language and symbols and progress toward the use of appropriate terminology (e.g., “add more” becomes “plus,” “repeated addition” becomes “multiplication,” “fair share” becomes “divide,” “balance the equation” becomes “solve the equation”).

### Process Standard 3: Reasoning

1. Explain mathematical situations using patterns and relationships (e.g., identify patterns in situations, represent patterns in a variety of ways, extend patterns to connect with more general cases).
2. Demonstrate thinking processes using a variety of age-appropriate materials and reasoning processes (e.g., manipulatives, models, known facts, properties and relationships, inductive [specific to general], deductive [general to specific], spatial, proportional, logical reasoning [“and” “or” “not”] and recursive reasoning).
3. Make predictions and draw conclusions about mathematical ideas and concepts. Predictions become conjectures and conclusions become more logical as students mature mathematically.

### Process Standard 4: Connections

1. Relate various concrete and pictorial models of concepts and procedures to one another (e.g., use two colors of cubes to represent addition facts for the number 5, relate patterns on a hundreds chart to multiples, use base-10 blocks to represent decimals).
2. Link concepts to procedures and eventually to symbolic notation (e.g., represent actions like snap, clap, clap with symbols A B B, demonstrate  $3 \cdot 4$  with a geometric array, divide a candy bar into 3 equal pieces that represent one piece as  $\frac{1}{3}$ ).
3. Recognize relationships among different topics within mathematics (e.g., the length of an object can be represented by a number, multiplication facts can be modeled with geometric arrays,  $\frac{1}{2}$  can be written as 0.5 and 50%).
4. Use mathematical strategies to solve problems that relate to other curriculum areas and the real world (e.g., use a timeline to sequence events, use symmetry in art work, explore fractions in quilt designs and to describe pizza slices).

### Process Standard 5: Representation

1. Create and use a variety of representations appropriately and with flexibility to organize, record, and communicate mathematical ideas (e.g., dramatizations, manipulatives, drawings, diagrams, tables, graphs, symbolic representations).
2. Use representations to model and interpret physical, social, and mathematical situations (e.g., counters, pictures, tally marks, number sentences, geometric models; translate between diagrams, tables, charts, graphs).

## Oklahoma C<sup>3</sup> Standards

### Mathematics

#### Grade 5

Asterisks (\*) have been used to identify standards and objectives that are not assessed by the Oklahoma School Testing Program (OSTP) in the original *Oklahoma C<sup>3</sup>* curriculum.

**The student applies a wide range of strategies to describe, interpret, evaluate, and analyze a variety of math problems and contexts.**

**Standard 1: Algebraic Reasoning: Patterns and Relationships—The student will use algebraic methods to describe patterns and solve problems in a variety of contexts.**

1. Describe rules that produce patterns found in tables, graphs, and models, and use variables (e.g., boxes, letters, pawns, number cubes, or other symbols) to solve problems or to describe general rules in algebraic expression or equation form.
2. Use algebraic problem-solving techniques (e.g., use a balance to model an equation and show how subtracting a number from one side requires subtracting the same amount from the other side) to solve problems.
3. Recognize and apply the commutative, associative, and distributive properties to solve problems (e.g.,  $3 \times (2 + 4) = (3 \times 2) + (3 \times 4)$ ).

**Standard 2: Number Sense and Operation - The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.**

1. Number Sense
  - a. Apply the concept of place value of whole numbers through hundred millions (9 digits) and model, read, and write decimal numbers through thousandths.
  - b. Represent with models the connection between fractions and decimals, compare and order fractions and decimals, and be able to convert from one representation to the other to solve problems (e.g., use 10-by-10 grids, base-10 blocks).
  - c. Identify and compare integers using real world situations (e.g., owing money, temperature, or measuring elevations above and below sea level).
  - d. \*Identify and apply factors, multiples, prime, and composite numbers in a variety of problem-solving situations (e.g., build rectangular arrays for numbers 1–100 and classify as prime or composite, use common factors to add fractions).

**2. Number Operations**

- a. Estimate, add, or subtract decimal numbers with the same and different place values to solve problems (e.g.,  $3.72 + 1.4$ ,  $\$4.56 - \$2.12$ ).
- b. Estimate, add, or subtract fractions (including mixed numbers) to solve problems using a variety of methods (e.g., use fraction strips, use area models, find a common denominator).
- c. Estimate and find the quotient (with and without remainders) with two-digit divisors and a two- or three-digit dividend to solve problems.

**Standard 3: Geometry —The student will apply geometric properties and relationships.**

1. Compare and contrast the basic characteristics of circles and polygons (triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons).
2. Classify angles (e.g., acute, right, obtuse, straight).

**Standard 4: Measurement —The student will use appropriate units of measure to solve problems in a variety of contexts.**

1. Measurement
  - a. Compare, estimate, and determine the measurement of angles.
  - b. Develop and use the formula for perimeter and area of a square and rectangle to solve application problems.
  - c. Convert basic measurements of volume, mass, and distance within the same system for metric and customary units (e.g., inches to feet, hours to minutes, centimeters to meters).
2. Money: Solve a variety of problems involving money.

**Standard 5: Data Analysis —The student will use data analysis, statistics, and probability to interpret data in a variety of contexts.**

1. Data Analysis
  - a. Compare and translate displays of data and justify the selection of the type of table or graph (e.g., charts, tables, bar graphs, pictographs, line graphs, circle graphs, Venn diagrams).
  - b. \*Formulate questions, design investigations, consider samples, and collect, organize, and analyze data using observation, measurement, surveys, or experiments (e.g., how far can 5th graders throw a softball based on where it first hits the ground?).

2. Probability
  - a. Determine the probability of events occurring in familiar contexts or experiments and express probabilities as fractions from zero to one (e.g., find the fractional probability of an event given a biased spinner).
  - b. Use the fundamental counting principle on sets with up to four items to determine the number of possible combinations (e.g., create a tree diagram to see possible combinations).
3. Central Tendency: Determine the range (spread), mode (most often), and median (middle) of a set of data.

**Oklahoma C<sup>3</sup> Standard:**

Standard 1: Algebraic Reasoning: Patterns and Relationships —The student will use algebraic methods to describe patterns and solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

1. Describe rules that produce patterns found in tables, graphs, and models, and use variables (e.g., boxes, letters, pawns, number cubes, or other symbols) to solve problems or to describe general rules in algebraic expression or equation form.

**Item Specifications:**Emphasis:

- Describe rules that produce patterns found in tables, graphs, and models, and use variables to solve problems or to describe general rules in algebraic expression or equation form.
- Apply use of variables in solving problems and describing mathematical situations.

Stimulus Attributes:

- Test items may include illustrations of the following: tables, graphs, diagrams, number lines, patterns, and counting manipulatives.

Format:

- Use variables as unknowns.
- Use variables as changing quantities.
- Use variables in generalizations of patterns.
- Use variables to describe general rules.

Content Limits:

- Limit patterns to an extension of, at most, three places.
- Limit required operations to addition, subtraction, multiplication, and basic division.
- Limit description of rules to one variable.
- Limit to two operations in order of operations from left to right.

Distractor Domain:

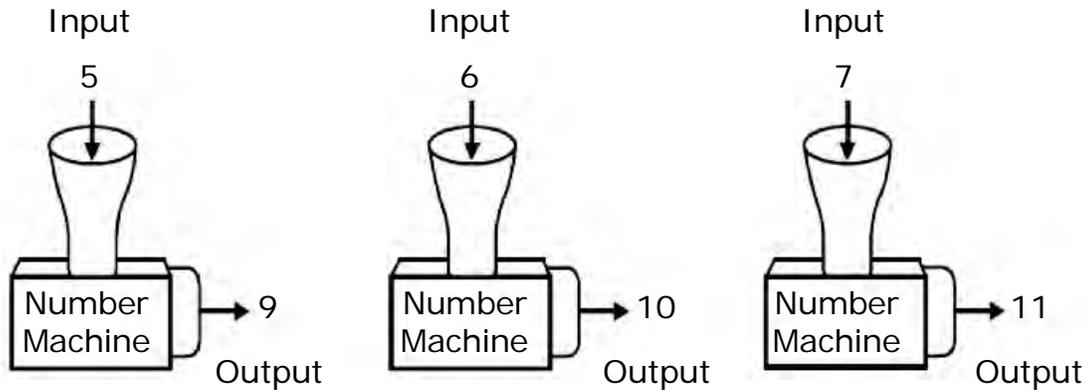
- Computational errors
- Predictable misrepresentations of the pattern

**Modified Oklahoma C<sup>3</sup> 1.1 Sample Item:**

Depth of Knowledge: 1

Correct Answer: A

This number machine used the same rule each time to find the output numbers shown.



- Let  $n$  represent the input number.

Which rule could the machine use to find each output number?

- Ⓐ  $n + 4$
- Ⓑ  $n - 4$
- Ⓒ  $n \times 4$

Depth of Knowledge: 2

Correct Answer: B

The numbers of books sold each day at a book fair are shown in this table.

**Book Fair Sales**

Day	Before School	After School
Monday	15	24
Tuesday	23	32
Wednesday	11	20
Thursday	18	27
Friday	12	21

Which statement compares the number of books sold before school to the number of books sold after school each day?

- (A) Eight more books were sold after school than before school.
- (B) Nine more books were sold after school than before school.
- (C) Nine more books were sold before school than after school.

Depth of Knowledge: 3

Correct Answer: A

<b>Input (<math>n</math>)</b>	1	2	3	4	5
<b>Output</b>	3	5	7	9	11

If  $n$  is the input number, which expression could be used to find the value of the output in the table above?

- Ⓐ  $2 \cdot n + 1$
- Ⓑ  $3 \cdot n$
- Ⓒ  $4 \cdot n - 1$

**Oklahoma C<sup>3</sup> Standard:**

Standard 1: Algebraic Reasoning: Patterns and Relationships —The student will use algebraic methods to describe patterns and solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

2. Use algebraic problem-solving techniques (e.g., use a balance to model an equation and show how subtracting a number from one side requires subtracting the same amount from the other side) to solve problems.

**Item Specifications:**Emphasis:

- Apply a variety of problem-solving techniques to solve problems.

Stimulus Attributes:

- Test items may include illustrations of the following: tables, graphs, base-10 blocks, cubes, sticks, number lines, and other counting manipulatives.

Format:

- Model real-world situations with objects.
- Express mathematical relationships using numerical or pictorial equations.
- Use representations such as graphs, tables, and equations to draw conclusions.

Content Limits:

- Limit unknowns to two-digit whole numbers.
- Limit algebraic equations to one operation.
- Limit to one variable.

Distractor Domain:

- Inappropriate operations selected
- Computational errors

**Modified Oklahoma C<sup>3</sup> 1.2 Sample Item:**

Depth of Knowledge: 1

Correct Answer: A

**What value of  $w$  makes this equation true?**

$$w + 17 = 26$$

- Ⓐ 9
- Ⓑ 11
- Ⓒ 43

Depth of Knowledge: 2

Correct Answer: B

**John has 2 fewer marbles than Kay.**

- Kay has  $\Delta$  marbles.

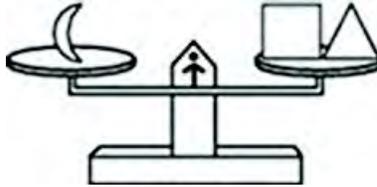
**How many marbles does John have?**

- Ⓐ  $2 - \Delta$
- Ⓑ  $\Delta - 2$
- Ⓒ  $\Delta \div 2$

Depth of Knowledge: 3

Correct Answer: B

The scale below is balanced.



Which expression must be true?

Ⓐ  $\triangle = \text{crescent} + \square$

Ⓑ  $\triangle = \text{crescent} - \square$

Ⓒ  $\triangle = \text{crescent} \times \square$

**Oklahoma C<sup>3</sup> Standard:**

Standard 1: Algebraic Reasoning: Patterns and Relationships —The student will use algebraic methods to describe patterns and solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

3. Recognize and apply the commutative, associative, and distributive properties to solve problems (e.g.,  $3 \times (2 + 4) = (3 \times 2) + (3 \times 4)$ ).

**Item Specifications:**Emphasis:

- Apply the basic properties of arithmetic (commutative, associative, and distributive) to solve problems.

Stimulus Attributes:

- Test items may include illustrations of the following: base-10 blocks, cubes, and other counting manipulatives.

Format:

- Identify the basic properties of arithmetic and use them to compute with whole numbers.
- Identify mathematical and nonmathematical situations that are facilitated by the use of the arithmetic properties.

Content Limits:

- Limit numbers to three-digit whole numbers.
- Limit situations to using two of the basic properties of arithmetic.

Distractor Domain:

- Computational errors
- Failure to generalize the appropriate property

**Modified Oklahoma C<sup>3</sup> 1.3 Sample Item:**

Depth of Knowledge: 1

Correct Answer: C

**Which expression is equivalent to  $4 \times n$ ?**

- Ⓐ  $n + 4$   
Ⓑ  $n - 4$   
Ⓒ  $n \times 4$

Depth of Knowledge: 2

Correct Answer: A

Mr. Clark's employees work 20 hours each week and earn \$7 per hour. He uses the following expression to find the total weekly payroll for  $n$  employees.

$$7 \cdot (20 \cdot n)$$

Which is an equivalent expression that can be used to find the total weekly payroll?

- Ⓐ  $(7 \cdot 20) \cdot n$   
Ⓑ  $20 \cdot (n + 7)$   
Ⓒ  $(n + 20) \cdot 7$

Depth of Knowledge: 2

Correct Answer: A

**Which expression is equivalent to  $12 \times 34$ ?**

Ⓐ  $(10 \times 34) + (2 \times 34)$

Ⓑ  $(10 \times 30) + (2 \times 4)$

Ⓒ  $(10 \times 2) + (30 \times 4)$

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

1. Number Sense
  - a. Apply the concept of place value of whole numbers through hundred millions (9 digits) and model, read, and write decimal numbers through thousandths.

**Item Specifications:**Emphasis:

- Solve problems using decimal numbers to the thousandths place.
- Solve problems by analyzing the decimal representations of rational numbers.
- Solve problems by analyzing the place value of whole numbers and the representations of rational numbers.

Stimulus Attributes:

- Test items may include illustrations of the following: base-10 blocks, sticks, and other counting manipulatives.

Format:

- Use place value concepts in real-world situations.
- Select and apply representations of decimals to solve problems.
- Use representations of decimals to model and analyze real-world situations.

Content Limits:

- Limit decimals to the thousandths place.
- Limit whole numbers to hundred millions.

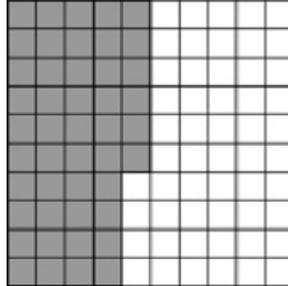
Distractor Domain:

- Misrepresentation of place value
- Computational errors

**Modified Oklahoma C<sup>3</sup> 2.1a Sample Item:**

Depth of Knowledge: 1

Correct Answer: C



**Which decimal number represents the shaded fractional part of the 10 x 10 grid shown?**

- (A) 46.00
- (B) 4.60
- (C) 0.46

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

1. Number Sense
  - b. Represent with models the connection between fractions and decimals, compare and order fractions and decimals, and be able to convert from one representation to the other to solve problems (e.g., use 10-by-10 grids, base 10 blocks).

**Item Specifications:**Emphasis:

- Use models to make a connection between fractions, decimals, and percents.
- Translate and demonstrate knowledge of the connections among rational numbers represented as fractions, decimals, and percents.

Stimulus Attributes:

- Test items may include illustrations of the following: tables, graphs, number lines, base-10 blocks,  $10 \times 10$  grids, cubes, sticks, and other counting manipulatives.

Format:

- Identify connections among representations of fractions and decimals.
- Organize representations of fractions and decimals.
- Translate among representations of fractions, decimals, and percents.
- Recognize and generate equivalent forms of commonly used fractions and decimals.

Content Limits:

- Limit decimals to the hundredths place.
- Limit fractions to common fractions (halves, thirds, fourths, fifths, sixths, eighths, or tenths).
- Limit fractions to halves, fourths, or three-quarters in items that include both decimals and fractions.
- Limit number of items with both decimals and fractions to one per test.

Distractor Domain:

- Computational errors
- Conversion errors
- Incorrect models
- Misrepresentation of place value
- Failure to establish correspondence between the appropriate model and its numerical or symbolic representation

**Modified Oklahoma C<sup>3</sup> 2.1b Sample Item:**

Depth of Knowledge: 1

Correct Answer: C

A cookie recipe requires  $\frac{1}{2}$  cup of sugar.

Which fraction is equivalent to  $\frac{1}{2}$ ?

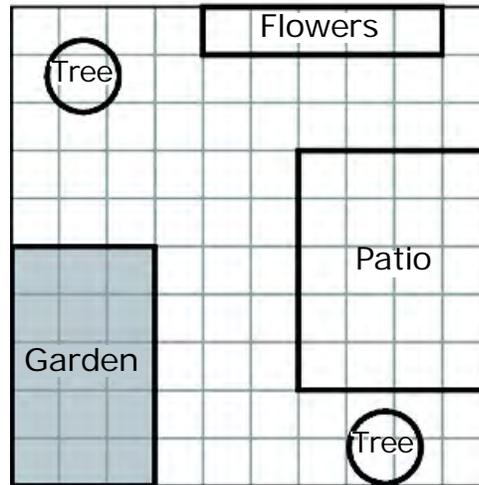
- Ⓐ  $\frac{2}{3}$
- Ⓑ  $\frac{3}{5}$
- Ⓒ  $\frac{4}{8}$

Depth of Knowledge: 1

Correct Answer: A

Thomas made a drawing of his yard on a 10-by-10 grid. In the shaded area, he plans to plant a garden.

Thomas's Yard



Which decimal shows the shaded part of the yard?

- Ⓐ 0.15
- Ⓑ 1.50
- Ⓒ 15.00

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

1. Number Sense:
  - c. Identify and compare integers using real world situations (e.g., owing money, temperature, or measuring elevations above and below sea level).

**Item Specifications:**Emphasis:

- Demonstrate a working knowledge of positive and negative integers to solve problems in mathematical and real-world contexts.

Stimulus Attributes:

- Test items may include illustrations of the following: coordinate graphs, number lines, balances, two-dimensional geometric figures, rulers, thermometers, other measuring instruments, profit/loss, calculator displays, tables, graphs, charts, data sets, and line, bar, and circle graphs.

Format:

- Compare, order, and translate among representations of positive and negative integers in mathematical, geometric, and real-life contexts.
- Apply the basic operations on positive and negative integers to solve problems in mathematical, geometric, and real-world contexts.

Content Limits:

- Limit to two-digit integers.

Distractor Domain:

- Common errors
- Incorrect procedures
- Computational errors
- Incorrect use of rules or properties

**Modified Oklahoma C<sup>3</sup> 2.1c Sample Item:**

Depth of Knowledge: 1

Correct Answer: B

Which list shows the temperatures in order from the lowest to the highest?

**Midday Temperature**

Day	Temperature (°C)
Wednesday	-1
Thursday	0
Friday	6
Saturday	-3

- Ⓐ 0, -1, -3, 6  
Ⓑ -3, -1, 0, 6  
Ⓒ -1, 0, -3, 6

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

2. Number Operations
  - a. Estimate, add, or subtract decimal numbers with the same and different place values to solve problems (e.g.,  $3.72 + 1.4$ ,  $\$4.56 - \$2.12$ ).

**Item Specifications:**Emphasis:

- Add and subtract decimal numbers with the same place values.
- Demonstrate computational fluency with the operations of addition and subtraction on decimal representations of rational numbers.

Stimulus Attributes:

- Test items may include illustrations of the following: tables, graphs, base-10 blocks, cubes, and other counting manipulatives.

Format:

- Use estimation to determine solutions to real-world situations involving decimals
- Add and subtract decimal numbers with the same place values up to the hundredths place

Content Limits:

- Limit decimal numbers to the hundredths place.

Distractor Domain:

- Computational errors
- Error in placement of decimal point
- Rounding errors

**Modified Oklahoma C<sup>3</sup> 2.2a Sample Item:**

Depth of Knowledge: 2

Correct Answer: C

**Maggie had a bag of peanuts that weighed 2.84 pounds. She took some of the peanuts out of the bag. The bag then weighed 1.24 pounds.**

**What was the weight of the peanuts that Maggie took out of the bag?**

- Ⓐ** 4.08 pounds
- Ⓑ** 3.60 pounds
- Ⓒ** 1.60 pounds

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

2. Number Operations
  - b. Estimate, add, or subtract fractions (including mixed numbers) to solve problems using a variety of methods (e.g., use fraction strips, use area models, find a common denominator).

**Item Specifications:**Emphasis:

- Add and subtract common fractions to solve problems using a variety of methods.
- Demonstrate the ability to find or estimate sums and differences using common fractions and mixed numbers (with like and unlike denominators).

Stimulus Attributes:

- Test items may include the following: finding the LCD, fraction strips, counting manipulatives, two-dimensional figures, tables, graphs, charts, maps, scale drawings, data sets, and other diagrams.

Format:

- Use fractions and mixed numbers to solve problems involving sums and differences in mathematical and real-world contexts.
- Use graphs, grids, and other representations of fractions to solve problems involving sums and differences in mathematical and real-world contexts.
- Use estimation of fractions and mixed numbers in real-world applications.
- Items may include fractions with different denominators.
- Items may include conversion from improper fractions to mixed numbers.

Content Limits:

- Limit fractions to halves, thirds, fourths, fifths, sixths, eighths, tenths, or twelfths.
- Limit mathematical and real-world contexts to age-appropriate situations.

Distractor Domain:

- Common errors
- Incorrect procedures
- Computational errors
- Scaling errors in estimation
- Use of incorrect equivalencies

**Modified Oklahoma C<sup>3</sup> 2.2b Sample Item:**

Depth of Knowledge: 2

Correct Answer: C

On Saturday, Jenny completed  $\frac{1}{2}$  of a puzzle and Miranda completed  $\frac{1}{4}$  of it.

How much of the puzzle is left to complete?

- Ⓐ  $\frac{3}{4}$
- Ⓑ  $\frac{1}{3}$
- Ⓒ  $\frac{1}{4}$

**Oklahoma C<sup>3</sup> Standard:**

Standard 2: Number Sense and Operation —The student will use numbers and number relationships to acquire basic facts. The student will estimate and compute with whole numbers, fractions, and decimals.

**Oklahoma C<sup>3</sup> Objective:**

2. Number Operations
  - c. Estimate and find the quotient (with and without remainders) with two-digit divisors and a two- or three-digit dividend to solve problems.

**Item Specifications:**Emphasis:

- Demonstrate the ability to find or estimate quotients in real-world contexts.

Stimulus Attributes:

- Test items may include illustrations of the following: pictures, charts, tables, and counters.

Format:

- Calculate quotients with and without remainders to solve real-world problems.

Content Limits:

- Limit numbers to whole numbers.
- Limit divisors to up to two digits.
- Limit dividends to two or three digits.

Distractor Domain:

- Computational errors
- Algorithmic errors
- Regrouping errors
- Misinterpretation of remainder

**Modified Oklahoma C<sup>3</sup> 2.2c Sample Item:**

Depth of Knowledge: 3

Correct Answer: B

**Leticia has 38 grapes.**

- **She wants to give an equal number of grapes to 5 friends.**

**What is the maximum number of grapes she can give to each friend?**

- (A) 5**
- (B) 7**
- (C) 8**

**Oklahoma C<sup>3</sup> Standard:**

Standard 3: Geometry —The student will apply geometric properties and relationships.

**Oklahoma C<sup>3</sup> Objective:**

1. Compare and contrast the basic characteristics of circles and polygons (triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons).

**Item Specifications:**Emphasis:

- Communicate characteristics of geometric figures using appropriate geometric language.

Stimulus Attributes:

- Test items may include illustrations of the following: tables, graphs, protractors, two-dimensional geometric shapes, geoboards, and other geometric manipulatives.

Format:

- Identify, compare, and analyze attributes of two-dimensional figures.
- Classify two-dimensional figures by their attributes.
- Identify and use the concepts of similarity, congruence, and lines of symmetry.

Content Limits:

- Limit two-dimensional figures to angles, triangles, squares, rectangles, parallelograms, pentagons, hexagons, heptagons, octagons, and circles (no trapezoids or rhombuses, except in the context of similarity and congruence).

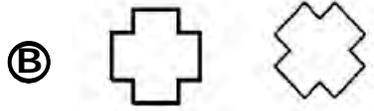
Distractor Domain:

- Failure to discriminate figures or figure characteristics

**Modified Oklahoma C<sup>3</sup> 3.1 Sample Item:**

Depth of Knowledge: 1

Correct Answer: B

**Which pair of shapes appears to be congruent?**

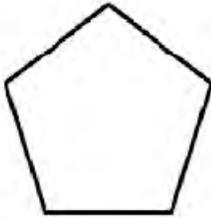
Depth of Knowledge: 1  
Correct Answer: B

**Which shape has 5 vertices?**

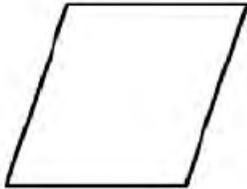
Ⓐ



Ⓑ



Ⓒ



Depth of Knowledge: 3

Correct Answer: A

**Which shapes will always be similar?**

- Ⓐ two circles
- Ⓑ two triangles
- Ⓒ two pentagons

**Oklahoma C<sup>3</sup> Standard:**

Standard 3: Geometry —The student will apply geometric properties and relationships.

**Oklahoma C<sup>3</sup> Objective:**

2. Classify angles (e.g., acute, right, obtuse, straight).

**Item Specifications:**Emphasis:

- Demonstrate the ability to find angle measures.

Stimulus Attributes:

- Test items may include illustrations of the following: angles, protractors, and other diagrams.
- Test items may include any of the following terms or phrases: acute, right, obtuse, straight, less than 90 degrees, equal to 90 degrees, or greater than 90 degrees.

Format:

- Identify and analyze angle measures in mathematical situations and in real-world context.
- Use comparisons to classify an angle.

Content Limits:

- Limit angle types to acute, right, obtuse, and straight.

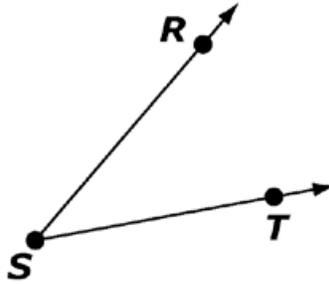
Distractor Domain:

- Misinterpretation of the concepts of acute, right, and obtuse angles
- Common errors
- Incorrect procedures
- Computational errors
- Incorrect use of rules or properties

**Modified Oklahoma C<sup>3</sup> 3.2 Sample Item:**

Depth of Knowledge: 1

Correct Answer: A

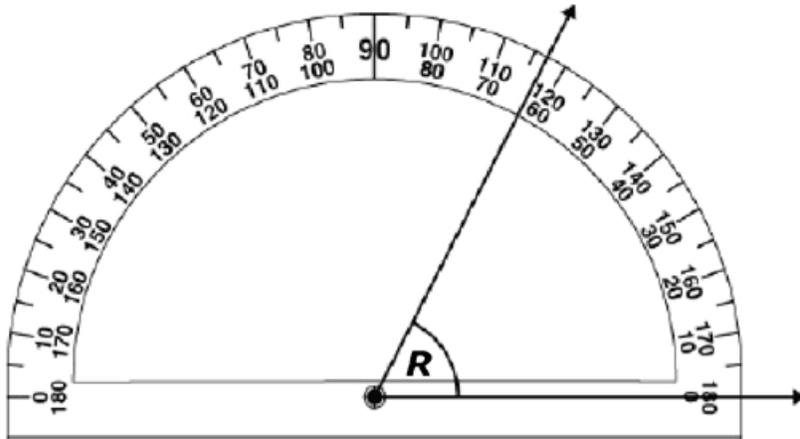
**Which statement describes angle  $\angle RST$ ?**

- Ⓐ less than  $90^\circ$
- Ⓑ equal to  $90^\circ$
- Ⓒ more than  $90^\circ$

Depth of Knowledge: 1

Correct Answer: A

Which term describes angle  $\angle R$ ?



- Ⓐ acute angle
- Ⓑ obtuse angle
- Ⓒ straight angle

Depth of Knowledge: 3

Correct Answer: C

**Which type of angle could be the sum of an acute and an obtuse angle?**

- Ⓐ acute
- Ⓑ right
- Ⓒ straight

**Oklahoma C<sup>3</sup> Standard:**

Standard 4: Measurement —The student will use appropriate units of measure to solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

1. Measurement
  - a. Compare, estimate, and determine the measurement of angles.

**Item Specifications:**Emphasis:

- Demonstrate the ability to find angle measures.

Stimulus Attributes:

- Test items may include illustrations of the following: angles, protractors, and other diagrams.

Format:

- Identify and analyze angle measures in mathematical situations and in real-world contexts.

Content Limits:

- Limit angle measures to whole numbers no greater than 180 degrees.

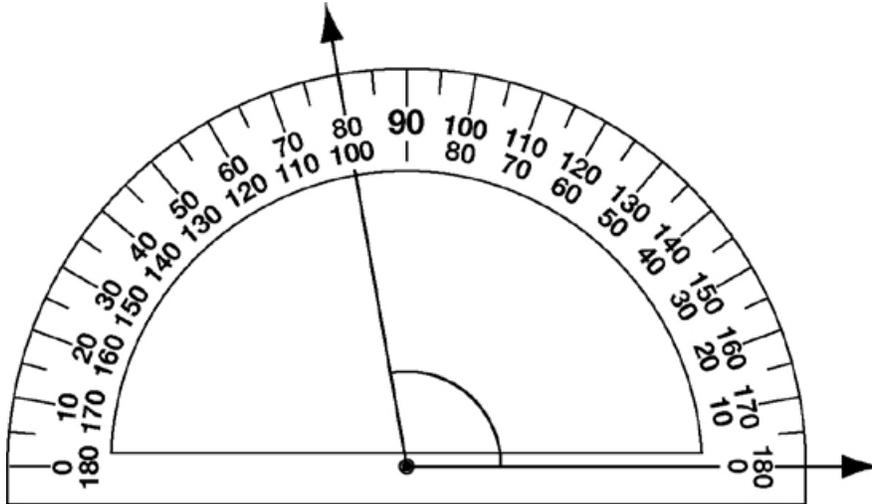
Distractor Domain:

- Common errors
- Incorrect procedures
- Computational errors
- Incorrect use of rules or properties
- Incorrect use of measurement instrument

**Modified Oklahoma C<sup>3</sup> 4.1a Sample Item:**

Depth of Knowledge: 1

Correct Answer: B

**How many degrees is this angle?**

- Ⓐ 80 degrees
- Ⓑ 100 degrees
- Ⓒ 180 degrees

**Oklahoma C<sup>3</sup> Standard:**

Standard 4: Measurement —The student will use appropriate units of measure to solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

1. Measurement
  - b. Develop and use the formula for perimeter and area of a square and a rectangle to solve application problems.

**Item Specifications:**Emphasis:

- Apply use of formulas or diagrams to calculate the perimeter and area of squares and rectangles.

Stimulus Attributes:

- Test items may include illustrations of the following: diagrams of rectangles or squares, dot grids, geoboards, and other geometric manipulatives.

Format:

- Use the given formula or grid to find the perimeter of a rectangle.
- Use the given formula or grid to find the area of a rectangle.
- Determine the number of square tiles that would be needed to build a rectangle of a certain area or perimeter .

Content Limits:

- Limit the figures to squares and rectangles.

Distractor Domain:

- Computational errors
- Inappropriate formulas

**Modified Oklahoma C<sup>3</sup> 4.1b Sample Item:**

Depth of Knowledge: 1

Correct Answer: C

**Tabletop**



**20 inches**

**40 inches**

What is the area ( $A$ ), in square inches, of the tabletop shown above?

$$A = lw$$

Ⓐ 60 square inches  
Ⓑ 400 square inches  
Ⓒ 800 square inches

**Oklahoma C<sup>3</sup> Standard:**

Standard 4: Measurement —The student will use appropriate units of measure to solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

1. Measurement
  - c. Convert basic measurements of volume, mass, and distance within the same system for metric and customary units (e.g., inches to feet, hours to minutes, centimeters to meters).

**Item Specifications:**Emphasis:

- Identify estimate, and translate basic measurements of volume, weight, and distance using customary and metric units.

Stimulus Attributes:

- Test items may include illustrations of the following: diagrams of two- and three-dimensional figures, maps, graphs, rulers, protractors, thermometers, beakers, or other measuring instruments.

Format:

- Identify appropriate measurements for objects or situations.
- Compute simple metric unit conversions.
- Compute simple customary unit conversions.

Content Limits:

- Limit conversion to inches to feet and feet to inches.
- Limit conversion to feet to yards and yards to feet.
- Limit conversion to minutes to hours and hours to minutes.
- Limit conversion to ounces to pounds and pounds to ounces.
- Limit conversion to pounds to tons and tons to pounds.
- Limit conversion to ounces to cups and cups to ounces.
- Limit conversion to cups to pints and pints to cups.
- Limit conversion to pints to quarts and quarts to pints.
- Limit conversion to quarts to gallons and gallons to quarts.
- Limit conversion to millimeters to centimeters and centimeters to millimeters.
- Limit conversion to centimeters to meters and meters to centimeters.
- Limit conversion to grams to kilograms and kilograms to grams.
- Limit conversion to milliliters to liters and liters to milliliters.
- Limit to one conversion per item.

Distractor Domain:

- Failure to discriminate between measurement units
- Inappropriate procedure or incorrect value in conversion
- Computational errors

**Modified Oklahoma C<sup>3</sup> 4.1c Sample Item:**

Depth of Knowledge: 1

Correct Answer: B

**Kailee ran 5,000 centimeters from school to the bus stop.**

**How many meters are equivalent to 5,000 centimeters?**

- (A)** 5 meters
- (B)** 50 meters
- (C)** 5,000 meters

**Oklahoma C<sup>3</sup> Standard:**

Standard 4: Measurement —The student will use appropriate units of measure to solve problems in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

2. Money: Solve a variety of problems involving money.

**Item Specifications:****Emphasis:**

- Apply calculating skills to solve problems involving money.

**Stimulus Attributes:**

- Test items may include illustrations of the following: pictures, tables, and charts.

**Format:**

- Solve real-world problems involving money.

**Content Limits:**

- Limit dollar amounts to hundreds place.
- Limit operations to addition and subtraction.

**Distractor Domain:**

- Computational errors
- Select incorrect operation

**Modified Oklahoma C<sup>3</sup> 4.2 Sample Item:**

Depth of Knowledge: 2

Correct Answer: C

**A television remote control cost \$9.56.**

- **A pack of batteries for the remote control costs \$5.38.**
- **Both prices include tax.**

**What is the total cost for the remote control and the pack of batteries?**

- Ⓐ \$4.18
- Ⓑ \$14.56
- Ⓒ \$14.94

Depth of Knowledge: 2

Correct Answer: A

**Mr. Miller buys a pair of pants and a jacket.**

- **The pants cost \$25 including tax.**
- **The jacket costs \$38 including tax.**
- **Mr. Miller gives the clerk \$80.**

**How much change should Mr. Miller receive?**

- Ⓐ \$17
- Ⓑ \$27
- Ⓒ \$42

Depth of Knowledge: 3

Correct Answer: B

This table shows the prices, including tax, of items sold at a book fair.

**Book Fair**

Item	Price
stickers	\$0.25
pencil	\$0.35
poster	\$1.05
gel pen	\$1.60
book	\$3.00

- Luna has \$7.75.
- She buys 3 posters and 1 book.

What is the greatest number of pencils Luna can buy after paying for the 3 posters and the book?

- Ⓐ 5 pencils
- Ⓑ 4 pencils
- Ⓒ 2 pencils

**Oklahoma C<sup>3</sup> Standard:**

Standard 5: Data Analysis —The student will use data analysis, statistics, and probability to interpret data in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

1. Data Analysis
  - a. Compare and translate displays of data and justify the selection of the type of table or graph (e.g., charts, tables, bar graphs, pictographs, line graphs, circle graphs, Venn diagrams).

**Item Specifications:**Emphasis:

- Interpret, analyze, and organize data from tables or graphs to solve problems.
- Select the most appropriate type of table or graph.
- Select and organize appropriate representations of data.
- Compare between displays of data.
- Demonstrate knowledge of data representation through comparison.

Stimulus Attributes:

- Test items may include tables, graphs, charts, and Venn diagrams.

Format:

- Translate between representations of data.
- Compare how representations of data support inferences and predictions.
- Select appropriate representations of data, such as tables and bar, circle, or line graphs.

Content Limits:

- Limit graphs to charts, tables, pictographs, line graphs, circle graphs, bar graphs, and simple Venn diagrams.
- Limit pictograph scales to multiples of 10 through 100.
- Limit scales such that all answer choices have identical increments.
- Limit to five categories of data.
- Limit circle graphs to use of predetermined percents or to no percents on the circle graph (do not require determining percents).

Distractor Domain:

- Misreading of labels or keys
- Misinterpretation of data
- Unsupportable conclusion
- Representations of data not appropriate (e.g., circle graph used to show progress over time)

**Modified Oklahoma C<sup>3</sup> 5.1a Sample Item:**

Depth of Knowledge: 2

Correct Answer: B

**Favorite Sports**

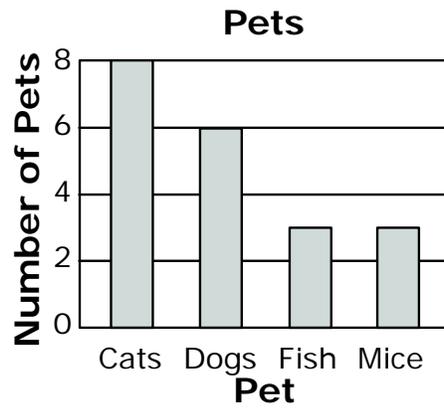
Sport	Percent of 5th-Graders
baseball	23%
basketball	20%
football	40%
soccer	17%

**Which type of graph best displays the data in the chart?**

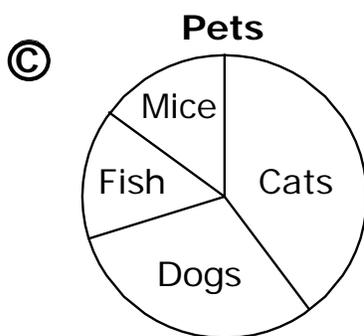
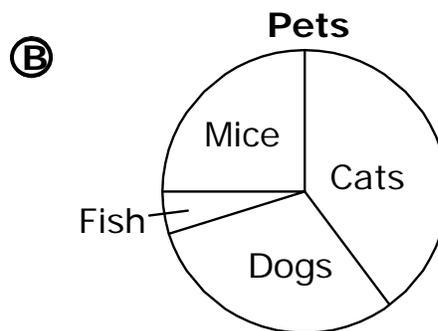
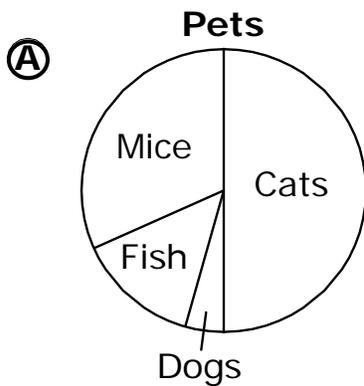
- Ⓐ bar graph
- Ⓑ circle graph
- Ⓒ line graph

Depth of Knowledge: 2  
 Correct Answer: C

Stan wants to change the bar graph of the pets to a circle graph.



Which circle graph best represents the information in the bar graph?



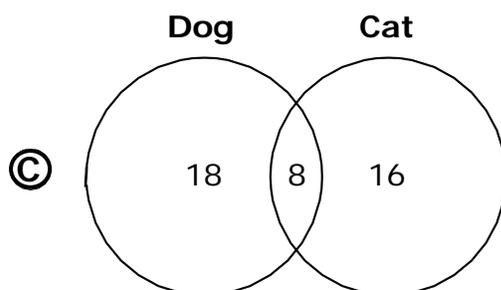
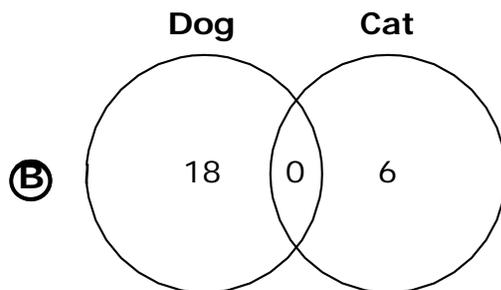
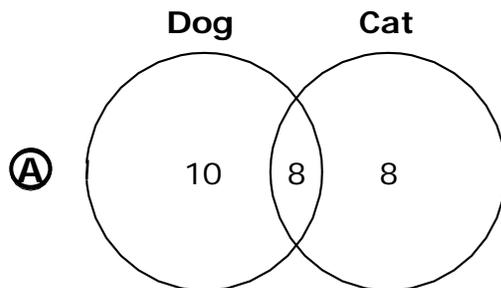
Depth of Knowledge: 3

Correct Answer: A

James surveyed 26 of his classmates who own at least one dog or one cat. Some of his classmates own both animals. The table shows his results.

Pets	Number of Classmates
Who Own a Dog	18
Who Own a Cat	16

Which Venn diagram matches this information?



**Oklahoma C<sup>3</sup> Standard:**

Standard 5: Data Analysis —The student will use data analysis, statistics, and probability to interpret data in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

2. Probability
  - a. Determine the probability of events occurring in familiar contexts or experiments and express probabilities as fractions from zero to one (e.g., find the fractional probability of an event given a biased spinner).

**Item Specifications:**Emphasis:

- Determine the probability of events occurring in familiar contexts and express probabilities as fractions.
- Emphasize pictorial representation of everyday objects.

Stimulus Attributes:

- Test items may include illustrations of the following: spinners, tables, graphs, charts, or other everyday objects.

Format:

- Predict the probability of outcomes of simple experiments.
- Fractions may be in simplest form.

Content Limits:

- Limit to simple probability experiments (e.g., one spinner, one coin, etc.).

Distractor Domain:

- Computational errors
- Inappropriate procedures

**Modified Oklahoma C<sup>3</sup> 5.2a Sample Item:**

Depth of Knowledge: 2

Correct Answer: C

**Kate rolls a fair, 6-sided number cube with the numbers 1 through 6 on the faces.**

**What is the probability that she rolls an even number?**

Ⓐ  $\frac{1}{6}$

Ⓑ  $\frac{2}{6}$

Ⓒ  $\frac{3}{6}$

Depth of Knowledge: 3

Correct Answer: B

**There are only green and red marbles in a bag.**

- **All of the marbles are the same size.**
- **The probability of drawing a green marble in the first**

**draw is  $\frac{10}{27}$ .**

**What is the least number of red marbles in the bag?**

- Ⓐ 10
- Ⓑ 17
- Ⓒ 37

**Oklahoma C<sup>3</sup> Standard:**

Standard 5: Data Analysis —The student will use data analysis, statistics, and probability to interpret data in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

2. Probability
  - b. Use the fundamental counting principle on sets with up to four items to determine the number of possible combinations (e.g., create a tree diagram to see possible combinations).

**Item Specifications:**Emphasis:

- Apply the knowledge of simple probability to describe the outcome of different arrangements and combinations of sets of up to four items.

Stimulus Attributes:

- Test items may include the following, but are not limited to: spinners, tables, lists, graphs, pictures, and charts. Emphasize pictorial representations of everyday objects.

Format:

- Describe the different possible outcomes of up to four different items.
- Answers may include lists of items or numerical representations of possible combinations.

Content Limits:

- Limit Fundamental Counting Principle to using up to four different items in each of up to two different categories.

Distractor Domain:

- Combination error
- Misinterpretation of stimulus

**Modified Oklahoma C<sup>3</sup> 5.2b Sample Item:**

Depth of Knowledge: 2

Correct Answer: A

Cake Flavor	Icing Type
Chocolate	Maple
Vanilla	White
Strawberry	Yellow

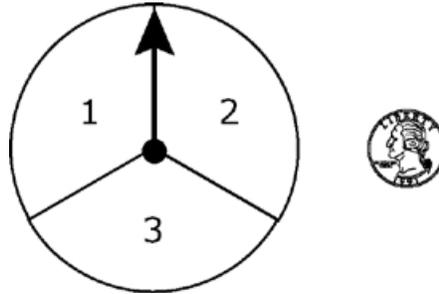
**How many different combinations of 1 cake flavor and 1 icing type can Martin use to make a cake?**

- Ⓐ** 9
- Ⓑ** 6
- Ⓒ** 3

Depth of Knowledge: 2

Correct Answer: C

**In a game, a player spins the spinner once and flips the coin once.**



**How many different combinations are possible?**

- (A)** 3
- (B)** 5
- (C)** 6

**Oklahoma C<sup>3</sup> Standard:**

Standard 5: Data Analysis —The student will use data analysis, statistics, and probability to interpret data in a variety of contexts.

**Oklahoma C<sup>3</sup> Objective:**

3. Central Tendency: Determine the range (spread), mode (most often), and median (middle) of a set of data.

**Item Specifications:**Emphasis:

- Demonstrate the ability to find the range, median, and mode for a set of data containing up to 10 elements.
- Emphasize creativity using real-life situations and everyday objects.

Stimulus Attributes:

- Test items may include illustrations of the following: data sets, charts, tables, bar graphs, pictographs, frequency charts.

Format:

- Given a set of data the student will determine range, mode, or median.

Content Limits:

- Limit data sets to numerical data.
- Limit data sets to 10 pieces of data.
- Limit to descriptor of range, mode, and median.
- Limit median items to an odd number of pieces of data.
- Limit bar graphs, pictographs, and frequency charts to five categories of data.

Distractor Domain:

- Misinterpretation of data
- Miscalculation
- Incorrect choice of measure

**Modified Oklahoma C<sup>3</sup> 5.3 Sample Item:**

Depth of Knowledge: 1

Correct Answer: A

24, 13, 39, 31, 46, 64, 13, 46, 13

**What is the mode for this set of data?**

- Ⓐ 13
- Ⓑ 31
- Ⓒ 46

Depth of Knowledge: 2

Correct Answer: B

The table shows the number of school newspapers sold by students last week.

**Newspapers Sold**

Day	Number of Newspapers
Monday	50
Tuesday	20
Wednesday	50
Thursday	20
Friday	60

What is the range for the number of newspapers sold by students last week?

- Ⓐ 30
- Ⓑ 40
- Ⓒ 50

Depth of Knowledge: 3

Correct Answer: A

The median for this set of data is 15.

23, 12, 11, 20, 16, 15, \_\_\_?

Which number could be the missing number in this set of data?

- Ⓐ 14
- Ⓑ 19
- Ⓒ 26