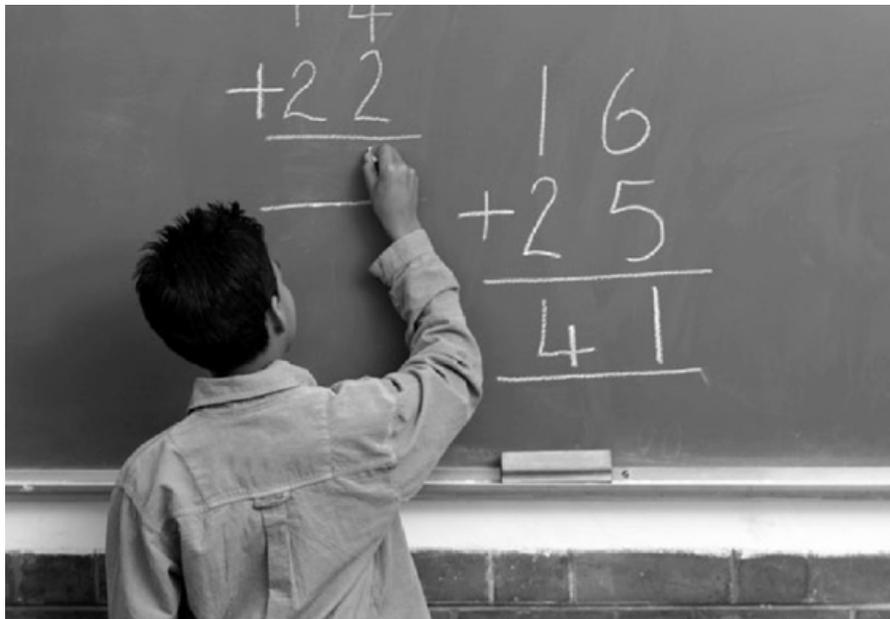


OKLAHOMA SCHOOL TESTING PROGRAM
OKLAHOMA MODIFIED ALTERNATE
ASSESSMENT PROGRAM

Test and Item Specifications

Mathematics
Grade 4



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 fourth-grade students' level of proficiency in mathematics. On the Grade 4 Mathematics Test, students are required to respond to a variety of items linked to the fourth-grade mathematics content standards identified in *Oklahoma College, Career, and Citizen Ready (C³) 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 *Oklahoma C³ Standards*.

Oklahoma C³ Content Standards and Objectives
Algebraic Reasoning: Patterns and Relationships <ul style="list-style-type: none"> • Algebra Patterns (1.1) • Equations (1.2) • Number Properties (1.3)
Number Sense and Operation <ul style="list-style-type: none"> • Number Sense (2.1) • Number Operations (2.2)
Geometry <ul style="list-style-type: none"> • Lines (3.1) • Angles (3.2) • Polygons (3.3) • Transformation (3.4)
Measurement <ul style="list-style-type: none"> • Measurement (4.1) • Time and Temperature (4.2) • Money (4.3)
Data Analysis <ul style="list-style-type: none"> • Data Analysis (5.1) • Probability (5.2) • Central Tendency (5.3)

General Considerations

It is necessary to create test items that are reliable, fair, and targeted to the *Oklahoma C³ 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 and objectives listed in the Test Blueprint for fourth-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 fourth-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, ethnicity, disability, culture, or religion; nor do items contain elements that are offensive to any such groups.
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 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.
- Eliminate answer choices that give students the option of making no changes to the item.
- 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. removing 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.

Mathematics Items - continued

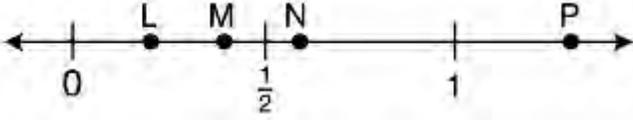
- Delete extraneous information including irrelevant material and unnecessary words in items or graphics.
- Simplify complex sentence structure and vocabulary in item and answer choices without eliminating math vocabulary.
- Change passive voice to active voice when appropriate.
- Add precise language 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 5 and 6.

OCCT Oklahoma C³ 2.1b.ii Sample Item:

Depth of Knowledge: 2

Correct Answer: B



A number line is shown with arrows at both ends. It has tick marks at 0, $\frac{1}{2}$, and 1. Point L is located between 0 and $\frac{1}{2}$. Point M is located between $\frac{1}{2}$ and 1. Point N is located between $\frac{1}{2}$ and 1, to the right of M. Point P is located to the right of 1.

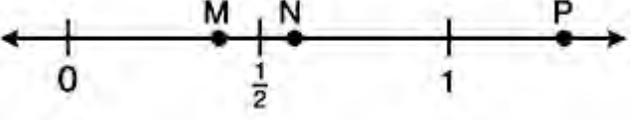
Which point best describes the location of 0.4 on the number line?

(A) L
(B) M
(C) N
(D) P

Modified OMAAP Oklahoma C³ 2.1b.ii Sample Item:

Depth of Knowledge: 2

Correct Answer: A



A number line is shown with arrows at both ends. It has tick marks at 0, $\frac{1}{2}$, and 1. Point M is located between 0 and $\frac{1}{2}$. Point N is located between $\frac{1}{2}$ and 1. Point P is located to the right of 1.

Which point describes the location of $\frac{2}{5}$ on the number line?

(A) M
(B) N
(C) P

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 reading level one grade level below a fourth-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 C³ Standards

Criteria for Aligning the Test with the Oklahoma C³ Standards and Objectives	
1. Categorical Concurrence	The test is constructed so that there are at least six items measuring each <i>OK C³</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.
2. Depth of Knowledge Consistency	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>OK C³</i> objective.
3. Range of Knowledge Correspondence	The test is constructed so that at least 50% of the objectives for a <i>OK C³</i> standard have at least one corresponding assessment item.
4. Balance of Representation	The test is constructed according to the Test Blueprint, which reflects the degree of representation given on the test to each <i>OK C³</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.
5. Source of Challenge	Each test item is constructed in such a way that the major cognitive demand comes directly from the targeted <i>OK C³</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 4 Mathematics
Test Blueprint
2012–2013 School Year

The Test Blueprint reflects the degree to which each *Oklahoma C³* 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 C³</i> Standards & Objectives	Ideal Number of Items for Alignment to <i>Oklahoma C³</i> *	Ideal ¹ Percentage of Items
Algebraic Reasoning: Patterns and Relationships	6–7	14%–16%
Algebra Patterns (1.1)	1–3	
Equations (1.2)	1–3	
Number Properties (1.3)	1–3	
Number Sense and Operation	14–15	33%–35%
Number Sense (2.1)	6–7	
Number Operations (2.2)	7–8	
Geometry	7–8	16%–19%
Lines (3.1)	1–2	
Angles (3.2)	1–2	
Polygons (3.3)	1–2	
Transformations (3.4)	1–2	
Measurement	7–8	16%–19%
Measurement (4.1)	2–4	
Time and Temperature (4.2)	1–3	
Money (4.3)	1–3	
Data Analysis	6–7	14%–16%
Data Analysis (5.1)	1–3	
Probability (5.2)	1–3	
Central Tendency (5.3)	1–3	
Total Test	40–43²	100%

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

² 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 is 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 C³* standard, item specifications are organized under the following headings:

- *Oklahoma C³* Standard and *Oklahoma C³* Objective
- Item Specifications
 - a. Emphasis
 - b. Stimulus Attributes
 - c. Format
 - d. Content Limits
 - e. Distractor Domain
 - f. Sample Test Items

The headings “*Oklahoma C³* Standard” and “*Oklahoma C³* Objective” state the standard and objective being measured as found in the fourth-grade mathematics section of the *Oklahoma C³* 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 non-routine problems.

Depth of Knowledge Assessed by Test Items

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

Depth of Knowledge	Percentage of Items
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.

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 every day 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, 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 STANDARDS (Oklahoma C³)**MATHEMATICS****Grade 4****Mathematics**

Asterisks (*) have been used to identify standards and objectives that are not assessed by the Oklahoma School Testing Program (OSTP) in the original *Oklahoma C³* 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 a variety of problem-solving approaches to create, extend, and analyze patterns.

1. Discover, describe, extend, and create a wide variety of patterns using tables, graphs, rules, and verbal models (e.g., determine the rule from a table or “function machine,” extend visual and number patterns).
2. Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.
3. Recognize and apply the associative property of multiplication (e.g., $6 \cdot (2 \cdot 3) = (6 \cdot 2) \cdot 3$)

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 and fractions.

1. Number Sense
 - a. Place Value
 - i. Apply the concept of place value through six-digits (e.g., write numbers in expanded form).
 - ii. Model, read, write, and rename decimal numbers to the hundredths (e.g., money, numerals to words).
 - b. Whole Number, Fraction, and Decimal
 - i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).

- ii. Use 0, $\frac{1}{2}$, and 1, or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).
- iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical or pictorial models. (e.g., egg cartons, fraction strips, circles, and squares).
- iv. *Explore and connect negative numbers using real world situations (e.g., owing money, temperature, measuring elevations above and below sea level).

2. Number Operations

- a. Estimate and find the product up to three–digit by three–digit using a variety of strategies to solve application problems.
- b. Division Concepts and Fact Families
 - i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$).
 - ii. Estimate the quotient with one–and two–digit divisors and a two–or three–digit dividend to solve application problems.
 - iii. Find the quotient (with and without remainders) with one–digit divisors and a two– or three–digit dividend to solve application problems.

Standard 3: Geometry—The student will use geometric properties and relationships to analyze shapes.

1. Identify, draw, and construct models of intersecting, parallel, and perpendicular lines.
2. Identify and compare angles equal to, less than, or greater than 90 degrees (e.g., use right angles to determine the approximate size of other angles).
3. Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons, and octagons to solve problems.
4. Describe the effects on two–dimensional objects when they slide (translate), flip (reflect), and turn (rotate) (e.g., tessellations).

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

1. Measurement
 - a. Estimate the measures of a variety of objects using customary units.

- b. Establish benchmarks for metric units and estimate the measures of a variety of objects (e.g., mass: the mass of a raisin is about 1 gram, length: the width of a finger is about 1 centimeter).
 - c. Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.
 - d. Develop and use the concept of area of different shapes using grids to solve problems.
2. Time and Temperature
 - a. Solved elapsed time problems.
 - b. Read thermometers using different intervals (intervals of 1, 2, or 5) and solve for temperature change.
 3. Money: Determine the correct amount of change when a purchase is made with a twenty-dollar bill.

Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.

1. Data Analysis
 - a. Read and interpret data displays such as tallies, tables, charts, and graphs and use the observations to pose and answer questions (e.g., choose a table in social studies of population data and write problems).
 - b. Collect, organize, and record data in tables and graphs (e.g., line graphs (plots), bar graphs, pictographs).
2. Probability: Predict the probability of outcomes of simple experiments using words such as certain, equally likely, impossible (e.g., coins, number cubes, spinners).
3. Central Tendency: Determine the median (middle) and the mode (most often) of a set of data.

Oklahoma C³ Standard:

Standard 1: Algebraic Reasoning: Patterns and Relationships—The student will use a variety of problem-solving approaches to create, extend, and analyze patterns.

Oklahoma C³ Objective:

1. Discover, describe, extend, and create a wide variety of patterns using tables, graphs, rules, and verbal models (e.g., determine the rule from a table or “function machine,” extend visual and number patterns).

Item Specifications:Emphasis:

- Discover, describe, and extend a variety of patterns using tables, graphs, rules, and verbal models.
- Extend patterns using a variety of stimuli.

Stimulus Attributes:

- Test items may include illustrations of the following: graphs, tables, verbal models, function machines, and pictures.

Format:

- Determine a pattern by using a rule.
- Extend a pattern from a table, graph, rule, or verbal model.

Content Limits:

- Limit items to whole numbers.
- Limit rules to one operation.
- Limit operations to addition, subtraction, or multiplication using basic facts.
- Limit extending patterns to the next element.

Distractor Domain:

- Computational error
- Inappropriate operation selected
- Misrepresentation of pattern or rule

Modified Oklahoma C³ 1.1a Sample Item:

Depth of Knowledge: 1

Correct Answer: B

Sam used the same subtraction rule to find each number shown in the box.

- **Sam plans to continue the pattern.**

31, 29, 27, 25, 23, ?

What should Sam write for the missing number in the box?

- (A)** 22
- (B)** 21
- (C)** 20

Depth of Knowledge: 1

Correct Answer: A

Travis used a rule to make this number pattern.

2, 7, 12, 17

Which rule could Travis have used for the pattern?

- (A)** add 5
- (B)** add 3
- (C)** multiply by 3

Depth of Knowledge: 2

Correct Answer: A

Robert's Numbers	Function Machine's Numbers
1	4
4	7
7	10
11	14
12	15

Which rule could the function machine have used to change Robert's numbers?

- (A) add 3
- (B) subtract 1
- (C) multiply by 4

Oklahoma C³ Standard:

Standard 1: Algebraic Reasoning: Patterns and Relationships—The student will use a variety of problem-solving approaches to create, extend, and analyze patterns.

Oklahoma C³ Objective:

2. Find variables in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, and division with whole numbers.

Item Specifications:Emphasis:

- Solve simple open sentences involving addition, subtraction, multiplication, or division with whole numbers (with a variable, e.g., $a + 17 = 23$).
- Determine the value of an unknown to make a math sentence true.

Stimulus Attributes:

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

Format:

- Solve a math sentence involving a single operation for an unknown quantity.

Content Limits:

- Limit numbers to two-digit whole numbers.
- Limit sentences to one operation.
- Limit operations to addition, subtraction, multiplication, or division.
- Limit to open sentences with the variable placed first.

Distractor Domain:

- Perform incorrect operation
- Computational errors

Modified Oklahoma C³ 1.2 Sample Item:

Depth of Knowledge: 2

Correct Answer: C

$$x - 11 = 34$$

What value of x makes this equation true?

- (A)** 23
- (B)** 25
- (C)** 45

Depth of Knowledge: 2

Correct Answer: A

Toby has 18 trading cards.

- **The equation shows the number of cards Toby needs to buy, n , to have a total of 47 trading cards.**

$$n + 18 = 47$$

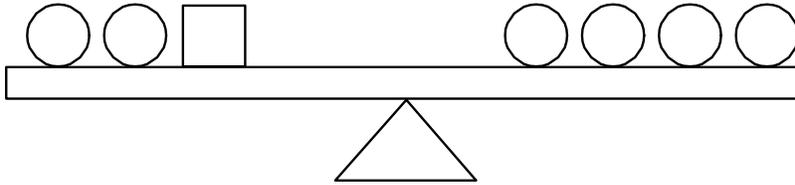
What value of n makes this equation true?

- (A)** 29
- (B)** 31
- (C)** 65

Depth of Knowledge: 3

Correct Answer: B

This scale is balanced.



How many circles equal 1 square?

- (A)** 4 circles
- (B)** 2 circles
- (C)** 1 circle

Oklahoma C³ Standard:

Standard 1: Algebraic Reasoning: Patterns and Relationships—The student will use a variety of problem-solving approaches to create, extend, and analyze patterns.

Oklahoma C³ Objective:

3. Recognize and apply the associative property of multiplication (e.g., $6 \cdot (2 \cdot 3) = (6 \cdot 2) \cdot 3$).

Item Specifications:Emphasis:

- Apply the associative property of multiplication 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 associative property of multiplication and use it to compute with whole numbers.

Content Limits:

- Limit operations to multiplication.
- Limit numbers to up to two-digit whole numbers.
- Limit situations to using the associative property of multiplication.

Distractor Domain:

- Common errors
- Incorrect procedures
- Computational errors
- Incorrect use of property
- Failure to generalize the appropriate property

Modified Oklahoma C³ 1.3 Sample Item:

Depth of Knowledge: 2

Correct Answer: C

Which equation shows the associative property of multiplication?

- (A)** $(8 \times 2) \times 5 = 16 \times 5$
(B) $(3 \times 4) \times 5 = 5 \times (4 \times 3)$
(C) $6 \times (5 \times 2) = (6 \times 5) \times 2$

Depth of Knowledge: 2

Correct Answer: A

Which expression is equal to $(9 \times 7) \times 2$?

- (A)** $9 \times (7 \times 2)$
(B) $(9 + 7) \times 2$
(C) $9 + (7 + 2)$

Depth of Knowledge: 3

Correct Answer: B

$$(10 \cdot 8) \cdot 4 = 10 \cdot (n \cdot 4)$$

What value of n makes the equation true?

- (A)** 4
(B) 8
(C) 10

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

1. Number Sense
 - a. Place Value
 - i. Apply the concept of place value through six–digits (e.g., write numbers in expanded form).

Item Specifications:Emphasis:

- Apply the concept of place value through six– digits.
- Use the concept of place value to determine the value of numerals.

Stimulus Attributes:

- Test items may include illustrations of the following: base–10 blocks, place value mats, and pictures.

Format:

- Determine the place value of a digit in a number.
- Determine the digit in a number having a given place value

Content Limits:

- Limit numbers to whole numbers.
- Limit numbers to six–digits.

Distractor Domain:

- Incorrect identification of a digit
- Incorrect identification of place value

Modified Oklahoma C³ 2.1a.i Sample Item:

Depth of Knowledge: 1

Correct Answer: C

Bridget's uncle was born in the year 1935.**Which digit is in the hundreds place?**

- (A)** 1
- (B)** 3
- (C)** 9

Depth of Knowledge: 1

Correct Answer: C

A male killer whale can have a mass of 5,442 kilograms.**What is 5,442 written in expanded form?**

- (A)** $50,000 + 400 + 42$
- (B)** $5,000 + 440 + 40 + 2$
- (C)** $5,000 + 400 + 40 + 2$

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

1. Number Sense
 - a. Place Value
 - ii. Model, read, write, and rename decimal numbers to the hundredths (e.g., money, numerals to words).

Item Specifications:Emphasis:

- Read, write, and rename whole numbers through four– digits and decimal numbers to the hundredths.
- Translate among different representations of numbers.

Stimulus Attributes:

- Test items may include illustrations of the following: pictures and diagrams.

Format:

- Read decimals as words.
- Read whole numbers through four–digits as words.
- Write numbers as words
- Write numbers as numerals
- Recognize decimal amounts as money amounts.

Content Limits:

- Limit decimals to include the hundredths place.
- Limit whole numbers through the thousands place.

Distractor Domain:

- Misrepresentation of numbers
- Error in translation

Modified Oklahoma C³ 2.1a.ii Sample Item:

Depth of Knowledge: 1

Correct Answer: B

The price of a CD player is thirty-nine dollars and ninety-five cents.

What is the price of the CD player written as a number?

- (A)** \$3.95
- (B)** \$39.95
- (C)** \$309.50

Depth of Knowledge: 2

Correct Answer: B

Which number is five hundred two and seventy-one hundredths?

- (A)** 527.10
- (B)** 502.71
- (C)** 52.71

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

1. Number Sense
 - b. Whole Number, Fraction, and Decimal
 - i. Compare and order whole numbers and decimals to the hundredths place (e.g., pictures of shaded regions of two-dimensional figures, use $>$, $<$, $=$ symbols).

Item Specifications:**Emphasis:**

- Compare and order whole numbers and decimal numbers.

Stimulus Attributes:

- Test items may include illustrations of the following: rectangles, pictures, egg cartons, and number lines.

Format:

- Determine the relationship among whole numbers as greater than ($>$), less than ($<$), or equal to ($=$).
- Identify the number with the greatest value.
- Identify the number with the least value.
- Identify numbers that are of equal value.

Content Limits:

- Limit whole numbers to four digits.
- Limit to three numbers to compare.
- Limit decimals to the tenths place.

Distractor Domain:

- Misinterpretation of place value

Modified P Oklahoma C³2.1b.i Sample Item:

Depth of Knowledge: 2

Correct Answer: C

Which number sentence is true?

- (A)** $907 > 970$
- (B)** $7,800 = 780$
- (C)** $3,406 < 3,511$

Oklahoma C³ Standard:

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

PASS Objective:

1. Number Sense
 - b. Whole Number, Fraction and Decimal
 - ii. Use 0, $\frac{1}{2}$, and 1, or 0, 0.5, and 1 as benchmarks and place additional fractions, decimals, and percents on a number line (e.g., $\frac{1}{3}$, $\frac{3}{4}$, 0.7, 0.4, 62%, 12%).

Item Specifications:Emphasis:

- Use 0, $\frac{1}{2}$, and 1 as benchmarks to place other fractions on a number line.
- Estimate using these benchmarks.

Stimulus Attributes:

- Test items may include illustrations of the following: pictures, models, fraction strips, and number lines.

Format:

- Determine which two benchmarks a given number lies between

Content Limits:

- Limit to common fractions (halves, thirds, fourths, fifths, eighths, and tenths).
- Limit to non-repeating decimals through the tenths place.
- Limit comparison to three objects.
- Limit items to values between 0 and 1.

Distractor Domain:

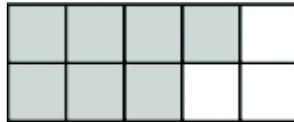
- Conceptual errors in number sense
- Rounding and estimation errors

Modified *Oklahoma C³ 2.1.b.ii* Sample Item:

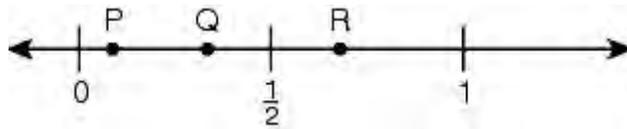
Depth of Knowledge: 2

Correct Answer: C

The shaded part of the large rectangle represents a fraction.



Which point on the number line best shows the location of the fraction that represents the shaded part of the rectangle?



- Ⓐ P
- Ⓑ Q
- Ⓒ R

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

1. Number Sense
 - b. Whole Number, Fraction, and Decimal
 - iii. Compare, add, or subtract fractional parts (fractions with like denominators and decimals) using physical and pictorial models (e.g., egg cartons, fraction strips, circles, and squares).

Item Specifications:**Emphasis:**

- Create physical and pictorial models of equivalent and nonequivalent fractional parts to be compared.
- Compare, add, or subtract fractions using concrete models.

Stimulus Attributes:

- Test items may include illustrations of the following: pictures, egg cartons, fraction strips, circles, rectangles, and counters.

Format:

- Use models to compare fractions with like or unlike denominators.
- Use models to calculate the sum or difference of fractions.

Content Limits:

- Limit items to two fractions.
- Limit to common fractions (halves, thirds, fourths, fifths, eighths, and tenths).
- Limit operations to simple addition or subtraction using models with the same denominator.

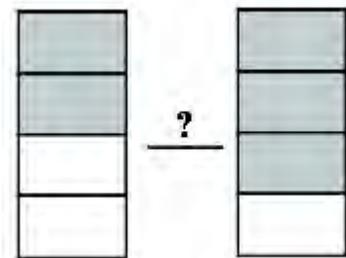
Distractor Domain:

- Representational error
- Misinterpretation of numerator and denominator

Modified Oklahoma C³ 2.1b.iii Sample Item:

Depth of Knowledge: 1

Correct Answer: A

**Which symbol makes the statement true?**

- (A)** $<$
- (B)** $>$
- (C)** $=$

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

2. Number Operation
 - a. Estimate and find the product of up to three–digit by three–digit using a variety of strategies to solve application problems.

Item Specifications:Emphasis:

- Estimate and find the product of up to three–digit numbers to solve application problems.
- Solve application problems that require the estimation or calculation of products of up to three–digit numbers.

Stimulus Attributes:

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

Format:

- Solve an application problem by estimating the product of three–digit numbers.
- Solve an application problem by calculating the product of no greater than a two–digit number multiplied by a two–digit number.

Content Limits:

- Limit items to whole numbers.
- Limit calculation items to no greater than two–digit by two–digit multiplication.
- Limit items with three–digit by three–digit multiplication to estimation.

Distractor Domain:

- Computational errors
- Rounding errors
- Regrouping errors

Modified Oklahoma C³ 2.2a Sample Item:

Depth of Knowledge: 2

Correct Answer: C

**Debbie rode her bicycle 12 miles every day for one month.
There were 31 days in the month.**

How many miles did she ride?

- (A)** 43 miles
- (B)** 362 miles
- (C)** 372 miles

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

2. Number Operation
 - b. Division Concepts and Fact Families
 - i. Demonstrate fluency (memorize and apply) with basic division facts up to $144 \div 12$ and the associated multiplication facts (e.g., $144 \div 12 = 12$ and $12 \times 12 = 144$).

Item Specifications:Emphasis:

- Show knowledge of basic division facts and identify their relationships to a fact family.

Stimulus Attributes:

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

Format:

- Identify the fact family related to a division fact.
- Calculate the quotient of two whole numbers.
- Identify the missing fact from a fact family.

Content Limits:

- Limit items to division with no remainder.
- Limit divisors to whole numbers up to 12.

Distractor Domain:

- Computational errors
- Misidentification of related facts

Modified Oklahoma C³ 2.2b.i Sample Item:

Depth of Knowledge: 1

Correct Answer: A

The fact family below is missing a fact.

$$3 \times 8 = 24$$

$$8 \times 3 = 24$$

$$24 \div 8 = 3$$

?

Which is the missing fact?

- (A)** $24 \div 3 = 8$
- (B)** $24 \div 4 = 6$
- (C)** $24 + 3 = 27$

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

2. Number Sense
 - b. Division Concepts and Fact Families
 - ii. Estimate the quotient with one– and two–digit divisors and a two– or three–digit dividend to solve application problems.

Item Specifications:Emphasis:

- Estimate the quotient with one– and two–digit divisors and a two–or three–digit dividend to solve application problems.
- Apply knowledge of division to estimate quotients to solve problems.

Stimulus Attributes:

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

Format:

- Estimate quotients to solve real-world problems.

Content Limits:

- Limit numbers to whole numbers.
- Limit to one– and two–digit divisors and two– or three–digit dividends.

Distractor Domain:

- Computational errors
- Rounding errors

Modified Oklahoma C³ 2.2b.ii Sample Item:

Depth of Knowledge: 2

Correct Answer: C

A company spent \$275 to buy 20 tickets to a music festival.

What was the approximate cost of each ticket?

- (A)** \$10
- (B)** \$12
- (C)** \$14

Oklahoma C³ Standard:

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

Oklahoma C³ Objective:

2. Number Sense
 - b. Division Concepts and Fact Families
 - iii. Find the quotient (with and without remainders) with one–digit divisors and a two– or three–digit dividend to solve application problems.

Item Specifications:Emphasis:

- Find the quotient (with and without remainders) with a one–digit divisor and a two–digit dividend to solve application problems.
- Apply knowledge of division to calculate quotients to solve problems.

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 to one–digit divisor and two–digit dividend with or without a remainder.
- Limit to one–digit divisor and three–digit dividend without a remainder.

Distractor Domain:

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

Modified Oklahoma C³ 2.2b.iii Sample Item:

Depth of Knowledge: 2

Correct Answer: A

Jay cooked 12 eggs.

- **The eggs are shared equally among 4 people.**

How many eggs did each person get?

- Ⓐ 3 eggs
- Ⓑ 4 eggs
- Ⓒ 7 eggs

Depth of Knowledge: 3

Correct Answer: B

Mrs. Gregg and 26 of her students are going on a field trip.

- **They will be traveling in school vans.**
- **Each van can seat 8 passengers.**

What is the least number of vans they will need?

- Ⓐ 2 vans
- Ⓑ 4 vans
- Ⓒ 5 vans

Oklahoma C³ Standard:

Standard 3: Geometry—The student will use geometric properties and relationships to analyze shapes.

Oklahoma C³ Objective:

1. Identify, draw, and construct models of intersecting, parallel, and perpendicular lines.

Item Specifications:Emphasis:

- Identify models of intersecting, parallel, and perpendicular lines.

Stimulus Attributes:

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

Format:

- Identify examples or models of intersecting, parallel, and perpendicular lines.

Content Limits:

- Limit items to pairs of lines.
- Limit to intersecting, parallel, and perpendicular lines.

Distractor Domain:

- Misunderstanding of intersecting, parallel, and perpendicular lines.

Modified Oklahoma C³ 3.1 Sample Item:

Depth of Knowledge: 1

Correct Answer: A

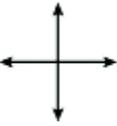
Which of these letters shows perpendicular line segments?

- Ⓐ T
- Ⓑ S
- Ⓒ N

Depth of Knowledge: 1

Correct Answer: C

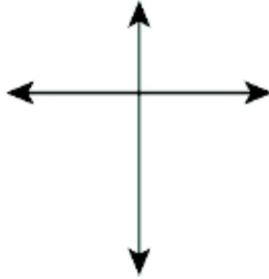
Which pair of lines appears to be parallel?

- Ⓐ 
- Ⓑ 
- Ⓒ 

Depth of Knowledge: 3

Correct Answer: C

The picture shows a pair of lines.



Which statement about the pair of lines is true?

- (A) The lines are perpendicular and parallel.
- (B) The lines are parallel and intersecting.
- (C) The lines are intersecting and perpendicular.

Oklahoma C³ Standard:

Standard 3: Geometry—The student will use geometric properties and relationships to analyze shapes.

Oklahoma C³ Objective:

2. Identify and compare angles equal to, less than, or greater than 90 degrees (e.g., use right angles to determine the approximate size of other angles).

Item Specifications:Emphasis:

- Identify and compare angles equal to, less than, or greater than 90 degrees.
- Apply concept of acute, right, and obtuse angles to classify other angles.

Stimulus Attributes:

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

Format:

- Use comparison to classify an angle.

Content Limits:

- Limit classifications to angles that are equal to (right), less than (acute), and greater than (obtuse) 90 degrees.

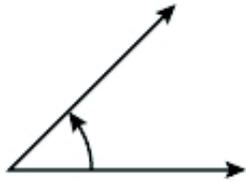
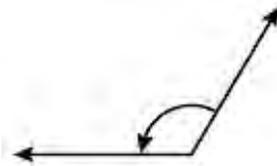
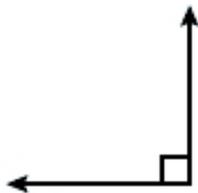
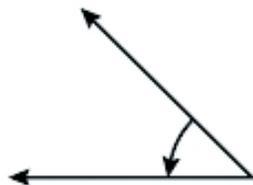
Distractor Domain:

- Misinterpretation of the concepts of acute, right, and obtuse angles
- Misunderstanding of vocabulary

Modified Oklahoma C³ 3.2 Sample Item:

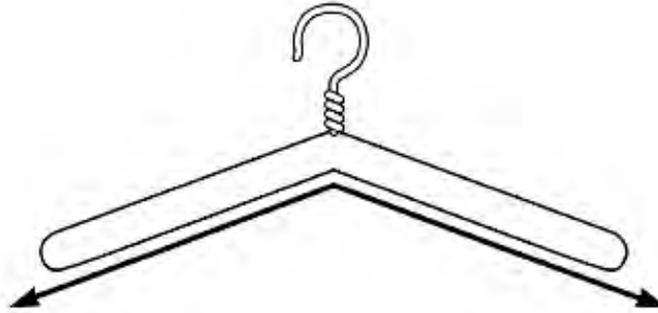
Depth of Knowledge: 1

Correct Answer: C

This angle is less than 90 degrees.**Which angle below is also less than 90 degrees?****(A)****(B)****(C)**

Depth of Knowledge: 1

Correct Answer: B



Which kind of angle is best modeled by the coat hanger?

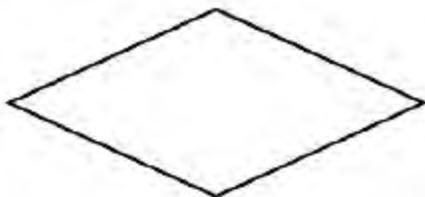
- Ⓐ acute angle
- Ⓑ obtuse angle
- Ⓒ right angle

Depth of Knowledge: 2

Correct Answer: B

Which figure appears to have four right angles?

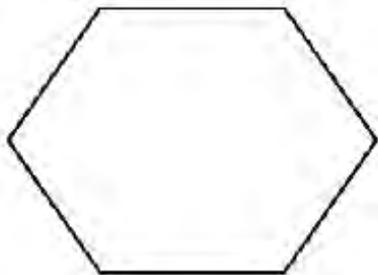
Ⓐ



Ⓑ



Ⓒ



Oklahoma C³ Standard:

Standard 3: Geometry—The student will use geometric properties and relationships to analyze shapes.

Oklahoma C³ Objective:

3. Identify, draw, and construct models of regular and irregular polygons including triangles, quadrilaterals, pentagons, hexagons, heptagons and octagons to solve problems.

Item Specifications:**Emphasis:**

- Apply the basic properties of polygons and use them to solve problems.

Stimulus Attributes:

- Test items may include illustrations and models of regular and irregular polygons.

Format:

- Identify basic two-dimensional figures.
- Build models of regular and irregular polygons.
- Identify and use the properties of regular and irregular polygons.

Content Limits:

- Limit to two-dimensional figures up to octagons.

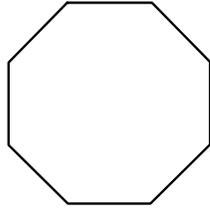
Distractor Domain:

- Misidentification of basic figures

Modified Oklahoma C³ 3.3 Sample Item:

Depth of Knowledge: 1

Correct Answer: B

Look at the polygon.**What is the name of this polygon?**

- (A) hexagon
- (B) octagon
- (C) pentagon

Depth of Knowledge: 1

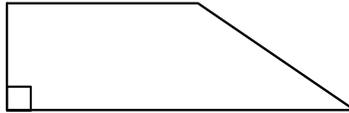
Correct Answer: B

Which polygon has 7 angles?

- Ⓐ pentagon
- Ⓑ heptagon
- Ⓒ hexagon

Depth of Knowledge: 2

Correct Answer: C



Which two shapes could be combined to make this polygon?

- Ⓐ a triangle and a heptagon
- Ⓑ a triangle and a pentagon
- Ⓒ a triangle and a rectangle

Oklahoma C³ Standard:

Standard 3: Geometry—The student will use geometric properties and relationships to analyze shapes.

Oklahoma C³ Objective:

4. Describe the effects on two-dimensional objects when they slide (translate), flip (reflect), and turn (rotate) (e.g., tessellations).

Item Specifications:Emphasis:

- Describe the effects on two-dimensional objects when they slide (translate), flip (reflect), or turn (rotate).

Stimulus Attributes:

- Test items may include illustrations of the following: diagrams, pictures, and grids.
- Test items may include any of the following terms: slide, translation, flip, reflection, turn, or rotation.

Format:

- Identify the results of geometric transformations on two-dimensional objects.

Content Limits:

- Limit transformations to translation, rotation, and reflection.
- Limit to two-dimensional objects.

Distractor Domain:

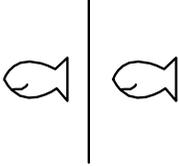
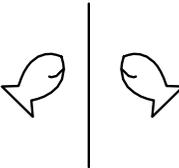
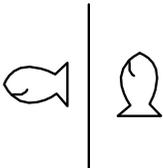
- Misidentification of transformation

Modified Oklahoma C³ 3.4 Sample Item:

Depth of Knowledge: 1

Correct Answer: B

Which **best** represents a reflection of the figure across the line segment?

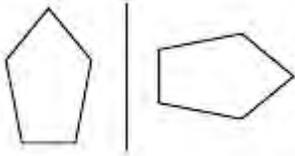
(A)**(B)****(C)**

Depth of Knowledge: 1

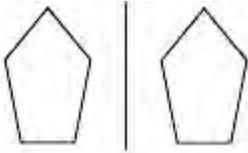
Correct Answer: B

Which of these pictures shows a translation of the figure from left to right?

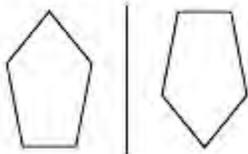
Ⓐ



Ⓑ

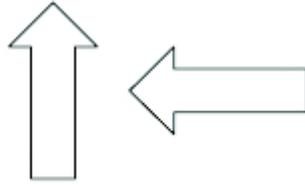


Ⓒ



Depth of Knowledge: 1

Correct Answer: A



Which term **best** describes the transformation used to make the design shown above?

- Ⓐ rotation
- Ⓑ reflection
- Ⓒ translation

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

1. Measurement
 - a. Estimate the measures of a variety of objects using customary units.

Item Specifications:**Emphasis:**

- Apply knowledge of customary units to estimate measurements.

Stimulus Attributes:

- Test items may include illustrations of the following: diagrams and pictures.

Format:

- Select the most appropriate customary unit of measurement for an object.

Content Limits:

- Limit to inches, feet, and yards for length.
- Limit to ounces and pounds for weight (mass).
- Limit to objects common to a fourth-grade student.

Distractor Domain:

- Insufficient development of concepts of inch, foot, yard, ounces, and pounds

Modified Oklahoma C³ 4.1a Sample Item:

Depth of Knowledge: 1

Correct Answer: C

A soccer ball weighs about 1 pound.**Which of these also weighs about 1 pound?****(A)****(B)****(C)**

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

1. Measurement
 - b. Establish benchmarks for metric units and estimate the measures of a variety of objects (e.g., mass: the mass of a raisin is about 1 gram; length: the width of a finger is about 1 centimeter).

Item Specifications:**Emphasis:**

- Establish benchmarks for metric units and estimate the measures of a variety of objects.

Stimulus Attributes:

- Test items may include illustrations of the following: diagrams and pictures.

Format:

- Use a benchmark to estimate weight or length in metric units.

Content Limits:

- Limit to millimeters, centimeters, and meters for length.
- Limit to grams and kilograms for weight (mass).
- Limit to objects common to a fourth-grade student.

Distractor Domain:

- Misunderstanding the concept of benchmarking
- Insufficient development of concepts of millimeter, centimeter, meter, grams, and kilograms

Modified Oklahoma C³ 4.1b Sample Item:

Depth of Knowledge: 2

Correct Answer: B

A paperclip has a mass of 1 gram.**Which could be the mass of one tennis ball?**

- (A)** 1 gram
- (B)** 60 grams
- (C)** 250 grams

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

1. Measurement
 - c. Select appropriate customary and metric units of measure and measurement instruments to solve application problems involving length, weight, mass, area, and volume.

Item Specifications:**Emphasis:**

- Apply knowledge of units of measure to determine appropriate units for specific situations.
- Apply knowledge of measurement concepts to determine appropriate measurement instrument for specific situations.

Stimulus Attributes:

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

Format:

- Identify appropriate unit and instrument of measure needed to solve a length, weight (mass), area, or volume problem.

Content Limits:

- Limit units of length to millimeter, centimeter, meter, kilometer, inch, foot, yard, or mile.
- Limit units of weight (mass) to gram, kilogram, ounce, or pound.
- Limit units of volume (capacity) to milliliter, liter, cup, pint, quart, or gallon.

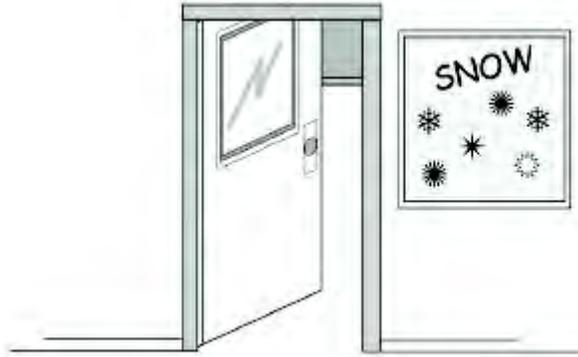
Distractor Domain:

- Identify inappropriate units of measure
- Select inappropriate measurement instrument

Modified Oklahoma C³ 4.1c Sample Item:

Depth of Knowledge: 1

Correct Answer: B

Sue measured the height of her classroom door.**Which could be the height of the door?**

- (A)** 7 inches
- (B)** 7 feet
- (C)** 7 miles

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

1. Measurement
 - d. Develop and use the concept of area of different shapes using grids to solve problems.

Item Specifications:Emphasis:

- Use manipulatives to develop the concept of area.
- Determine area of plane figures.

Stimulus Attributes:

- Test items may include illustrations of the following: graphs, grids, gridded figures, and charts.

Format:

- Calculate area by counting square units.
- Illustrations for area will be no larger than 5×5 and will be placed on a grid.

Content Limits:

- Limit area to counting whole or half square units.

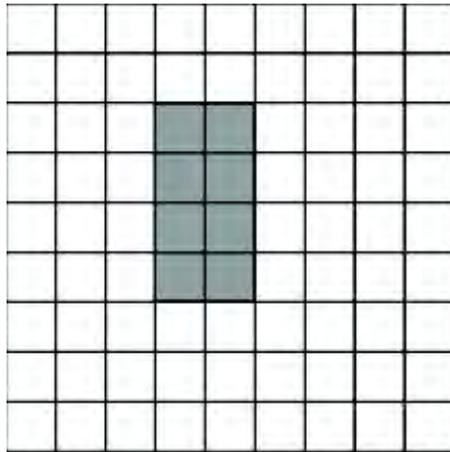
Distractor Domain:

- Computational errors
- Calculate perimeter for area

Modified Oklahoma C³ 4.1d Sample Item:

Depth of Knowledge: 2

Correct Answer: B



= 1 square unit

What is the area of the shaded figure on the grid?

- (A)** 6 square units
- (B)** 8 square units
- (C)** 12 square units

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

2. Time and Temperature
 - a. Solve elapsed time problems.

Item Specifications:**Emphasis:**

- Apply skill of calculating periods of time to solve problems.

Stimulus Attributes:

- Test items may include illustrations of the following: pictures, tables, schedules, calendars, charts, and the image of an analog clock.

Format:

- Solve real-world problems involving time.

Content Limits:

- Limit time to five-minute intervals.

Distractor Domain:

- Computational errors
- Select incorrect operation

Modified Oklahoma C³ 4.2a Sample Item:

Depth of Knowledge: 2

Correct Answer: B

John took an airplane flight that lasted 50 minutes.**What time did his plane take off if it landed at 10:20 A.M.?**

- (A)** 9:20 A.M.
- (B)** 9:30 A.M.
- (C)** 9:50 A.M.

Depth of Knowledge: 2

Correct Answer: B

Jessica's dance class starts at 9:45 A.M.

- **The dance class ends at 10:35 A.M.**

How many minutes did Jessica's dance class last?

- (A)** 60 minutes
- (B)** 50 minutes
- (C)** 40 minutes

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

2. Time and Temperature
 - b. Read thermometers using different intervals (intervals of 1, 2, or 5) and solve for temperature change.

Item Specifications:Emphasis:

- Apply skill calculating changes in temperature to solve problems.

Stimulus Attributes:

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

Format:

- Solve real-world problems involving temperature.

Content Limits:

- Limit temperature to whole degrees in degrees Fahrenheit or degrees Celsius.
- Limit intervals on thermometers to 1, 2, or 5.

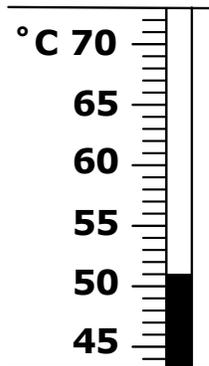
Distractor Domain:

- Computational errors
- Select incorrect operation

Modified Oklahoma C³ 4.2b Sample Item:

Depth of Knowledge: 1

Correct Answer: B

The thermometer shows the temperature at 9:00 P.M.

- **By 11 P.M., temperature dropped 4 °C.**

What was the temperature at 11 P.M.?

- (A)** 11 °C
- (B)** 47 °C
- (C)** 56 °C

Depth of Knowledge: 2

Correct Answer: B

The temperature at 7:00 A.M. was 63 °F.

- **The temperature at noon was 85 °F.**

What was the change in temperature between 7:00 A.M. and noon?

- Ⓐ 12 °F
- Ⓑ 22 °F
- Ⓒ 28 °F

Oklahoma C³ Standard:

Standard 4: Measurement—The student will solve problems using appropriate units of measure in a variety of situations.

Oklahoma C³ Objective:

3. Money: Determine the correct amount of change when purchase is made with a twenty-dollar bill.

Item Specifications:Emphasis:

- Apply skill calculating amounts of money to solve problems.

Stimulus Attributes:

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

Format:

- Subtract small amounts of money up to \$20.00 to solve real world problems.

Content Limits:

- Limit to finding change from up to \$20 bills.

Distractor Domain:

- Computational errors
- Select incorrect operation

Modified Oklahoma C³ 4.3 Sample Item:

Depth of Knowledge: 2

Correct Answer: A

Jack bought a shirt.

- **The shirt cost a total of \$13.45**
- **Jack paid for the shirt with a twenty dollar bill.**

How much change should Jack receive?

- Ⓐ \$6.55
- Ⓑ \$7.00
- Ⓒ \$7.45

Depth of Knowledge: 2

Correct Answer: C

The receipt shows the total cost of the groceries Alice bought.

<u>Red's Grocery</u>	
Bread.....	\$1.35
Milk.....	\$2.45
Chips.....	\$2.19
Eggs	\$3.48
School supplies.....	\$7.89
Total: \$17.36	

- **Alice paid for the groceries with a \$20 bill.**

What is the amount of change Alice should get?

- Ⓐ \$3.64
- Ⓑ \$3.36
- Ⓒ \$2.64

Depth of Knowledge: 3

Correct Answer: A

Kami bought 3 books and 1 poster at the school book fair.

- **Each book cost \$3.00 including tax.**
- **The poster cost \$1.05 including tax.**
- **Kami paid for the 3 books and 1 poster with a \$20.00 bill.**

What is the amount of change Kami should receive?

- Ⓐ \$9.95
- Ⓑ \$10.05
- Ⓒ \$12.95

Oklahoma C³ Standard:

Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.

Oklahoma C³ Objective:

1. Data Analysis
 - a. Read and interpret data displays, such as tallies, tables, charts, and graphs, and use the observations to pose and answer questions (e.g., choose a table in social studies of population data and write problems).

Item Specifications:Emphasis:

- Analysis of data presented in a variety of formats.

Stimulus Attributes:

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

Format:

- Answer questions involving how much, how many more or less, and direction of trend.
- Select a question that can be answered by the data.

Content Limits:

- Limit data to four categories.
- Limit operations to addition and subtraction.
- Limit graphs to pictograph, bar graph, and circle graph.

Distractor Domain:

- Misinterpretation of data
- Computational errors

Modified Oklahoma C³ 5.1a Sample Item:

Depth of Knowledge: 2

Correct Answer: B

Four friends recorded the number of glasses of milk each drank in a week.

- **They recorded their results in a chart.**

Name	Number of Glasses of Milk
Jan	
Mark	
Christa	
Todd	

Which person drank three fewer glasses of milk than Jan?

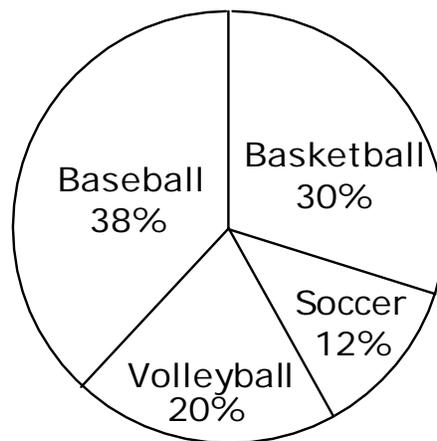
- (A) Mark
- (B) Christa
- (C) Todd

Depth of Knowledge: 3

Correct Answer: C

The students at an elementary school were asked to name their favorite sport.

- **The circle graph shows the percentage of students who chose each sport.**



Which two sports combined did less than half of the students choose as their favorite?

- Ⓐ baseball and volleyball
- Ⓑ basketball and volleyball
- Ⓒ soccer and volleyball

Oklahoma C³ Standard:

Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.

Oklahoma C³ Objective:

1. Data Analysis
 - b. Collect, organize, and record data in tables and graphs (e.g., line graphs (plots), bar graphs, pictographs).

Item Specifications:Emphasis:

- Determine accurate display of data.

Stimulus Attributes:

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

Format:

- Identify correct data set for display.
- Identify correct representation of data.

Content Limits:

- Limit data displays to tables, charts, pictographs, bar graphs, circle graphs, and line plots.
- Limit data displays to four categories.

Distractor Domain:

- Inaccurate representation of data set
- Misidentification of data set belonging to a display

Modified Oklahoma C³ 5.1b Sample Item:

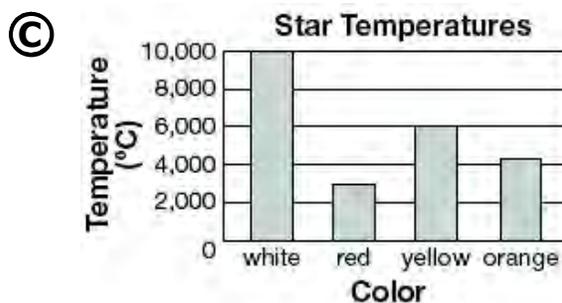
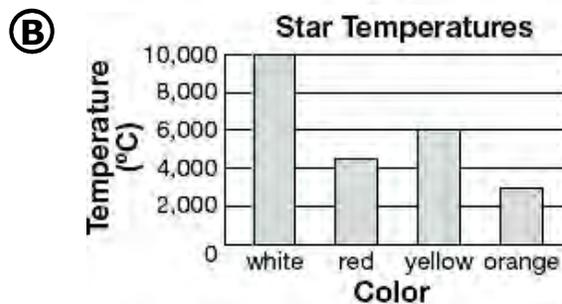
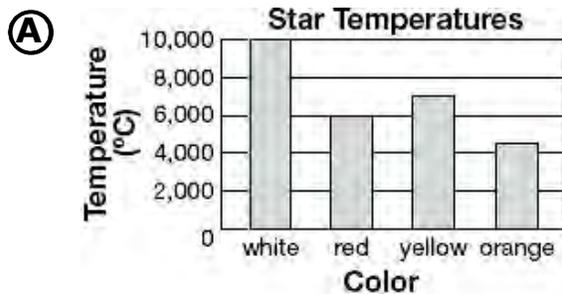
Depth of Knowledge: 2

Correct Answer: C

The table shows the temperatures for four different colors of stars.

Color	Temperature (°C)
white	10,000
red	3,000
yellow	6,000
orange	4,500

Which bar graph correctly shows the information in the table?



Depth of Knowledge: 2

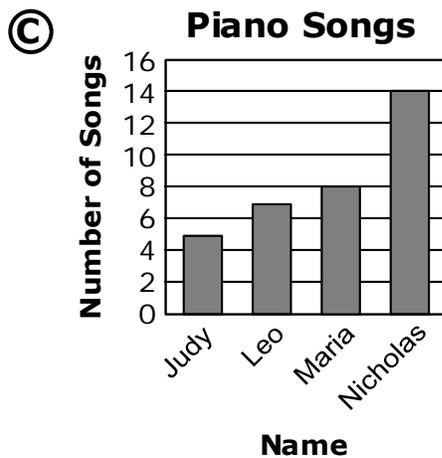
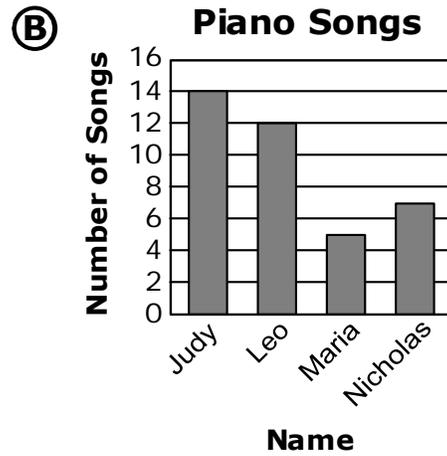
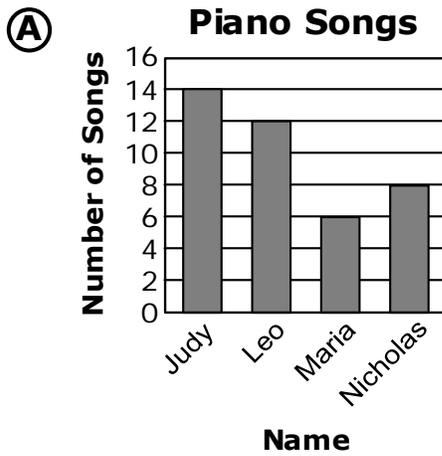
Correct Answer: B

The table shows the number of songs each of five students can play on the piano.

Piano Songs

Name	Judy	Leo	Maria	Nicholas
Number of Songs	14	12	5	7

Which bar graph correctly shows this information?



Oklahoma C³ Standard:

Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.

Oklahoma C³ Objective:

2. Probability: Predict the probability of outcomes of simple experiments using words such as certain, equally likely, impossible (e.g., coins, number cubes, spinners).

Item Specifications:Emphasis:

- Determine the likelihood of experimental outcomes.

Stimulus Attributes:

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

Format:

- Predict the probability of outcomes of simple experiments as certain, equally likely, or impossible.

Content Limits:

- Limit to simple probability experiments (e.g., one spinner, one coin, etc.).
- Limit predictions to certain, equally likely, or impossible.

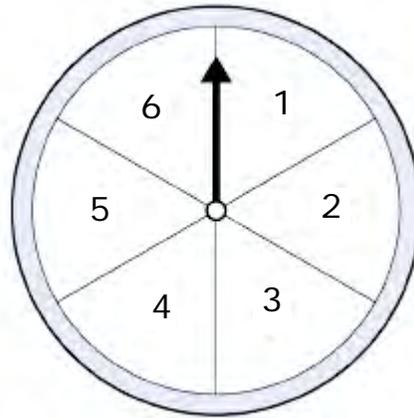
Distractor Domain:

- Misunderstanding of likelihood of event

Modified Oklahoma C³ 5.2 Sample Item:

Depth of Knowledge: 2

Correct Answer: B

Kyle spins the spinner once.**What is the probability that the spinner will land on a number less than 7?**

- Ⓐ It is certain for the spinner to land on the number 7.
- Ⓑ It is equally likely for the spinner to land on a number less than 7.
- Ⓒ It is impossible for the spinner to land on a number less than 7.

Depth of Knowledge: 2

Correct Answer: B

Colin rolls a number cube once.

- **The number cube has sides numbered 1 through 6.**

What is the probability of rolling a 7?

- Ⓐ certain
- Ⓑ impossible
- Ⓒ equally likely

Depth of Knowledge: 2

Correct Answer: A

Christine has 6 pencils.

- **Three of the pencils are red.**
- **Three of the pencils are yellow.**
- **She will choose 1 pencil without looking**

Which statement describes the probability that Christine will choose a red or yellow pencil?

- Ⓐ certain
- Ⓑ impossible
- Ⓒ equally likely

Oklahoma C³ Standard:

Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.

Oklahoma C³ Objective:

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

Item Specifications:Emphasis:

- Demonstrate the ability to find the median and mode for a set of data.

Stimulus Attributes:

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

Format:

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

Content Limits:

- Limit data sets to nine pieces of data.
- Limit data sets to numerical data.
- Limit medians to whole numbers.
- Limit to one mode.
- Limit data sets to an odd number of pieces of data.
- Limit bar graph, pictograph, and frequency chart to questions relating to mode.

Distractor Domain:

- Incorrect procedures
- Misunderstanding of concepts

Modified Oklahoma C³ 5.3 Sample Item:

Depth of Knowledge: 1

Correct Answer: C

2, 2, 3, 4, 6, 7, 9

What is the median of the set of data?

- (A)** 2
- (B)** 3
- (C)** 4

Depth of Knowledge: 2

Correct Answer: B

Five students sold newspapers for a fundraiser.

- **The frequency chart shows the number of newspapers sold by each student.**

Name	Newspapers Sold
Jan	/// III
Mark	/// /// /// IIII
Christa	/// /// II
Todd	/// /// /// /// I
Angela	/// III

What is the mode of the number of newspapers sold?

- A 3
- B 8
- C 12

Depth of Knowledge: 2

Correct Answer: B

The table shows the weights of pumpkins picked by five students.

Weights of Picked Pumpkins

Student	Weight of Pumpkin (pounds)
Frank	7
Gretchen	7
Harry	8
Ingrid	9
Jake	10

What is the median of the weights of pumpkins picked by the students?

- (A)** 7 pounds
- (B)** 8 pounds
- (C)** 10 pounds