

**OKLAHOMA SCHOOL TESTING PROGRAM**  
**OKLAHOMA CORE CURRICULUM TESTS**

# **TEST AND ITEM SPECIFICATIONS**

Mathematics  
Grade 3



Oklahoma State Department of Education  
Oklahoma City, Oklahoma

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# Oklahoma Core Curriculum Tests

## TEST AND ITEM SPECIFICATIONS

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**Purpose**

The purpose of the Grade 3 Mathematics Test is to measure Oklahoma third-grade students' level of proficiency in mathematics. On the test, students are required to respond to a variety of items linked to the third-grade mathematics content standards identified in the Oklahoma Academic Standards (OAS). Each Mathematics Test form tests each identified content standard and objective listed below. The following standards and objectives are intended to summarize the knowledge as identified in the Oklahoma Academic Standards.

OAS Content Standards and Objectives
<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>Properties of Shapes (3.1)</li><li>Spatial Reasoning (3.2)</li><li>Coordinate Geometry (3.3)</li></ul>
<b>Measurement</b> <ul style="list-style-type: none"><li>Measurement (4.1)</li><li>Time and Temperature (4.2)</li><li>Money (4.3)</li></ul>
<b>Data Analysis</b> <ul style="list-style-type: none"><li>Data Analysis (5.1)</li><li>Probability (5.2)</li></ul>

**Note: All references to Oklahoma Academic Standards (OAS) indicate the content standards and objectives previously known as Priority Academic Student Skills (PASS).**

**Test Structure, Format, and Scoring**

The Oklahoma Core Curriculum Tests consist of multiple-choice items. 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 method. Of the total items, 10 items are field-test items and do not contribute to the student's scaled score.

Content Assessment	Total Items	Total Operational Items	Total Field Test Items
Mathematics	60	50	10
Reading	60	50	10

**Test Alignment with Oklahoma Academic Standards**

Criteria for Aligning the Test with the OAS Standards and Objectives
<b>1. Categorical Concurrence</b> The test is constructed so that there are at least six items measuring each OAS standard. The number of items 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 OAS objective.
<b>3. Range of Knowledge Correspondence</b> The test is constructed so that at least 75% of the objectives for an OAS 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 OAS standard and/or OAS objective in terms of the percent of total test items measuring each standard and the number of test items measuring each standard and/or objective. The test construction shall yield a balance of representation with an index of 0.7 or higher of assessed objectives related to a standard.
<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 OAS objective or OAS concept being assessed, not from specialized knowledge or cultural background that the test-taker may bring to the testing situation.

# Oklahoma School Testing Program

## Grade 3 Mathematics – Test Blueprint

### School Years 2014-2015, 2015-2016, 2016-2017

The blueprint describes the content and structure of an assessment and defines the ideal number of test items by standard and objective of the Priority Academic Student Skills/ Oklahoma Academic Standards (PASS/OAS).

Standards and Objectives	Ideal Number of Items	Ideal Percentage of Items
<b>1.0 Algebraic Reasoning: Patterns &amp; Relationships</b>	<b>7</b>	<b>14%</b>
1.1 Algebra Patterns	2	
1.2 Equations	2	
1.3 Number Properties	3	
<b>2.0 Number Sense and Operation</b>	<b>20</b>	<b>40%</b>
2.1 Number Sense	10	
2.2 Number Operations	10	
<b>3.0 Geometry</b>	<b>7</b>	<b>14%</b>
3.1 Properties of Shapes	3	
3.2 Spatial Reasoning	2	
3.3 Coordinate Geometry	2	
<b>4.0 Measurement</b>	<b>9</b>	<b>18%</b>
4.1 Measurement	4	
4.2 Time and Temperature	2	
4.3 Money	3	
<b>5.0 Data Analysis</b>	<b>7</b>	<b>14%</b>
5.1 Data Analysis	4	
5.2 Probability	3	
<b>Total Test</b>	<b>50</b>	<b>100%</b>

*(Please note this blueprint does not include items that may be field-tested.)*

- A minimum of 6 items is required to report a standard, and a minimum of 4 items is required to report results for an objective.

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

The Oklahoma Core Curriculum Tests will, as closely as possible, reflect the following “Depth of Knowledge” distribution of items.

Grades 3-5	
Depth of Knowledge	Percent of Items
Level 1—Recall and Reproduction	20-25%
Level 2—Skills and Concepts	65-70%
Level 3—Strategic Thinking	5-15%

Grades 6-8	
Depth of Knowledge	Percent of Items
Level 1—Recall and Reproduction	10-15%
Level 2—Skills and Concepts	65-70%
Level 3—Strategic Thinking	15-25%

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

**Level 2** (Skills and Concepts) requires the student to make some decision 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** (Strategic and Extended Thinking) requires complex reasoning, planning, developing, using evidence, and a higher level of thinking. These processes typically require an extended amount of time. The cognitive demands of the item should be high and the work should be complex. In order to be considered at this level, students are required to make several connections (relate ideas *within* the content area or *among* the content areas) and select one approach among many alternatives as to how the situation should be solved. 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.

**Note**—The descriptions are adapted from Review Background Information and Instructions, Standards and Assessment Alignment Analysis, CCSSO TILSA Alignment Study, May 21-24, 2001, Version 2.0.

For an extended description of each Depth of Knowledge level, see the web site at <http://facstaff.wcer.wisc.edu/normw/TILSA/INFO%20and%20INSTR%20Align%20Anal%20513.pdf>.

### *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 Core Curriculum Tests, modifications have been made to some items that simplify and clarify instructions, and provide maximum readability, comprehensibility, and legibility. This includes such things as reduction of language load in content areas other than Reading, increased font size, fewer items per page, and boxed items to assist visual focus. Reading tests will have vocabulary at grade level. In all other tests, the vocabulary level will be below the grade being tested except for content words. Grades 3 and 4 will be one grade level below, and grades 5, 6, 7, and 8 will be two grade levels below. These modifications are evident in the sample items included in this document.

### *Testing Schedules*

Each subject test, except Writing, is divided into two separate sections at grades 3, 4, and 5. These two sections of the test may be administered on the same day with a break given between the sections or on consecutive days. At grades 6, 7, and 8, each subject area test is meant to be administered in a separate session. Students may be given additional time if needed, but additional time will be given as an extension of the same testing period, not at a different time.

Grade 3 Mathematics		Grade 3 Reading	
Test Session		Test Session	
<b>Section 1</b>		<b>Section 1</b>	
	<u>Approximately:</u>		<u>Approximately:</u>
Distributing books, filling in the Student Demographic Page, reading directions	25 minutes	Distributing books, reading directions	15 minutes
Administering the Mathematics Test; <b>no calculators are allowed</b> during this test	30-40 minutes	Administering the Reading Test	50-60 minutes
<b>Total:</b>	55-65 minutes	<b>Total:</b>	65-75 minutes
<b>Section 2</b>		<b>Section 2</b>	
	<u>Approximately:</u>		<u>Approximately:</u>
Distributing books, reading directions	5 minutes	Distributing books, reading directions	5 minutes
Administering the Mathematics Test; <b>no calculators are allowed</b> during this test	30-40 minutes	Administering the Reading Test	45-55 minutes
<b>Total:</b>	35-45 minutes	<b>Total:</b>	50-60 minutes

### ***Multiple-Choice Item Guidelines***

- All item stems clearly indicate what is expected in an item to help students focus on selecting a response.
- Each multiple-choice item has a stem (question, statement, or incomplete statement, and/or graphic component) and four 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.
- Art incorporated within an item must be functional and assist students in determining the correct response.

In summary, test items assess whether students: understand relevant concepts and procedures; communicate their understandings effectively in content specific terms; approach problems; and develop viable solutions.

### ***Stimulus Materials***

Stimulus materials are the passages, graphs, models, figures, etc. that students must read and examine in order to respond to items. The following characteristics are necessary for stimulus materials:

1. When students are given information, data, or an experimental setup to evaluate, they should know the research question and the purpose of the research.
2. Tables, graphs, reading passages, and illustrations provide sufficient information for assessment of multiple standards.
3. Stimulus materials for a set of items may be a combination of multiple stimuli.
4. Information in stimulus materials is representative of concepts and principles described in *Oklahoma Academic Standards*.
5. For conceptual items, stimulus materials are necessary but not conceptually sufficient for student response.
6. There is a balance of graphic and textual stimulus materials within a test form. At least 50% of the items have appropriate pictorial and graphical representations. Graphs, tables, or figures are clearly associated with their intended items. Graphics appear either on the same page as the stimulus or on the facing page.
7. The stimuli avoid subject matter that might prompt emotional distress on the part of the students.
8. Permission to use stimuli from copyrighted material is obtained as necessary by the testing vendor.



### ***General Considerations***

It is necessary to create test items that are reliable, fair, and targeted to the Oklahoma Academic 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 standards and objectives listed in the Test Blueprint for the specific grade and content area. In the Oklahoma Academic Standards document, asterisks have been used to identify standards and objectives that must be assessed by the local school district.
2. Test items that assess each standard are not limited to one particular type of response format. Each item begins with a stem that asks a question or poses a clear problem. Stems may include incomplete sentences in order to reduce unnecessary repetition of text.
3. Test items attempt to focus on content that is authentic and that grade-level students can relate to and understand.
4. Test items are worded precisely and clearly. The more focused an item, the more reliable and fair it will be, and the more likely all students will understand what is required of them.
5. All items are reviewed to eliminate language that is biased 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 multiple-choice answer options, including the correct response and 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 reasonably distributed among A's, B's, C's, and D's. The distractors adopt the language and sense of the material in the selection. Test items focus on reading skills and comprehension strategies, avoiding measurement of a student's feelings or values.
7. Items deal with issues and details that are of consequence in the stimulus and central to students' understanding and interpretation of the stimulus.
8. To the greatest extent possible, no item or response choice clues the answer to any other item. No item stem or answer option provides clues to any other item's answer, nor is the same fact of the passage assessed more than once, including the same vocabulary or technical term.
9. Test items are tied closely and particularly to the stimuli from which they derive, so that the impact of outside (prior) knowledge, while never wholly avoidable, is minimized.
10. The responses "Both of the above," "All of the above," "None of the above," and "Neither of the above" are not used.

11. Most stems are positively worded—avoiding the use of the word not. If a negative is required, the format is “All of the following . . . except.”
12. The material presented is balanced, culturally diverse, well-written, and of interest to students. The stimuli and items are presented fairly in order to gain a true picture of students’ skills.
13. Across all forms, a balance of gender and active/passive roles by gender is maintained.
14. No resource materials or calculators may be used by students during the test.

### ***Vocabulary***

No single source is available to determine the reading level of various words. Therefore, the appropriateness and difficulty of a word is determined in various ways. Vocabulary words are checked in the following: *EDL Core Vocabularies in Reading, Mathematics, Science, and Social Studies*; *Basic Reading Vocabularies*; the *Living Word*; or other reliable readability sources. In addition to using the aforementioned printed resources to assist in creating vocabulary items, each vocabulary item must be approved by Oklahoma’s Content Review Committee. The committee, comprised of Oklahoma educators from across the state, reviews proposed vocabulary items for grade level appropriateness. Reading tests will have vocabulary at grade level. In all other tests, the vocabulary level will be below the grade being tested except for content words. Grades 3 and 4 will be one grade level below, and grades 5, 6, 7, and 8 will be two grade levels below.

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 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.

### ***Overview of Item Specifications***

For each standard of the Oklahoma Academic Standards, item specifications are organized under the following headings:

- OAS Standard and OAS Objective
- Item Specifications
  - a. Emphasis
  - b. Stimulus Attributes
  - c. Format
  - d. Content Limits
  - e. Primary Process Standards
  - f. Distractor Domain
  - g. Sample Test Items

The headings “OAS Standard” and “OAS Objective” state the standard and objective being measured as found in the third-grade mathematics section of the Oklahoma Academic Standards document.

The heading “Item Specifications” highlights important points about the items’ emphasis, stimulus attributes, format, content limits, primary process standards, distractor domain, and sample test items. 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.

#### **Note about the Item Specifications and Sample Test 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.** The sample test items are not intended to be definitive in nature or construction—the stimuli and the test items that follow them may differ from one test form to another, as may their presentations.

## Oklahoma Academic Standards

## MATHEMATICS CONTENT STANDARDS

## Grade 3

Asterisks (\*) have been used to identify standards and objectives that must be assessed by the local school district. All other skills may be assessed by the Oklahoma School Testing Program (OSTP).

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

1. Describe (orally or in written form), create, extend and predict patterns in a variety of situations (e.g., 3, 6, 9, 12 . . . , use a function machine to generate input and output values for a table, show multiplication patterns on a hundreds chart, determine a rule and generate additional pairs with the same relationship).
2. Find unknowns in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, and multiplication.
3. Recognize and apply the commutative and identity properties of multiplication using models and manipulative to develop computational skills (e.g.,  $3 \cdot 5 = 5 \cdot 3$ ,  $7 \cdot 1 = 7$ ).

**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.**

1. Number Sense
  - a. Place Value
    - i. Model the concept of place value through 4 digits (e.g., base-10 blocks, bundles of 10s, place value mats).
    - ii. Read and write whole numbers up to 4 digits (e.g., expanded form, standard form).
  - b. Whole Numbers and Fractions
    - i. Compare and order whole numbers up to 4 digits.
    - ii. Create and compare physical and pictorial models of equivalent and nonequivalent fractions including halves, thirds, fourths, eighths, tenths, twelfths, and common percents (25%, 50%, 75%, 100%) (e.g., fraction circles, pictures, egg cartons, fraction strips, number lines).
2. Number Operations
  - a. Estimate and find the sum or difference (with and without regrouping) of 3- and 4-digit numbers using a variety of strategies to solve application problems.

**b. Multiplication Concepts and Fact Families**

- i. Use physical models and a variety of multiplication algorithms to find the product of multiplication problems with one-digit multipliers.
- ii. Demonstrate fluency (memorize and apply) with basic multiplication facts up to  $10 \times 10$  and the associated division facts (e.g.,  $5 \times 6 = 30$  and  $30 \div 6 = 5$ ).
- iii. Estimate the product of 2-digit by 2-digit numbers by rounding to the nearest multiple of 10 to solve application problems.

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

1. Identify and compare attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes (e.g., count the edges and faces of a cube, the radius is half of a circle, lines of symmetry).
2. Analyze the effects of combining and subdividing two- and three-dimensional figures (e.g., folding paper, tiling, nets, and rearranging pieces of solids).
3. Make and use coordinate systems to specify locations and shapes on a grid with ordered pairs and to describe paths from one point to another point on a grid.

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

1. Measurement
  - a. Choose an appropriate measurement instrument and measure the length of objects to the nearest inch or half-inch and the weight of objects to the nearest pound or ounce.
  - \*b. Choose an appropriate measurement instrument and measure the length of objects to the nearest meter or centimeter and the weight of objects to the nearest gram or kilogram.
  - c. Develop and use the concept of perimeter of different shapes to solve problems.
  - \*d. Develop and use strategies to choose an appropriate unit and measurement instrument to estimate measurements (e.g., use parts of the body as benchmarks for measuring length).
2. Time and Temperature
  - a. Solve simple addition problems with time (e.g., 15 minutes added to 1:10 p.m.).
  - b. Tell time on a digital and analog clock to the nearest 5 minute.
  - c. Read a thermometer and solve for temperature change.
3. Money: Determine the correct amount of change when a purchase is made with a five dollar bill.

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**Standard 5: Data Analysis—The student will demonstrate an understanding of collection, display, and interpretation of data and probability.****1. Data Analysis**

- \*a. Pose questions, collect, record, and interpret data to help answer questions (e.g., which was the most popular booth at our carnival?).
- b. Read graphs and charts, identify the main idea, draw conclusions, and make predictions based on the data (e.g., predict how many children will bring their lunch based on a menu).
- c. Construct bar graphs, frequency tables, line graphs (plots), and pictographs with labels and a title from a set of data.

**2. Probability: Describe the probability (more, less, or equally likely) of chance events.**

## MATHEMATICS PROCESS STANDARDS

### Grade 3

#### 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 Academic Standards****SAMPLE TEST ITEMS BY STANDARD****Grade 3****OAS Standard:**

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

**OAS Objective:**

1. Describe (orally or in written form), create, extend and predict patterns in a variety of situations (e.g., 3, 6, 9, 12 . . . , use a function machine to generate input and output values for a table, show multiplication patterns on a hundreds chart, determine a rule and generate additional pairs with the same relationship).

**Item Specifications:**Emphasis:

Determine and use rules to create, extend, and predict patterns.

Stimulus Attributes:

Test items may include illustrations of the following: function machines, tables, lists, pictures, and hundreds charts.

Format:

- Use rules to complete patterns
- Use rules to extend patterns
- Determine a rule from a table, chart, or list
- Determine a missing element in a pair of numbers by using generalizations from other pairs with the same relationship

Content Limits:

- Limit rule to one operation
- Limit operations to addition, subtraction, and multiplication
- Limit multiplication to multiplication by 2, 5, and 10
- Limit extension of pattern to next element
- Limit to whole numbers

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Inappropriate operation selected
- Predictable misrepresentation of pattern

**Oklahoma Academic Standards 1.1 Sample Test Items:**

Primary Process Standard: 3M4.4

Depth of Knowledge: 1

Correct Answer: B

**Luke used the 4 game balls shown to form a repeating pattern.**



**He will continue to repeat the 4 balls in the same order. What will be the next ball in Luke's pattern?**

**A****B****C****D**

Primary Process Standard: 3M2.4

Depth of Knowledge: 2

Correct Answer: A

**Gloria started a pattern with a number. Then she used the rule "subtract 4" to find each of the other numbers in her pattern. Which could be Gloria's pattern?**

**A** 24, 20, 16, 12**B** 18, 14, 11, 8**C** 19, 14, 9, 4**D** 31, 29, 27, 25

Primary Process Standard: 3M3.2

Depth of Knowledge: 2

Correct Answer: A

**Abe started a pattern on the hundred chart by shading the number 7. Then he used an addition rule to shade two other numbers. He will shade more numbers in the pattern using the same rule.**

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

**What should be the next shaded number in Abe's pattern?**

- A** 28
- B** 31
- C** 34
- D** 37

Primary Process Standard: 3M3.1

Depth of Knowledge: 2

Correct Answer: D

**Kelly and John like to play a number game. Kelly says a number. Then John uses the same rule each time to find his number. Some of their numbers are shown in the table.**

**Number Game**

<b>Kelly's Numbers</b>	<b>John's Numbers</b>
1	3
4	6
7	9
11	13
12	14

**Which of these could be the rule John uses on each of Kelly's numbers to find his numbers?**

- A** multiply by 2
- B** divide by 2
- C** subtract 2
- D** add 2

Primary Process Standard: 3M3.1

Depth of Knowledge: 2

Correct Answer: C

**The table shows the total number of stickers Brenda used to make different numbers of cards.**

**Brenda's Cards**

<b>Number of Cards</b>	<b>Total Number of Stickers</b>
3	6
5	10
6	12
8	16
9	?

**Based on the information in the table, which rule could be used to find the total number of stickers used to make 9 cards?**

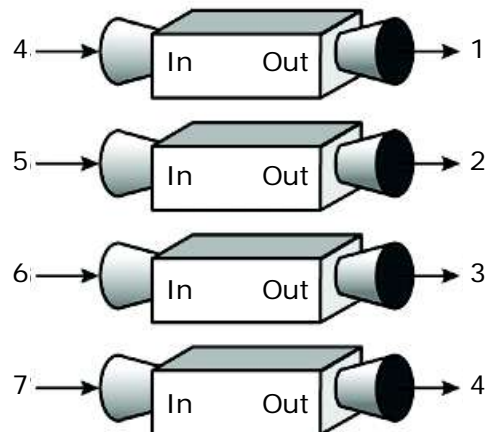
- A**    add 3
- B**    add 4
- C**    multiply by 2
- D**    multiply by 3

Primary Process Standard: 3M2.3

Depth of Knowledge: 2

Correct Answer: D

**The picture shows how a number machine uses a rule to change a number.**



**What is the rule for this number machine?**

- A** add 1
- B** add 3
- C** subtract 1
- D** subtract 3

Primary Process Standard: 3M1.2

Depth of Knowledge: 2

Correct Answer: C

**A teacher arranged students in rows for a school picture. She put 8 students in the first row. Each row after the first row increased by 6 students. Which set of numbers lists the number of students in each of the first four rows?**

- A** 6, 8, 10, 12
- B** 6, 12, 18, 24
- C** 8, 14, 20, 26
- D** 8, 16, 24, 32

Primary Process Standard: 3M3.2

Depth of Knowledge: 3

Correct Answer: B

**The table shows the costs of different numbers of fruit bars.**

**Fruit Bar Costs**

Number of Bars	2	3	4	5
Cost	\$4	\$6	\$8	\$10

**Based on the information in the table, which statement is true?**

- A** Each fruit bar costs \$4.
- B** Each fruit bar costs \$2.
- C** The cost of 6 fruit bars will be \$11.
- D** The cost of 6 fruit bars will be \$15.

**OAS Standard:**

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

**OAS Objective:**

2. Find unknowns in simple arithmetic problems by solving open sentences (equations) and other problems involving addition, subtraction, and multiplication.

**Item Specifications:**Emphasis:

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 2-digit whole numbers
- Limit sentence to one operation
- Limit operation to addition, subtraction, or multiplication

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 4: Connections

Distractor Domain:

- Perform incorrect operation



**Oklahoma Academic Standards 1.2 Sample Test Items:**

Primary Process Standard: 3M2.3

Depth of Knowledge: 2

Correct Answer: D

$$x - 11 = 34$$

**Which value of  $x$  makes this equation true?**

- A** 23
- B** 25
- C** 44
- D** 45

Primary Process Standard: 3M1.1

Depth of Knowledge: 2

Correct Answer: A

**A teacher gave 5 students an equal number of stickers. The equation shows the number of stickers,  $n$ , the teacher gave each student.**

$$5 \times n = 20$$

**Which value of  $n$  makes this equation true?**

- A** 4
- B** 15
- C** 25
- D** 80

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: A

**Ben is 8 years younger than his sister. Ben's sister is 17 years old. The equation shows Ben's age,  $b$ .**

$$b + 8 = 17$$

**Which value of  $b$  makes this equation true?**

- A** 9
- B** 10
- C** 25
- D** 30

**OAS Standard:**

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

**OAS Objective:**

3. Recognize and apply the commutative and identity properties of multiplication using models and manipulatives to develop computational skills (e.g.,  $3 \cdot 5 = 5 \cdot 3$ ,  $7 \cdot 1 = 7$ ).

**Item Specifications:**Emphasis:

Demonstrate knowledge of the commutative and identity properties and use to develop computational skills.

Stimulus Attributes:

Test items may include illustrations of the following: number lines, counting manipulatives, balances, two- and three-dimensional geometric figures, data sets, charts, tables, and other diagrams.

Format:

- Identify simple examples and basic uses of the commutative and identity properties
- Use the commutative and identity properties of numbers to develop computational skills
- Use a square for an unknown

Content Limits:

- Limit properties to commutative and identity
- Limit to single-digit factors

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

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

**Oklahoma Academic Standards 1.3 Sample Test Items:**

Primary Process Standard: 3M3.3

Depth of Knowledge: 1

Correct Answer: C

**A teacher wrote an expression equal to  $6 \times 7$ . Which expression is equal to  $6 \times 7$ ?**

**A**  $7 + 6$

**B**  $7 - 6$

**C**  $7 \times 6$

**D**  $7 \div 6$

Primary Process Standard: 3M3.3

Depth of Knowledge: 2

Correct Answer: B

**Which equation shows the commutative property of multiplication?**

**A**  $(8 \times 1) \times 2 = 1 + (8 + 2)$

**B**  $(8 \times 1) \times 2 = 2 \times (8 \times 1)$

**C**  $(8 \times 1) \times 2 = 8 \times (1 \times 2)$

**D**  $(8 \times 1) \times 2 = 8 \times (1 + 2)$

Primary Process Standard: 3M3.3

Depth of Knowledge: 2

Correct Answer: A

**Which equation shows the identity property of multiplication?**

**A**     $7 \times 1 = 7$

**B**     $7 + 1 = 1 + 7$

**C**     $7 \times 0 = 0 \times 7$

**D**     $7 + 5 = 5 + 7$

**OAS 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.

**OAS Objective:**

1. Number Sense
  - a. Place Value
    - i. Model the concept of place value through 4 digits (e.g., base-10 blocks, bundles of 10s, place value mats).

**Item Specifications:**Emphasis:

Model place value of whole numbers through four digits by representation.

Stimulus Attributes:

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

Format:

- Select a whole number through four digits from a model
- Select a model of a whole number through four digits

Content Limits:

- Limit whole numbers to the thousands place

Primary Process Standards:

Process Standard 1: Problem Solving  
Process Standard 2: Communication  
Process Standard 4: Connections  
Process Standard 5: Representation

Distractor Domain:


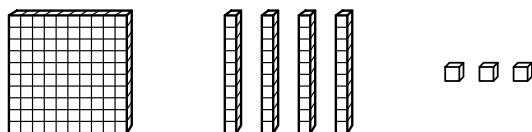
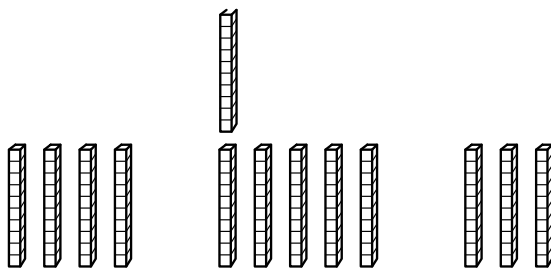
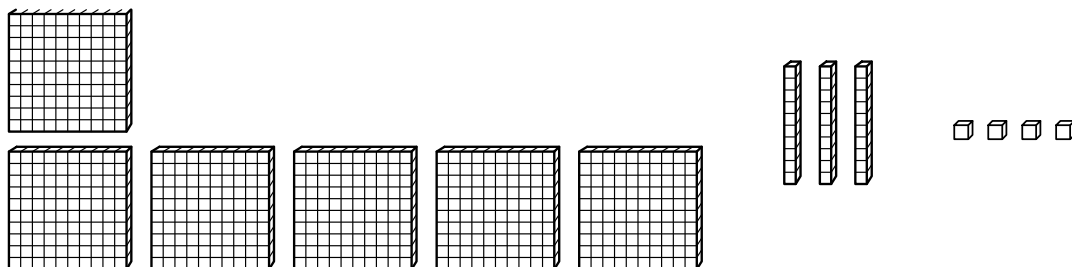
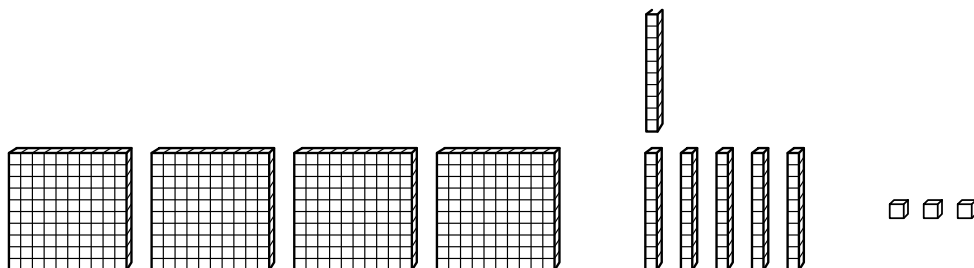
- Misrepresentation of place value
- Computational error

**Oklahoma Academic Standards 2.1ai Sample Test Items:**

Primary Process Standard: 3M5.2

Depth of Knowledge: 1

Correct Answer: D

**Which picture shows a model of the number 463?****Key:**  = 1**A****B****C****D**

Primary Process Standard: 3M2.1

Depth of Knowledge: 1

Correct Answer: C

**Bobby used his place value mat to show a number.**

Thousands	Hundreds	Tens	Ones
○ ○	○ ○ ○	○ ○ ○ ○ ○	○ ○ ○ ○

**Which is another way to show Bobby's number?**

- A** 2,304
- B** 2,350
- C** 2,354
- D** 2,540

Primary Process Standard: 3M4.3

Depth of Knowledge: 2

Correct Answer: B

**Which of these numbers has a digit in the tens place that is greater than 4?**

- A** 6,537
- B** 2,364
- C** 1,928
- D** 4,815



Primary Process Standard: 3M1.1

Depth of Knowledge: 3

Correct Answer: C

Which place value mat represents a number with a digit in the hundreds place that is greater than the digit in the thousands place?

A

Thousands	Hundreds	Tens	Ones
○○○ ○○○	○○○ ○○○	○○ ○○	○○ ○○

B

Thousands	Hundreds	Tens	Ones
○○○ ○○○	○○○ ○○○	○○	○○○

C

Thousands	Hundreds	Tens	Ones
○○○ ○○○	○○○○ ○○○○	○○○	○○○○○

D

Thousands	Hundreds	Tens	Ones
○○○○ ○○○○	○○○ ○○○	○○	○○ ○○

**OAS 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.

**OAS Objective:**

1. Number Sense
  - a. Place Value
    - ii. Read and write whole numbers up to 4 digits (e.g., expanded form, standard form).

**Item Specifications:**Emphasis:

Translate between representations of numbers.

Stimulus Attributes:

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

Format:

- Identify equivalent representations of a whole number

Content Limits:

- Limit numbers to whole numbers
- Limit numbers to four digits
- Limit representations to standard form, expanded form, written form, or models

Primary Process Standards:

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Predictable misrepresentation of digits
- Incorrect value for a digit
- Failure to establish correspondence between the appropriate model and its numerical or symbolic representation

**Oklahoma Academic Standards 2.1a Sample Test Items:**

Primary Process Standard: 3M5.1

Depth of Knowledge: 1

Correct Answer: C

**Which is equal to 3,571 in expanded form?**

- A**  $300 + 500 + 700 + 100$
- B**  $300 + 50 + 71$
- C**  $3,000 + 500 + 70 + 1$
- D**  $3,000 + 57 + 1$

Primary Process Standard: 3M5.1

Depth of Knowledge: 1

Correct Answer: D

**The Concorde was the fastest jet built to carry passengers. It traveled at the speed, in miles per hour, shown.****one thousand, five hundred fifty****What is that speed written as a numeral?**

- A** 155
- B** 1,055
- C** 1,500
- D** 1,550

Primary Process Standard: 3M5.1

Depth of Knowledge: 1

Correct Answer: A

**What is 4,973 written in words?**

- A** four thousand, nine hundred seventy-three
- B** four hundred ninety-seven
- C** four thousand, nine hundred three
- D** four hundred seventy-three

**OAS 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.

**OAS Objective:**

1. Number Sense
  - b. Whole Numbers and Fractions
    - i. Compare and order whole numbers up to 4 digits.

**Item Specifications:**Emphasis:

Compare and order two or more whole numbers.

Stimulus Attributes:

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

Format:

- Identify relationship between two or more whole numbers as greater than ( $>$ ), less than ( $<$ ), or equal to ( $=$ )
- Order whole numbers in ascending or descending order

Content Limits:

- Limit to whole numbers
- Limit to four digits
- Limit to three numbers

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Misrepresentation of place value
- Misinterpretation of symbols

**Oklahoma Academic Standards 2.1bi Sample Test Items:**

Primary Process Standard: 3M4.1

Depth of Knowledge: 1

Correct Answer: A

**Which symbol goes in the box to make the number sentence true?**

$$120 \quad \square \quad 152$$

**A**    <**B**    >**C**    =**D**    +

Primary Process Standard: 3M3.1

Depth of Knowledge: 2

Correct Answer: A

**Which list shows three numbers in order from least to greatest?**

**A**    1,739,    1,985,    2,808**B**    1,739,    2,808,    1,985**C**    2,808,    1,985,    1,739**D**    2,808,    1,739,    1,985

Primary Process Standard: 3M3.2

Depth of Knowledge: 3

Correct Answer: D

**Riley made this table to show the weights of her pets.**

**Weights of Pets**

<b>Pet's Name</b>	<b>Weight (ounces)</b>
Bart	1,520
Juan	1,360
Megan	1,424

**Which shows Riley's pets in order from heaviest to lightest?**

- A** Bart, Juan, Megan
- B** Juan, Megan, Bart
- C** Megan, Bart, Juan
- D** Bart, Megan, Juan

**OAS 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.

**OAS Objective:**

1. Number Sense
  - b. Whole Numbers and Fractions
    - ii. Create and compare physical and pictorial models of equivalent and nonequivalent fractions including halves, thirds, fourths, eighths, tenths, twelfths, and common percents (25%, 50%, 75%, 100%) (e.g., fraction circles, pictures, egg cartons, fraction strips, number lines).

**Item Specifications:**Emphasis:

Compare and order fractional numbers and percents using concrete models.

Stimulus Attributes:

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

Format:

- Use models to compare fractions
- Use models to identify fractions and percents
- Identify relationship among fractions as greater than ( $>$ ), less than ( $<$ ), or equal to ( $=$ )
- Identify fraction with the greatest value or the least value
- Order three fractions from least to greatest or greatest to least

Content Limits:

- Limit fractions to halves, thirds, fourths, eighths, tenths, and twelfths
- Limit percents to 25%, 50%, 75%, and 100%

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Computational errors
- Misrepresentation of numerator and denominator
- Misrepresentation of equivalence between 25%, 50%, 75%, 100% and their corresponding fractions



**Oklahoma Academic Standards 2.1bii Sample Test Items:**

Primary Process Standard: 3M3.2

Depth of Knowledge: 1

Correct Answer: A

The diagram shows how fraction strips are used to model four fractions.

$$\frac{1}{4} = \boxed{\frac{1}{4}}$$

$$\frac{2}{3} = \boxed{\frac{1}{3} \quad \frac{1}{3}}$$

$$\frac{1}{2} = \boxed{\frac{1}{2}}$$

$$\frac{3}{4} = \boxed{\frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4}}$$

Which fraction has the least value?

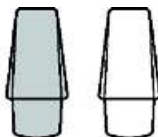
- A  $\frac{1}{4}$
- B  $\frac{1}{3}$
- C  $\frac{1}{2}$
- D  $\frac{3}{4}$

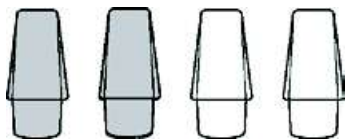
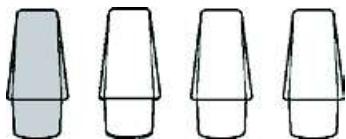
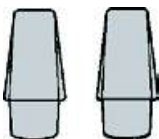
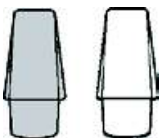
Primary Process Standard: 3M2.3

Depth of Knowledge: 2

Correct Answer: B

Which set shows less than  $\frac{1}{2}$  of the pencil erasers shaded?

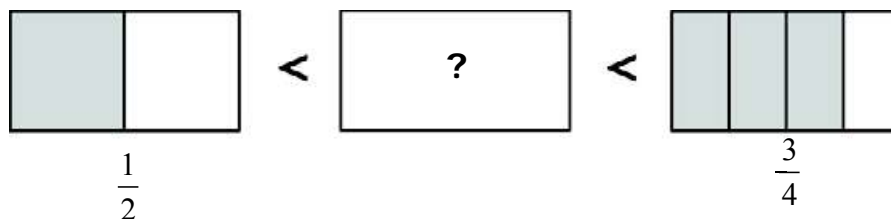
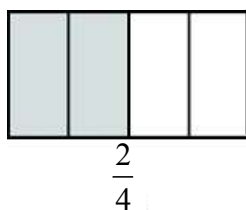
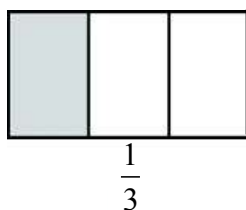
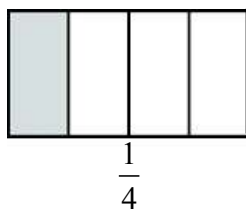
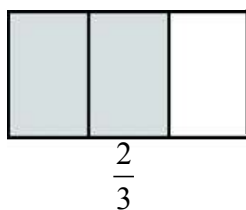
$$\frac{1}{2} =$$


**A****B****C****D**

Primary Process Standard: 3M2.4

Depth of Knowledge: 3

Correct Answer: D

**Sol drew these three rectangles to compare three fractions.****Which fraction goes in the middle to make the comparison true?****A****B****C****D**

**OAS 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.

**OAS Objective:**

2. Number Operations
  - a. Estimate and find the sum or difference (with and without regrouping) of 3- and 4-digit numbers using a variety of strategies to solve application problems.

**Item Specifications:**Emphasis:

Solve problems based on real world situations requiring estimation or calculation of sums and differences.

Stimulus Attributes:

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

Format:

- Solve application problems by adding and subtracting whole numbers
- Solve application problems by rounding and then adding or subtracting

Content Limits:

- Limit to whole numbers
- Limit to three- and four-digit numbers

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Computational errors
- Regrouping errors
- Rounding errors

**Oklahoma Academic Standards 2.2a Sample Test Items:**

Primary Process Standard: 3M1.2

Depth of Knowledge: 2

Correct Answer: D

**Joe's Pet Store had 329 angelfish, 704 guppies, and 1,058 goldfish. What was the total number of these 3 types of fish?**

- A** 1,033 fish
- B** 1,461 fish
- C** 2,071 fish
- D** 2,091 fish

Primary Process Standard: 3M1.4

Depth of Knowledge: 2

Correct Answer: C

**Today, Clara's Bakery made 281 cookies and sold 147 cookies. To the nearest ten, what is the number of cookies that are left to sell tomorrow?**

- A** 30 cookies
- B** 40 cookies
- C** 130 cookies
- D** 150 cookies

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: A

**Thomas has 152 baseball cards. His friend Mark has 129 baseball cards. How many more baseball cards does Thomas have than Mark?**

- A** 23 baseball cards
- B** 37 baseball cards
- C** 271 baseball cards
- D** 281 baseball cards

Primary Process Standard: 3M1.2

Depth of Knowledge: 3

Correct Answer: A

**Members of a soccer team had 800 raffle tickets to sell. They sold 308 tickets the first week and 175 the second week. How many raffle tickets did the team members have left to sell after the first and second weeks?**

- A** 317 raffle tickets
- B** 327 raffle tickets
- C** 483 raffle tickets
- D** 492 raffle tickets

**OAS 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.

**OAS Objective:**

## 2. Number Operations

## b. Multiplication Concepts and Fact Families

- i. Use physical models and a variety of multiplication algorithms to find the product of multiplication problems with one-digit multipliers.

**Item Specifications:**Emphasis:

Demonstrate knowledge of multiplication facts through the use of models and algorithms.

Stimulus Attributes:

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

Format:

- Identify the multiplication fact represented by a model
- Identify the correct multiplication algorithm

Content Limits:

- Limit to one-digit multipliers
- Limit to whole numbers

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

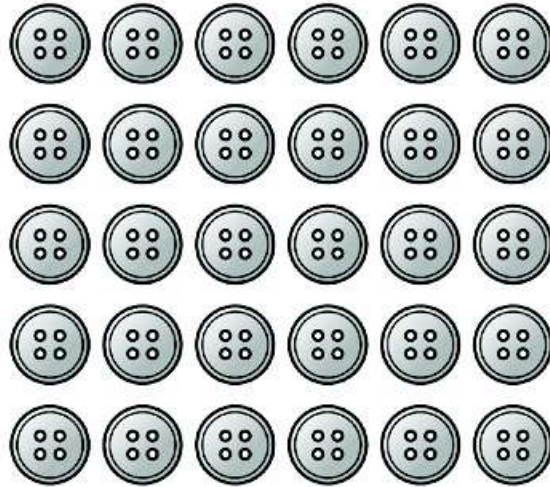
- Computational errors
- Misidentification of model or algorithm

**Oklahoma Academic Standards 2.2bi Sample Test Item:**

Primary Process Standard: 3M5.2

Depth of Knowledge: 2

Correct Answer: A



Which fact shows the total number of buttons in the picture?

- A**  $5 \times 6 = 30$
- B**  $5 + 6 = 11$
- C**  $5 \times 5 = 25$
- D**  $5 + 5 = 10$



**OAS 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.

**OAS Objective:**

2. Number Operations

b. Multiplication Concepts and Fact Families

ii. Demonstrate fluency (memorize and apply) with basic multiplication facts up to  $10 \times 10$  and the associated division facts (e.g.,  $5 \times 6 = 30$  and  $30 \div 6 = 5$ ).

**Item Specifications:**Emphasis:

Solve problems requiring knowledge of basic multiplication and division facts.

Stimulus Attributes:

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

Format:

- Identify and extend multiplication and division patterns
- Solve multiplication and division problems
- Identify the missing fact in a fact family

Content Limits:

- Limit multiplication facts and associated division facts to up to  $10 \times 10$

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

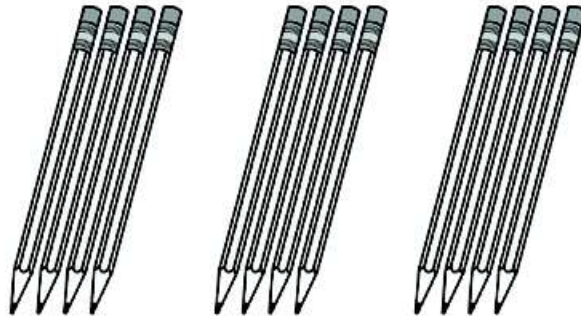
- Computational errors
- Misidentification of multiplication pattern
- Misidentification of division facts

**Oklahoma Academic Standards 2.2bii Sample Test Items:**

Primary Process Standard: 3M4.1

Depth of Knowledge: 1

Correct Answer: D



The pencils represent this fact family.

$$3 \times 4 = 12$$

$$12 \div 3 = 4$$

$$12 \div 4 = 3$$

Which of these equations also belongs to this fact family?

**A**  $12 \div 6 = 2$

**B**  $4 - 3 = 1$

**C**  $4 + 3 = 7$

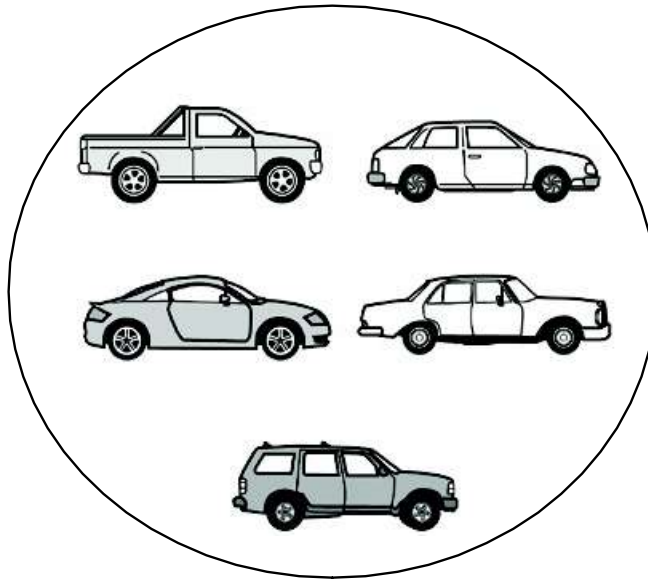
**D**  $4 \times 3 = 12$

Primary Process Standard: 3M4.3

Depth of Knowledge: 1

Correct Answer: C

**Terry counted toy cars in groups of 5. The picture shows one group.**



**Which list shows grouping by fives?**

- A** 5, 7, 9, 11
- B** 5, 10, 14, 18
- C** 5, 10, 15, 20
- D** 5, 8, 10, 12

Primary Process Standard: 3M3.2

Depth of Knowledge: 3

Correct Answer: D

**Nadia did 5 sets of 9 sit-ups. She wrote this equation to represent the total number of sit-ups she did.**

$$5 \times 9 = \square$$

**Which equation belongs in the same fact family as the equation shown?**

**A**  $5 + 9 = \square$

**B**  $\square - 5 = 9$

**C**  $9 \times \square = 5$

**D**  $\square \div 9 = 5$

**OAS 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.

**OAS Objective:**

2. Number Operations

b. Multiplication Concepts and Fact Families

iii. Estimate the product of 2-digit by 2-digit numbers by rounding to the nearest multiple of 10 to solve application problems.

**Item Specifications:**Emphasis:

Apply estimation skills to solve multiplication problems.

Stimulus Attributes:

Test items may include illustrations of the following: tables, graphs, pictures, and other counting manipulatives.

Format:

- Estimate the result of multiplication on whole numbers
- Use estimation to determine solutions to real world situations involving multiplication of whole numbers

Content Limits:

- Limit to product of 2-digit number by 2-digit number

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Computational errors
- Rounding errors

**Oklahoma Academic Standards 2.2biii Sample Test Items:**

Primary Process Standard: 3M1.4

Depth of Knowledge: 2

Correct Answer: B

**Joey baked 12 batches of brownies. Each batch has 36 brownies. Which is closest to the total number of brownies Joey baked?**

- A** 300 brownies
- B** 400 brownies
- C** 600 brownies
- D** 800 brownies

Primary Process Standard: 3M1.3

Depth of Knowledge: 2

Correct Answer: C

**A school library has 17 shelves of picture books. There are 33 picture books on each shelf. Which is closest to the total number of picture books in this library?**

- A** 300 picture books
- B** 400 picture books
- C** 600 picture books
- D** 800 picture books

**OAS Standard:**

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

**OAS Objective:**

1. Identify and compare attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes (e.g., count the edges and faces of a cube, the radius is half of a circle, lines of symmetry).

**Item Specifications:**Emphasis:

Classify and differentiate by characteristic plane figures and solid figures.

Stimulus Attributes:

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

Format:

- Name a figure with given characteristics
- Identify characteristics of a figure (e.g., edges, faces, vertices)
- Identify congruent figures

Content Limits:

- Limit plane figures (regular or irregular) to a maximum of five sides
- Limit solid figures to spheres, cylinders, rectangular or triangular prisms, and rectangular or triangular pyramids

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

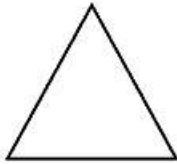
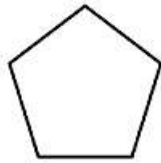
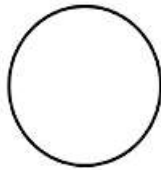
- Misidentification of characteristics, figures, or congruency
- Error in correlation of characteristics with figures

**Oklahoma Academic Standards 3.1 Sample Test Items:**

Primary Process Standard: 3M2.4

Depth of Knowledge: 1

Correct Answer: D

**Which figure has exactly 4 sides and 4 vertices?****A****B****C****D**

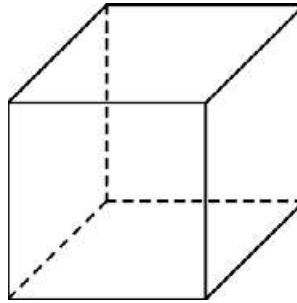


Primary Process Standard: 3M2.3

Depth of Knowledge: 2

Correct Answer: C

**A cube is pictured.**



**How many faces does a cube have?**

- A** 2 faces
- B** 4 faces
- C** 6 faces
- D** 8 faces

Primary Process Standard: 3M2.3

Depth of Knowledge: 3

Correct Answer: B

**Two figures are shown.**

Figure X

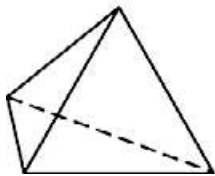
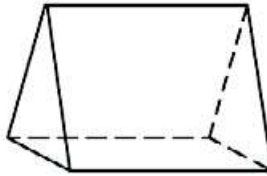


Figure Y



**Which statement about these figures is true?**

- A** Figure X has more faces than Figure Y.
- B** Figure Y has more vertices than Figure X.
- C** Both figures have the same number of edges.
- D** Both figures only have faces that are triangles.

**OAS Standard:**

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

**OAS Objective:**

2. Analyze the effects of combining and subdividing two- and three-dimensional figures (e.g., folding paper, tiling, nets, and rearranging pieces of solids).

**Item Specifications:**Emphasis:

Determine basic geometric figures used to form composite figures.

Stimulus Attributes:

Test items may include illustrations of the following: diagrams, grids, gridded figures, pattern blocks, and pictures.

Format:

- Identify basic figures that combine to form composite figures
- Identify composite figure formed by combining basic figures

Content Limits:

- Limit plane figures used in composite figures to a maximum of five sides
- Limit to three basic figures in a composite figure

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 5: Representation

Distractor Domain:

- Misidentification of basic figures
- Misidentification of composite figure formed

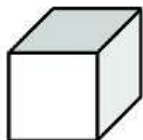
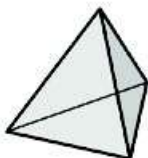
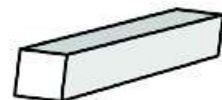
**Oklahoma Academic Standards 3.2 Sample Test Items:**

Primary Process Standard: 3M3.2

Depth of Knowledge: 1

Correct Answer: B

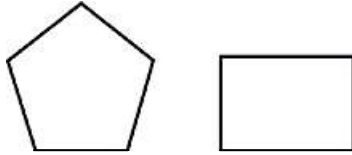
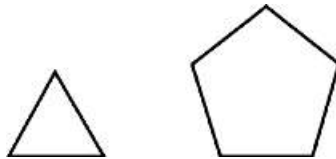
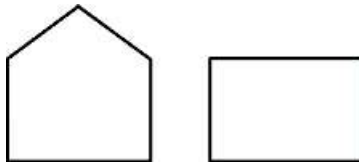
**Which of these 3-dimensional figures could be made using only triangles as faces?**

**A****B****C****D**

Primary Process Standard: 3M3.1

Depth of Knowledge: 2

Correct Answer: C

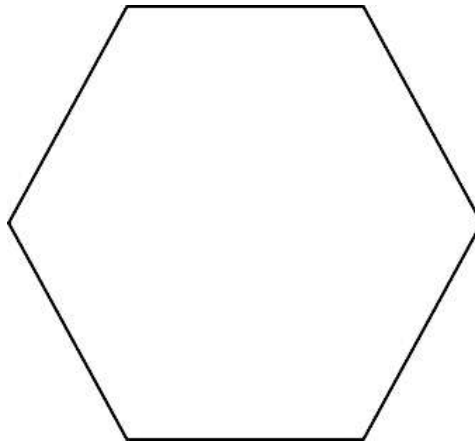
**Which shows one base and one face of a triangular prism?****A****B****C****D**

Primary Process Standard: 3M3.3

Depth of Knowledge: 3

Correct Answer: C

**Which three shapes could be combined to create the hexagon shown?**



- A** square, triangle, square
- B** triangle, square, triangle
- C** triangle, rectangle, triangle
- D** rectangle, triangle, rectangle

**OAS Standard:**

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

**OAS Objective:**

3. Make and use coordinate systems to specify locations and shapes on a grid with ordered pairs and to describe paths from one point to another point on a grid.

**Item Specifications:**Emphasis:

Identify and use grid coordinates to solve problems.

Stimulus Attributes:

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

Format:

- Identify the location of ordered pairs on a grid
- Describe paths between points
- Use ordered pairs to solve problems

Content Limits:

- Limit to  $6 \times 6$  grids
- Limit to objects or points placed at the intersection of the grid lines
- Limit location of ordered pairs to positive whole numbers in the first quadrant of the Cartesian plane

Primary Process Standards:

Process Standard 2: Communication

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Misinterpretation of coordinate meanings
- Incorrect directions when moving between points

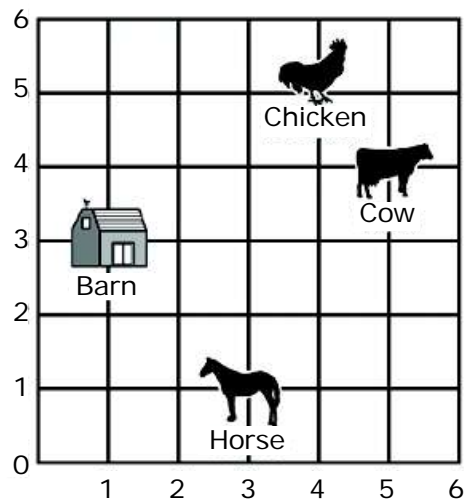
**Oklahoma Academic Standards 3.3 Sample Test Items:**

Primary Process Standard: 3M5.2

Depth of Knowledge: 1

Correct Answer: C

The grid shows the location of the barn and 3 animals on Joey's farm.



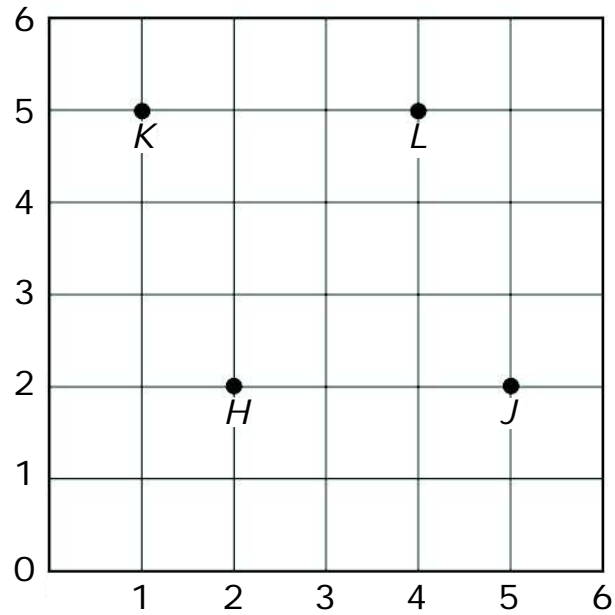
Which ordered pair shows the location of the chicken?

- A (1, 3)
- B (3, 1)
- C (4, 5)
- D (5, 4)

Primary Process Standard: 3M5.1

Depth of Knowledge: 1

Correct Answer: B



What letter is located at (5, 2) on this grid?

- A** *H*
- B** *J*
- C** *K*
- D** *L*

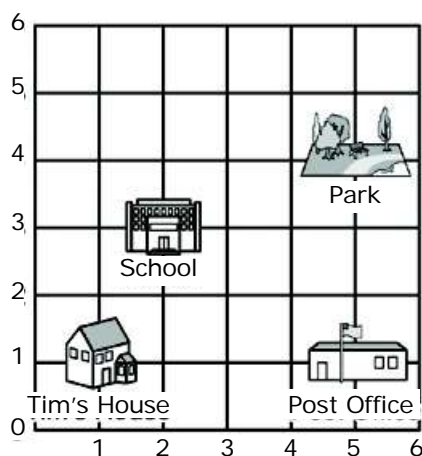


Primary Process Standard: 3M2.1

Depth of Knowledge: 2

Correct Answer: D

**Tim started walking from his house. On the map, he went to the right 4 spaces and then up 3 spaces.**



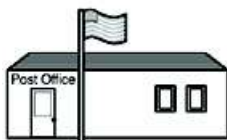
**Which picture shows his new location?**

**A**

Tim's House

**B**

School

**C**

Post Office

**D**

Park

**OAS Standard:**

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

**OAS Objective:**

1. Measurement
  - a. Choose an appropriate measurement instrument and measure the length of objects to the nearest inch or half-inch and the weight of objects to the nearest pound or ounce.

**Item Specifications:**Emphasis:

Apply knowledge of customary units to estimate and measure length and weight to solve problems.

Stimulus Attributes:

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

Format:

- Read a balance to solve weight problems
- Use a ruler to measure length to the nearest inch or half-inch
- Choose correct measurement instrument

Content Limits:

- Limit length to nearest inch or half-inch
- Limit weight to pounds and ounces

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Inaccurate reading of measurement instrument
- Incorrect choice of measurement instrument

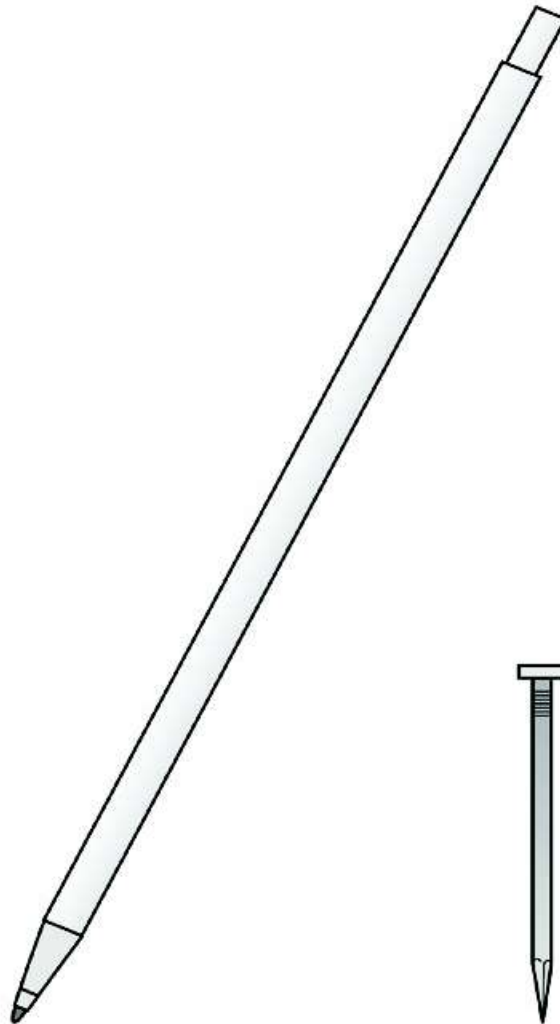
**Oklahoma Academic Standards 4.1a Sample Test Items:**

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: D

The nail is about two inches (in.) long.



About how long is the pen?

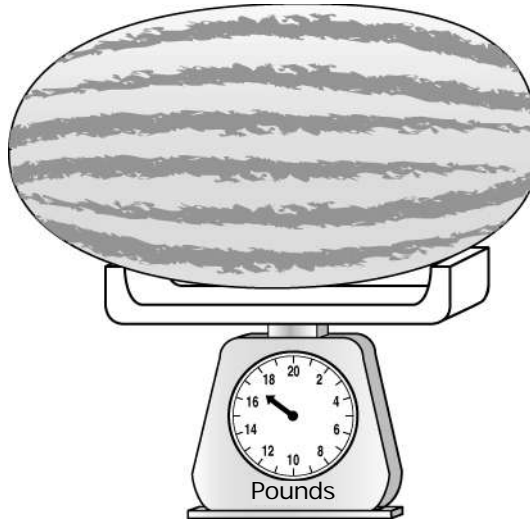
- A 3 in.
- B 4 in.
- C 5 in.
- D 6 in.

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: B

**The scale shows the weight of one watermelon.**



**Ms. Cerda bought 2 watermelons the same size as the one shown on the scale. What is the total weight, in pounds, of the 2 watermelons?**

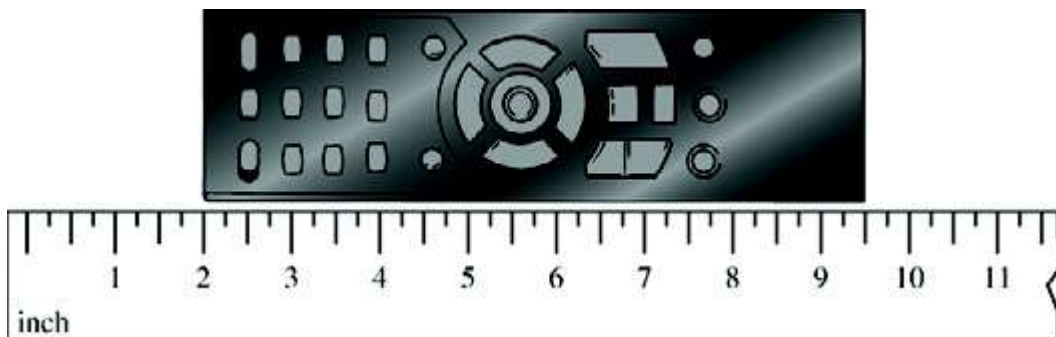
- A** 40 pounds
- B** 34 pounds
- C** 32 pounds
- D** 17 pounds

Primary Process Standard: 3M3.3

Depth of Knowledge: 3

Correct Answer: B

**What is the length, to the nearest half-inch (in.), of the remote control shown?**



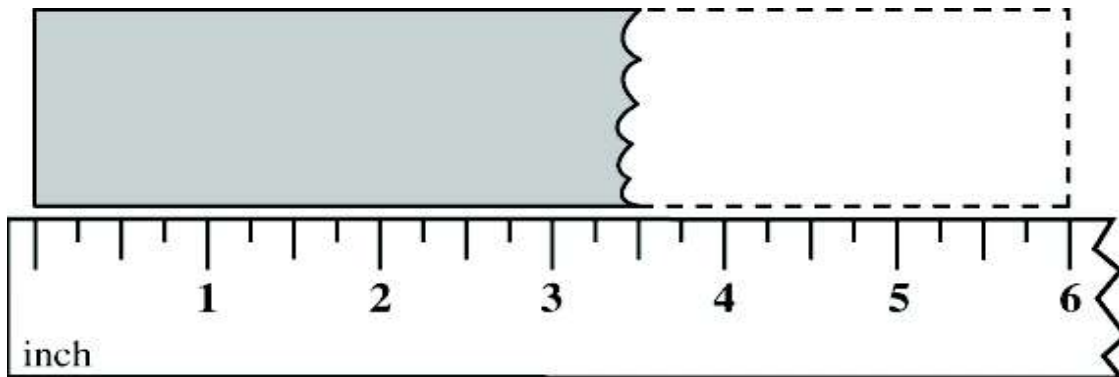
- A**  $5\frac{1}{2}in.$
- B**  $7\frac{1}{2}in.$
- C**  $9\frac{1}{2}in.$
- D**  $11\frac{1}{2}in.$

Primary Process Standard: 3M4.1

Depth of Knowledge: 3

Correct Answer: B

**Gail ate part of a candy bar. The shaded area in the picture shows how much is left.**



**To the nearest half-inch, how much of the bar has Gail already eaten?**

- A**  $1\frac{1}{2}$  inches
- B**  $2\frac{1}{2}$  inches
- C**  $3\frac{1}{2}$  inches
- D**  $4\frac{1}{2}$  inches

**OAS Standard:**

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

**OAS Objective:**

1. Measurement

c. Develop and use the concept of perimeter of different shapes to solve problems.

**Item Specifications:**Emphasis:

Determine perimeter of simple polygons.

Stimulus Attributes:

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

Format:

- Calculate perimeter by counting units

Content Limits:

- Limit perimeter to counting whole units
- Limit shapes to squares and rectangles or figures that can be composed of squares and rectangles

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Computational errors
- Use incorrect formula

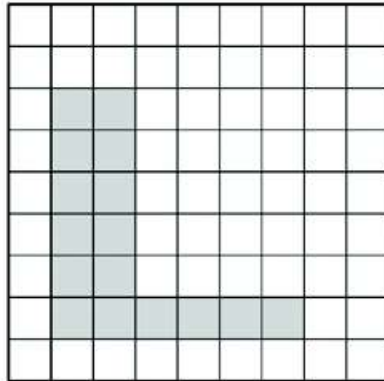
**Oklahoma Academic Standards 4.1c Sample Test Item:**

Primary Process Standard: 3M5.2

Depth of Knowledge: 2

Correct Answer: A

Each small square on the grid has sides that measure 1 unit long.



What is the perimeter, in units, of the shaded figure on the grid?

- A** 24 units
- B** 22 units
- C** 21 units
- D** 16 units



**OAS Standard:**

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

**OAS Objective:**

2. Time and Temperature

a. Solve simple addition problems with time (e.g., 15 minutes added to 1:10 p.m.).

**Item Specifications:**Emphasis:

Apply knowledge of adding time to solve problems.

Stimulus Attributes:

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

Format:

- Add a given number of minutes to given time

Content Limits:

- Limit time to five-minute intervals

Primary Process Standards:

Process Standard 2: Communication

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Computational errors
- Conversion errors (minutes to hours)

**Oklahoma Academic Standards 4.2a Sample Test Item:**

Primary Process Standard: 3M1.3

Depth of Knowledge: 2

Correct Answer: C

**Oliver begins eating his lunch at 12:30 p.m.****He eats his lunch in 45 minutes. What time does Oliver finish lunch?**

- A** 12:45 p.m.
- B** 1:00 p.m.
- C** 1:15 p.m.
- D** 1:30 p.m.

**OAS Standard:**

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

**OAS Objective:**

2. Time and Temperature

b. Tell time on a digital and analog clock to the nearest 5 minute.

**Item Specifications:**Emphasis:

Apply skill of reading clocks to solve problems.

Stimulus Attributes:

Test items may include illustrations of the following: digital and analog clocks.

Format:

- Tell time on a digital or analog clock

Content Limits:

- Limit time to five-minute intervals

Primary Process Standards:

Process Standard 2: Communication

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Inaccurate reading of clocks

**Oklahoma Academic Standards 4.2b Sample Test Item:**

Primary Process Standard: 3M2.4

Depth of Knowledge: 1

Correct Answer: A

**Bob will leave for school at the time shown on the clock.****What time does the clock show?**

- A** 7:45
- B** 8:09
- C** 8:45
- D** 9:08

**OAS Standard:**

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

**OAS Objective:**

2. Time and Temperature

c. Read a thermometer and solve for temperature change.

**Item Specifications:**Emphasis:

Apply skill of reading thermometers to solve problems.

Stimulus Attributes:

Test items may include illustrations of the following: Fahrenheit and Celsius thermometers.

Format:

- Read temperature on a Fahrenheit or Celsius thermometer
- Add or subtract degrees from temperature on thermometer

Content Limits:

- Limit temperature readings to whole degrees

Primary Process Standards:

Process Standard 2: Communication

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Inaccurate reading of thermometers
- Computational errors

**Oklahoma Academic Standards 4.2c Sample Test Items:**

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: D

**The temperature at lunchtime was 60 °F. By bedtime, the temperature had dropped 35 °F. What was the temperature at bedtime?**

- A** 95 °F
- B** 85 °F
- C** 35 °F
- D** 25 °F

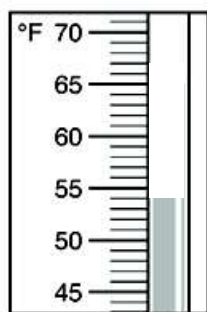
Primary Process Standard: 3M5.2

Depth of Knowledge: 3

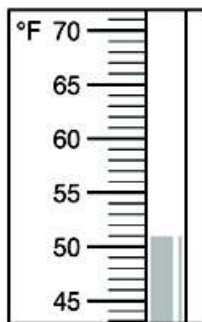
Correct Answer: C

One day in McAlester, the high temperature was  $56^{\circ}\text{F}$ . Which thermometer best shows  $56^{\circ}\text{F}$ ?

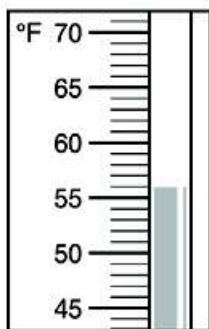
A



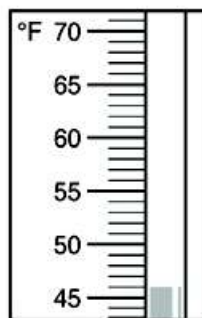
B



C



D



**OAS Standard:**

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

**OAS Objective:**

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

**Item Specifications:**Emphasis:

Apply subtraction skills to solve problems involving money.

Stimulus Attributes:

Test items may include illustrations of the following: pictures and counting manipulatives.

Format:

- Subtract small amounts of money up to \$5.00 to solve real world problems

Content Limits:

- Limit numbers to two decimal places
- Limit number of purchased items to two
- Limit to finding change up to \$5.00

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Distractor Domain:

- Computational errors
- Decimal placement errors
- Regrouping errors



**Oklahoma Academic Standards 4.3 Sample Test Items:**

Primary Process Standard: 3M1.2

Depth of Knowledge: 2

Correct Answer: C

**Anton bought a comic book. The price is shown. Anton paid with a \$5.00 bill.**



**How much change should Anton have received?**

- A**    \$2.10
- B**    \$2.15
- C**    \$2.85
- D**    \$3.85

Primary Process Standard: 3M4.3

Depth of Knowledge: 2

Correct Answer: A

**Chris bought a CD for \$4.95, including tax. He gave the clerk a \$5 bill. How much change should he have received?**

- A**    \$0.05
- B**    \$1.05
- C**    \$4.45
- D**    \$4.90

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

Correct Answer: C

Dakota bought a puzzle that cost \$2.30, including tax. She paid with a \$5 bill. Which of these shows how much change Dakota should have received?

A



B



C



D



Primary Process Standard: 3M1.1

Depth of Knowledge: 3

Correct Answer: D

**The table shows the prices of several school supplies at a store.**

**School Supplies**

Item	Price
binder	\$2.87
calculator	\$3.45
markers	\$1.75
paper	\$1.05
school box	\$1.25

**June had \$5.00 when she went to the store. She bought 1 calculator. What is the most expensive item June could have bought with the money she had left?**

- A** binder
- B** markers
- C** paper
- D** school box

**OAS Standard:**

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

**OAS Objective:**

1. Data Analysis
  - b. Read graphs and charts, identify the main idea, draw conclusions, and make predictions based on the data (e.g., predict how many children will bring their lunch based on a menu).

**Item Specifications:**Emphasis:

Interpret graphical representations of data to include main idea, drawing conclusions, and making predictions.

Stimulus Attributes:

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

Format:

- Interpret and compare information in a chart or graph
- Supply missing information in a chart or graph

Content Limits:

- Limit graphs to pictographs, bar graphs, and circle graphs
- Limit charts and tables to five categories
- Limit scale increments to 1, 2, 5, or 10

Primary Process Standards:

Process Standard 1: Problem Solving

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Misinterpretation of data
- Unsupportable conclusions and predictions
- Inappropriate main idea

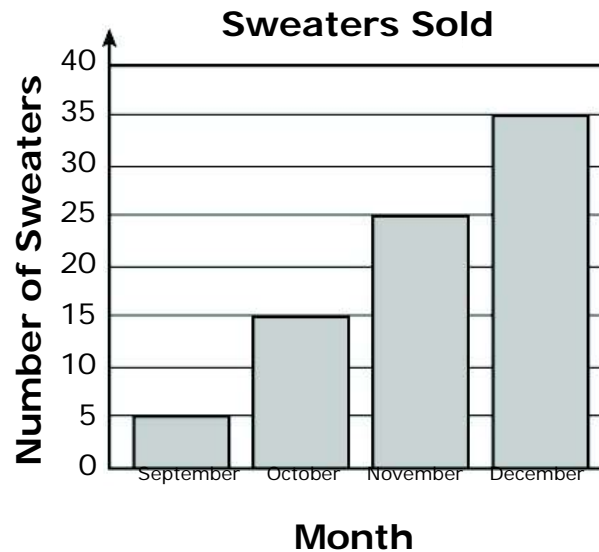
**Oklahoma Academic Standards 5.1b Sample Test Items:**

Primary Process Standard: 3M1.1

Depth of Knowledge: 2

Correct Answer: B

The graph shows the number of sweaters Lisa sold in each of 4 months.



How many more sweaters did Lisa sell in November than in September?

- A** 30 sweaters
- B** 20 sweaters
- C** 15 sweaters
- D** 10 sweaters

Primary Process Standard: 3M1.2

Depth of Knowledge: 2

Correct Answer: D

**The table shows the number of tickets sold in each of 5 weeks.**

**Number of Tickets Sold**

<b>Week</b>	<b>Number Sold Each Week</b>
1	18
2	22
3	38
4	52
5	86

**How many tickets were sold in weeks 2 and 4 altogether?**

- A** 30 tickets
- B** 60 tickets
- C** 72 tickets
- D** 74 tickets






















Primary Process Standard: 3M5.1


Depth of Knowledge: 2

Correct Answer: D

The pictograph shows the number of cupcakes sold at a bakery each day last week.

**Number of Cupcakes Sold**

Day	Number Sold
Monday	  
Tuesday	   
Wednesday	 
Thursday	    
Friday	      

Key:  = 10 cupcakes

How many total cupcakes were sold on Monday and Tuesday last week?

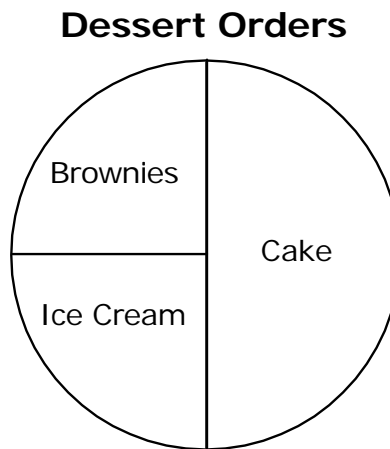
- A 6 cupcakes
- B 7 cupcakes
- C 60 cupcakes
- D 70 cupcakes

Primary Process Standard: 3M3.2

Depth of Knowledge: 3

Correct Answer: B

**The graph shows the desserts 4 friends ordered at a restaurant.**



**Based on the graph, how many of the friends ordered cake?**

- A** 1 friend
- B** 2 friends
- C** 3 friends
- D** 4 friends

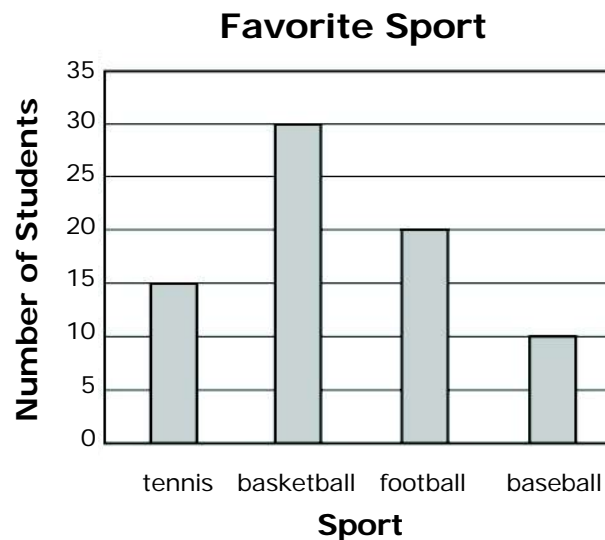


Primary Process Standard: 3M3.3

Depth of Knowledge: 3

Correct Answer: B

**Some students voted for their favorite sport. The results are shown in the graph.**



**According to the graph, which statement is true?**

- A** Twice as many students voted for baseball than voted for football.
- B** Twice as many students voted for basketball than voted for tennis.
- C** The number of students who voted for tennis is less than the number of students who voted for baseball.
- D** The number of students who voted for basketball is less than the number of students who voted for baseball and tennis combined.

**OAS Standard:**

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

**OAS Objective:**

1. Data Analysis
  - c. Construct bar graphs, frequency tables, line graphs (plots), and pictographs with labels and a title from a set of data.

**Item Specifications:**Emphasis:

Construct graphical displays of sets of data.

Stimulus Attributes:

Test items may include illustrations of the following: bar graphs, frequency tables, line graphs (plots), pictographs, pictures, and counting manipulatives.

Format:

- Data set displayed correctly as a graph
- Graph representing a unique data set
- Identify correct labels and title for a graph or chart

Content Limits:

- Limit to five categories
- Limit to bar graph, frequency table, line graph (plot), or pictograph
- Limit scale on bar graphs, line graphs, and frequency tables to increments of 1, 2, 5, or 10

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

- Misreading scale increments, labels, or key
- Misinterpret information in data set or graph

**Oklahoma Academic Standards 5.1c Sample Test Items:**

Primary Process Standard: 3M5.1

Depth of Knowledge: 2

Correct Answer: A

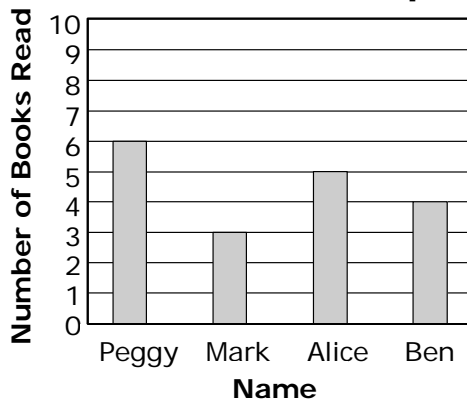
The chart shows the number of books read by 4 students.

**Books Read in April**

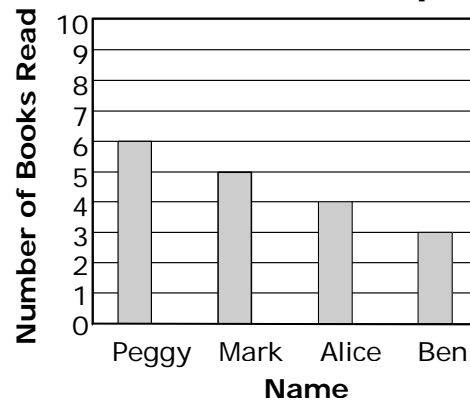
Name	Number of Books Read
Peggy	
Mark	
Alice	
Ben	

Which bar graph correctly shows the information in the chart?

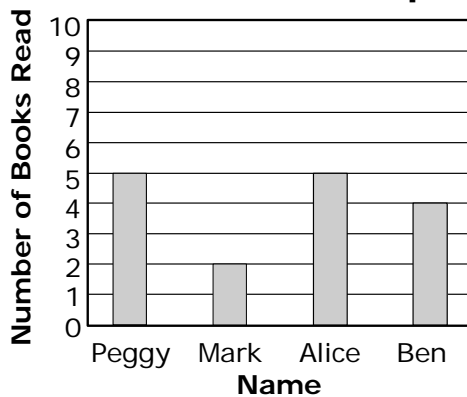
**A Books Read in April**



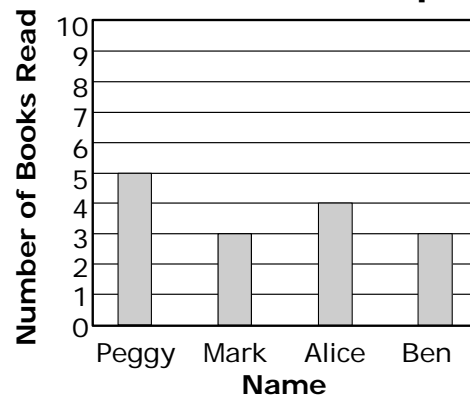
**B Books Read in April**



**C Books Read in April**



**D Books Read in April**







Primary Process Standard: 3M4.3


Depth of Knowledge: 2

Correct Answer: C

The number of red, yellow, blue, and green balloons that Sadie has is shown in this pictograph.

Colors of Balloons

Color	Number of Balloons
Red	
Yellow	
Blue	
Green	

Key:  = 2 balloons

Which table shows the same information as the pictograph?

**A**

Color	Number of Balloons
Red	15
Yellow	6
Blue	12
Green	3

**B**

Color	Number of Balloons
Red	5
Yellow	2
Blue	4
Green	1

**C**

Color	Number of Balloons
Red	10
Yellow	4
Blue	8
Green	2

**D**

Color	Number of Balloons
Red	12
Yellow	4
Blue	10
Green	2

Primary Process Standard: 3M5.2

Depth of Knowledge: 2

Correct Answer: C


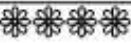
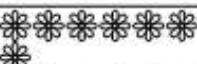

Meredith has a flower garden. The table shows how many of each flower she has in her garden.


Meredith's Garden

Flower	Number of Flowers
roses	50
tulips	40
pansies	75
daisies	115

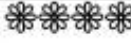
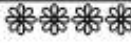
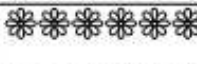

Which pictograph shows the same information as the table?


A Meredith's Garden

Flower	Number of Flowers
roses	
tulips	
pansies	
daisies	

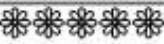
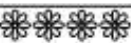
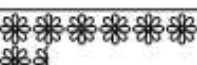

Key:  = 10 flowers


B Meredith's Garden

Flower	Number of Flowers
roses	
tulips	
pansies	
daisies	



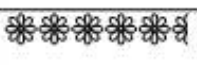
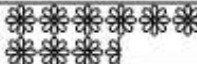
Key:  = 10 flowers


C Meredith's Garden

Flower	Number of Flowers
roses	
tulips	
pansies	
daisies	

Key:  = 10 flowers

D Meredith's Garden

Flower	Number of Flowers
roses	
tulips	
pansies	
daisies	

Key:  = 10 flowers

**OAS Standard:**

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

**OAS Objective:**

2. Probability: Describe the probability (more, less, or equally likely) of chance events.

**Item Specifications:**Emphasis:

Apply the knowledge of simple probability to describe the outcome of chance events.

Stimulus Attributes:

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

Format:

- Describe the probability of a single event as most likely, least likely, or equally likely
- Emphasize pictorial representation of everyday objects

Content Limits:

- Limit to a single event
- Limit to descriptors of most, least, or equally likely

Primary Process Standards:

Process Standard 2: Communication

Process Standard 3: Reasoning

Process Standard 4: Connections

Process Standard 5: Representation

Distractor Domain:

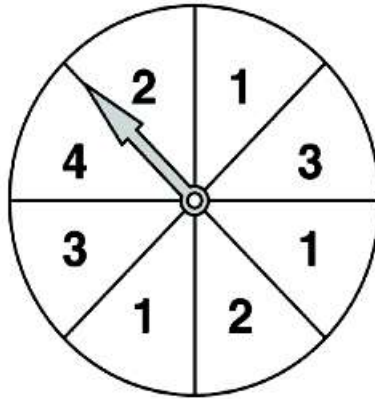
- Confuse meaning of least likely, most likely, and equally likely
- Misinterpretation of stimulus

**Oklahoma Academic Standards 5.2 Sample Test Items:**

Primary Process Standard: 3M3.2

Depth of Knowledge: 2

Correct Answer: D

**Each section of the spinner is the same size.****On which number is the arrow least likely to land after one spin?**

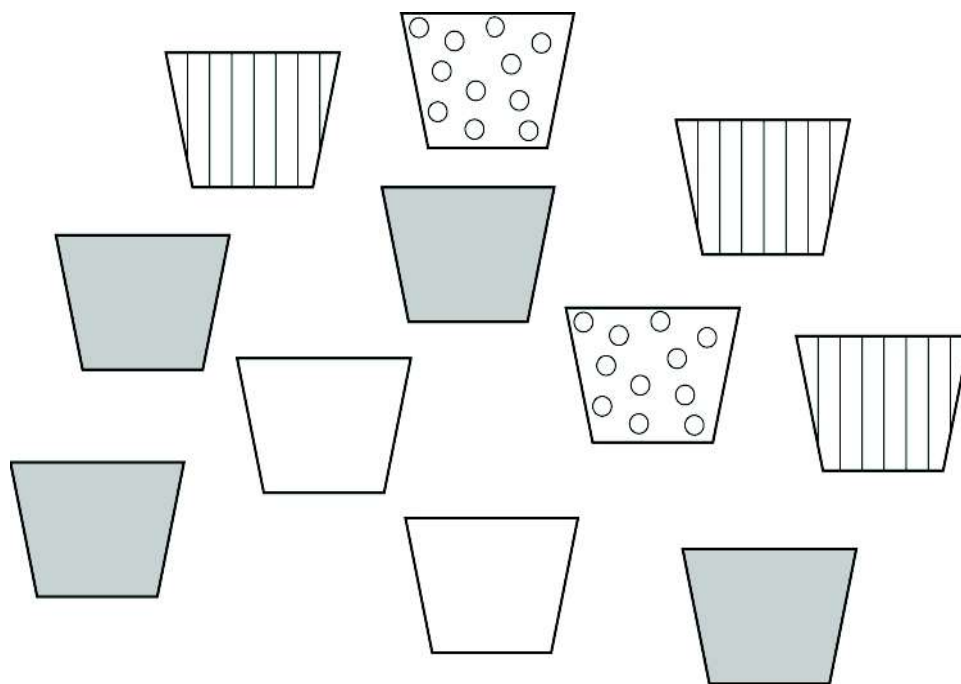
- A** 1
- B** 2
- C** 3
- D** 4

Primary Process Standard: 3M4.4

Depth of Knowledge: 2

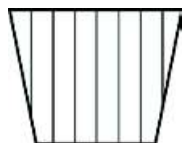
Correct Answer: D

The picture shows some flower pots that Mrs. Thomas has in a box.



If Mrs. Thomas pulls 1 flower pot from the box without looking, which type of flower pot will she most likely pull out?

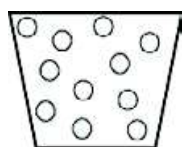
A



B



C



D





Primary Process Standard: 3M1.2

Depth of Knowledge: 3

Correct Answer: C

**A gumball machine contains only these gumballs:**

- 4 red
- 5 green
- 5 blue
- 2 yellow

**Based on the numbers shown, which color of gumball is most likely to come out of the machine next?**

- A** red
- B** yellow
- C** either green or blue
- D** either blue or yellow