NEBRASKA STATE ACCOUNTABILITY

MATHEMATICS ITEM AND SCORING SAMPLER

GRADE 8

Nebraska State Accountability assessments are administered by the Nebraska Department of Education (NDE).
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INFORMATION ABOUT THE ITEM AND SCORING SAMPLER

ITEMS

GENERAL INTRODUCTION

The Nebraska Department of Education provides districts and schools with tools to assist in delivering focused instructional programs aligned to the state assessment system. These tools include Table of Specifications documents, administration manuals, and content-based item and scoring samplers. This Item and Scoring Sampler is a useful tool for Nebraska educators in the preparation of local instructional programs and the statewide NeSA-MATH.

SAMPLER CONTENTS

This sampler contains test questions (items) that have been written to align to the assessment indicators that are based on the Nebraska College- and Career-Ready Mathematics Standards. The test questions provide a simulation of the types of items that will appear on an operational Nebraska College- and Career-Ready NeSA-MATH. Each sample test question has been through a rigorous review process to ensure alignment with the assessment indicators.

PURPOSE AND USES

The purpose of the sampler is to expose teachers and administrators to new item types and to show how these items align to the revised Nebraska College- and Career-Ready Mathematics Standards. Many of the items provided in the sampler will be accessible to students in the form of MATH Practice Tests, Guided Practice Tests, and Online Tools Training resources.

ITEM FORMAT AND SCORING GUIDELINES

The Nebraska College- and Career-Ready NeSA-MATH has two types of test questions. The types of test questions are Multiple-Choice (MC) and Auto-Scored Constructed Response (ASCR).

MULTIPLE CHOICE (MC):

All MC items have four answer choices, including three distractors and one correct answer. Distractors represent common miscalculations, incorrect logic, common misinterpretations, unsound reasoning, etc. A correct response to an MC item is worth one point.

AUTO-SCORED CONSTRUCTED RESPONSE (ASCR):

ASCR item types provide a new forum in which to address higher-level thinking skills without the use of hand-scored test questions. Using the expansive features and functions of online testing, developers will incorporate technical enhancements to the test question, the response area, and/or the stimulus. Item types may include drag-and-drop, hot-spot, and in-line selection of multiple answers from drop-down menus. Students will be able to manipulate information within dynamic tasks such as dragging and pasting elements, using manipulatives, and selecting multiple answers from a variety of presentation methods. Each ASCR test question is worth 2 points.

DEPTH OF KNOWLEDGE

In addition to being aligned to the standards, the sample items included in this sampler were also developed with a particular emphasis on cognitive complexity, or Depth of Knowledge (DOK). The DOK level is also provided for each item in this sampler in the Item Information Table. DOK measures the level of cognitive demand required to complete an assessment item. The following descriptions show the expectations of the DOK levels in greater detail.

Level 1 (Recall) includes the recall of information such as a fact, definition, term, or a simple procedure, as well as performing a simple algorithm or applying a formula. That is, in mathematics, a one-step, well-defined, and straight algorithmic procedure should be included at this lowest level. Other key words that signify Level 1 include "identify," "recall," "recognize," "use," and "measure." Verbs such as "describe" and "explain" could be classified at different levels, depending on what is to be described and explained.

Level 2 (Skill/Concept) includes the engagement of some mental processing beyond a habitual response. A Level 2 assessment item requires students to make some decisions as to how to approach the problem or activity, whereas Level 1 requires students to demonstrate a rote response, perform a well-known algorithm, follow a set procedure (like a recipe), or perform a clearly defined series of steps. Keywords that generally distinguish a Level 2 item include "classify," "organize," "estimate," "make observations," "collect and display data," and "compare data." These actions imply more than one step. For example, to compare data requires first identifying characteristics of objects or phenomena and then grouping or ordering the objects. Some action verbs, such as "explain," "describe," or "interpret," could be classified at different levels depending on the object of the action. For example, interpreting information from a simple graph, or reading information from the graph, also are at Level 2. Interpreting information from a complex graph that requires some decisions on what features of the graph need to be considered and how information from the graph can be aggregated is at Level 3. Level 2 activities are not limited only to number skills, but may involve visualization skills and probability skills. Other Level 2 activities include noticing or describing non-trivial patterns; explaining the purpose and use of experimental procedures; carrying out experimental procedures; making observations and collecting data; classifying, organizing, and comparing data; and organizing and displaying data in tables, graphs, and charts.

Level 3 (Strategic Thinking) requires reasoning, planning, using evidence, and a higher level of thinking than the previous two levels. In most instances, requiring students to explain their thinking is at Level 3. Activities that require students to make conjectures are also at this level. The cognitive demands at Level 3 are complex and abstract. The complexity does not result from the fact that there are multiple answers, a possibility for both Levels 1 and 2, but because the task requires more demanding reasoning. An activity, however, that has more than one possible answer and requires students to justify the response they give would most likely be at Level 3. Other Level 3 activities include drawing conclusions from observations, citing evidence and developing a logical argument for concepts, explaining phenomena in terms of concepts, and deciding which concepts to apply in order to solve a complex problem.

ITEM AND SCORING SAMPLER FORMAT

Sample questions are provided in this sampler, along with any related stimulus information such as a passage or graphic. Following each test question is an item information table.

Example Response Item Information Table

Item Information		
Alignment	Assigned Indicator	Assigned indicator definition
Answer Key	Correct Answer	**Option Annotations**
Depth of Knowledge	Assigned DOK	Brief answer option analysis or rationale
Focus	Skill/Task	

The NeSA-MATH is administered primarily online. Although there is a paper-pencil format, the examples in this sampler include samples of students' responses in online format.

ADDITIONAL INFORMATION

For more information related to the Nebraska plan and schedule for making the transition to NeSA-Mathematics, see http://www.education.ne.gov/Assessment and select the link on the left titled "CCR MATH Transition."

MULTIPLE-CHOICE ITEMS

1. What is $\sqrt[3]{3^{-6}}$ in simplest form?

A. $\frac{1}{387420489}$

B. $\frac{1}{19683}$

C. $\frac{1}{27}$

D. $\frac{1}{9}$

Item Information		
Alignment	MA 8.1.2.b	Simplify numerical expressions involving exponents and roots (e.g., $4^{(-2)}$ is the same as $\frac{1}{16}$).
Answer Key	D	**Option Annotations**
Depth of Knowledge	2	The student is asked to simplify the radical expression shown.
Focus	Simplifying Expressions with Roots	Option D is correct since $\sqrt[3]{3^{-6}} = 3^{\left(\frac{-6}{3}\right)} = 3^{-2} = \left(\frac{1}{3}\right)^2 = \frac{1}{9}$. Option A is incorrect since $3^{(-6 \bullet 3)} = 3^{-18} = \left(\frac{1}{3}\right)^{18} = \frac{1}{387{,}420{,}489}$. Option B is incorrect since $3^{(-6-3)} = 3^{-9} = \left(\frac{1}{3}\right)^9 = \frac{1}{19{,}683}$. Option C is incorrect since $3^{(-6+3)} = 3^{-3} = \left(\frac{1}{3}\right)^3 = \frac{1}{27}$.

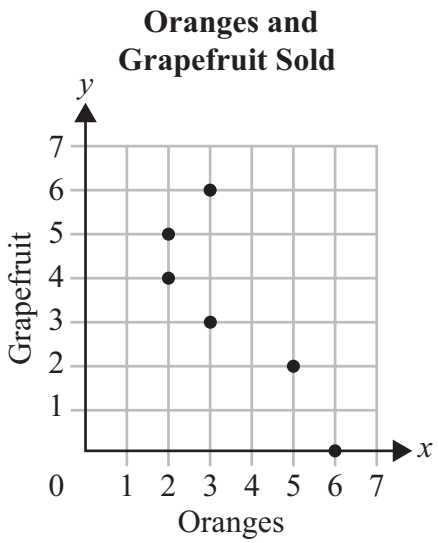
2. Use the table below to answer the question.

Oranges and Grapefruit Sold

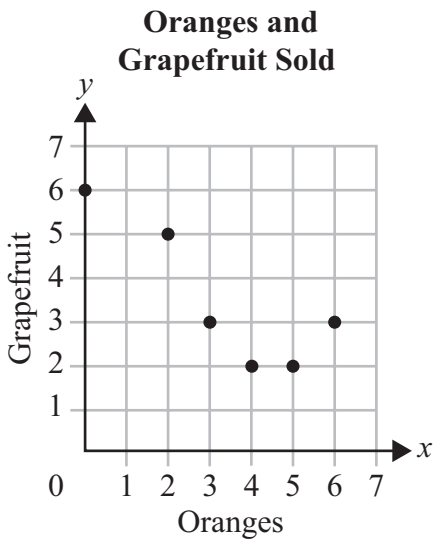
Oranges	3	4	0	2	5	6
Grapefruit	3	2	6	5	2	3

The table shows the numbers of oranges and grapefruits sold to six different customers. Which scatter plot represents the data?

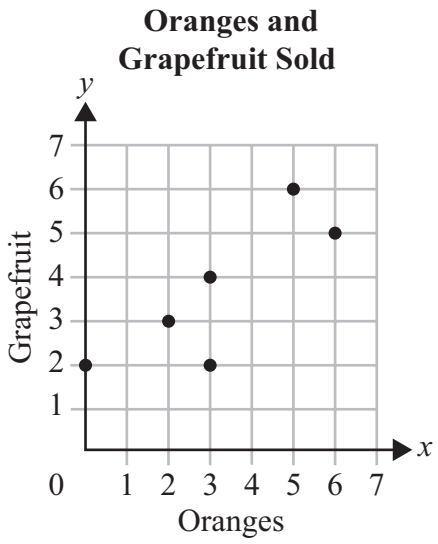
A.



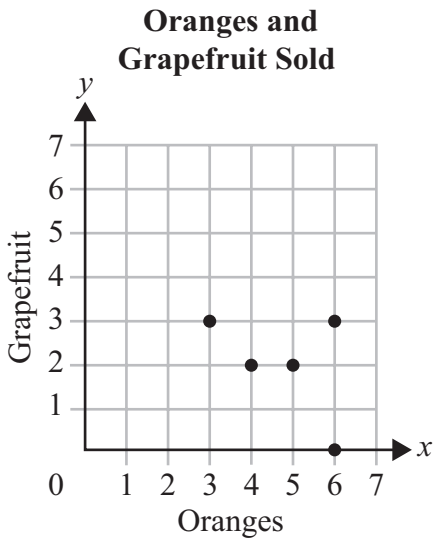
B.



C.

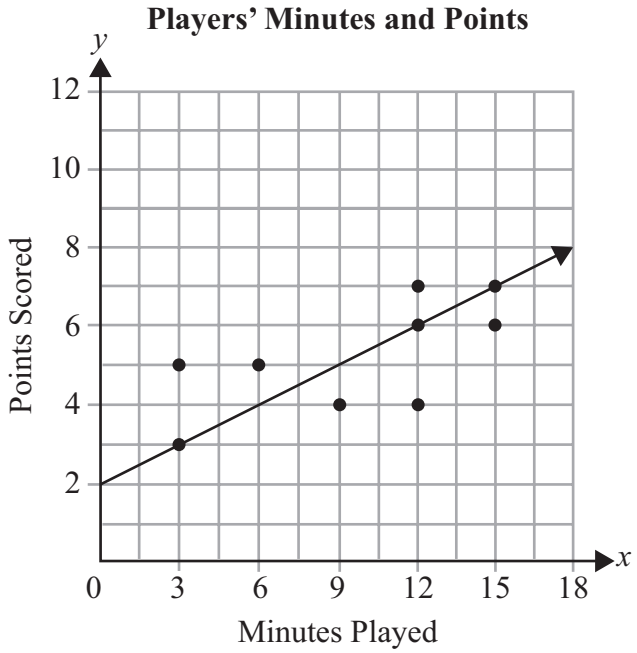


D.



Item Information		
Alignment	MA 8.4.1.a	Represent bivariate data (i.e. ordered pairs) using scatter plots.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to use the table to identify the scatter plot that represents the data in the table. Option B is the correct answer since all values from the table are represented in the scatter plot. Option A is incorrect since the *x*- and *y*-coordinates of the points are reversed in the scatter plot. Option C is incorrect since only one point from the table is plotted correctly in the scatter plot. Option D is incorrect since the *x*- and *y*-coordinates of one of the points are reversed and one point from the table is not included in the scatter plot.
Focus	Representing Data from Tables Using Scatter Plots	

3. Use the scatter plot below to answer the question.



The scatter plot shows the number of minutes played and points scored by some players on a team. Using the line of best fit, which number is CLOSEST to the number of points that would be scored by a player that plays for 27 minutes?

A. 6

B. 11

C. 15

D. 16

Item Information		
Alignment	MA 8.4.2.a	Solve problems and make predictions using an approximate line of best fit.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to use the line of best fit on the scatter plot to make a prediction. Option B is the correct answer since the equation of the line of best fit is $y = \frac{1}{3}x + 2$, $y = \frac{1}{3}(27) + 2$, $y = 9 + 2$, or $y = 11$. Option A is incorrect since 6 is the absolute value of the x-intercept. Options C and D are incorrect since the equation of the line of best fit used to generate the values is $y = \frac{1}{2}x + 2$.
Focus	Making Predictions Using Line of Best Fit	

4. What is the square root of 100?

A. 5

B. 10

C. 25

D. 50

Item Information		
Alignment	MA 8.1.2.a	Evaluate the square roots of perfect squares less than or equal to 400 and cube roots of perfect cubes less than or equal to 125.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the square root of 100. Option B is the correct answer since $10^2 = 10 \bullet 10 = 100$. Option A is incorrect since $5^2 = 5 \bullet 5 = 25$. Option C is incorrect since $25^2 = 625$. Option D is incorrect since $50^2 = 2{,}500$.
Focus	Evaluating Square Roots of Perfect Squares	

5. Use the equation below to answer the question.

$$5(2m + 10) = 2(5m + 10)$$

Which statement correctly describes the value of m?

A. The variable m has no correct solutions.

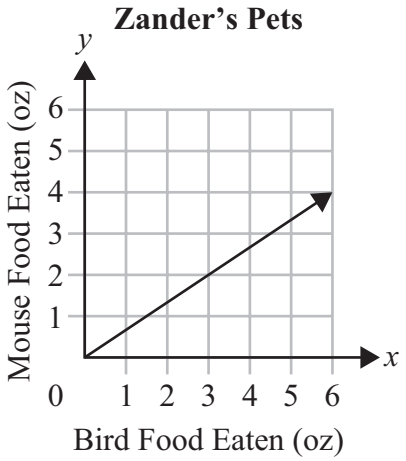
B. The variable m has infinitely many correct solutions.

C. The variable m has one solution, and it is when $m = 0$.

D. The variable m has one solution, and it is when $m = 1$.

Item Information		
Alignment	MA 8.2.1.c	Describe equations and linear graphs as having one solution, no solution, or infinitely many solutions.
Answer Key	A	**Option Annotations**
Depth of Knowledge	2	The student is asked to use the equation to determine the number of solutions of the variable. Option A is the correct answer since there are no values of the variable that make the equation true. Options B, C and D are incorrect since the equation has no solution.
Focus	Equations with No Solution	

6. Use the graph below to answer the question.



The graph shows the amount of food Zander's pet mouse eats compared to his pet bird. Which statement correctly compares the amount of food each pet eats?

A. For every 1 ounce of food the bird eats, the mouse eats 2 ounces of food.

B. For every 2 ounces of food the bird eats, the mouse eats 1 ounce of food.

C. For every 2 ounces of food the bird eats, the mouse eats 3 ounces of food.

D. For every 3 ounces of food the bird eats, the mouse eats 2 ounces of food.

Item Information		
Alignment	MA 8.2.1.d	Graph proportional relationships and interpret the slope.
Answer Key	D	**Option Annotations**
Depth of Knowledge	2	The student is asked to use the graph to interpret the slope of the given situation. Option D is the correct answer since the rate of change is $\frac{2}{3}$ where the *y*-value represents mouse food and the *x*-value represents bird food, and the point (3, 2) falls on the line. Option A is incorrect since the point (1, 2) does not fall on the line. Option B is incorrect since the point (2, 1) does not fall on the line. Option C is incorrect since the point (2, 3) does not fall on the line.
Focus	Interpreting Slope of Graph of Proportional Relationship	

7. Aaron sells jackets online. He adds $4.75 per jacket onto every purchase for shipping. He collected a total of $188.75 selling 5 jackets. Which equation could be used to calculate the sale price, j, of each jacket?

A. $5(j + 4.75) = 188.75$

B. $5j + 4.75 = 188.75$

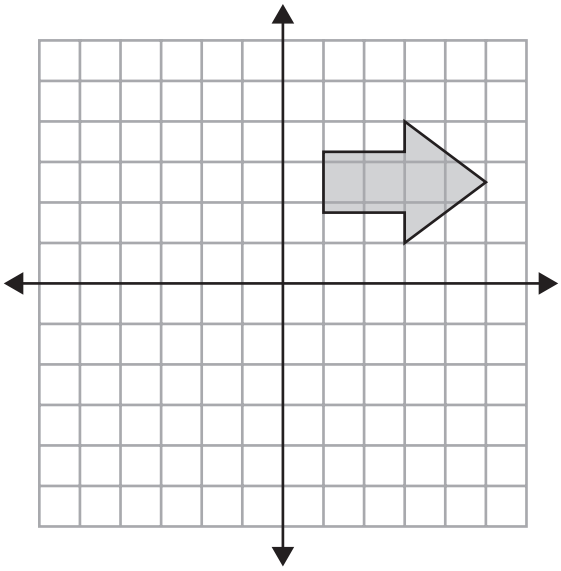
C. $5(4.75) + j = 188.75$

D. $(5 + 4.75)j = 188.75$

<table>
<tr><th colspan="3">Item Information</th></tr>
<tr><td>Alignment</td><td>MA 8.2.3.b</td><td>Write a multi-step equation to represent real-world problems using rational numbers in any form.</td></tr>
<tr><td>Answer Key</td><td>A</td><td rowspan="3">Option Annotations

The student is asked to write a multi-step equation that represents the given situation. Option A is the correct answer since the equation shows the price of each jacket plus the shipping fee (j + 4.75) multiplied by the 5 jackets sold, and the product is equal to 188.75. Option B is incorrect since the equation does not show the shipping fee (4.75) multiplied by the 5 jackets. Option C is incorrect since the equation does not show the price of each golf ball (j) multiplied by the 5 jackets. Option D is incorrect since the equation shows the shipping fee multiplied by the cost of the jacket.</td></tr>
<tr><td>Depth of Knowledge</td><td>2</td></tr>
<tr><td>Focus</td><td>Writing Multi-Step Equations to Represent Real-World Problems</td></tr>
</table>

8. Use the arrow on the coordinate plane below to answer the question.



The arrow is rotated 90° clockwise about the origin. Which statement correctly describes the quadrant and orientation of the arrow?

A. The arrow is in quadrant II pointing right.

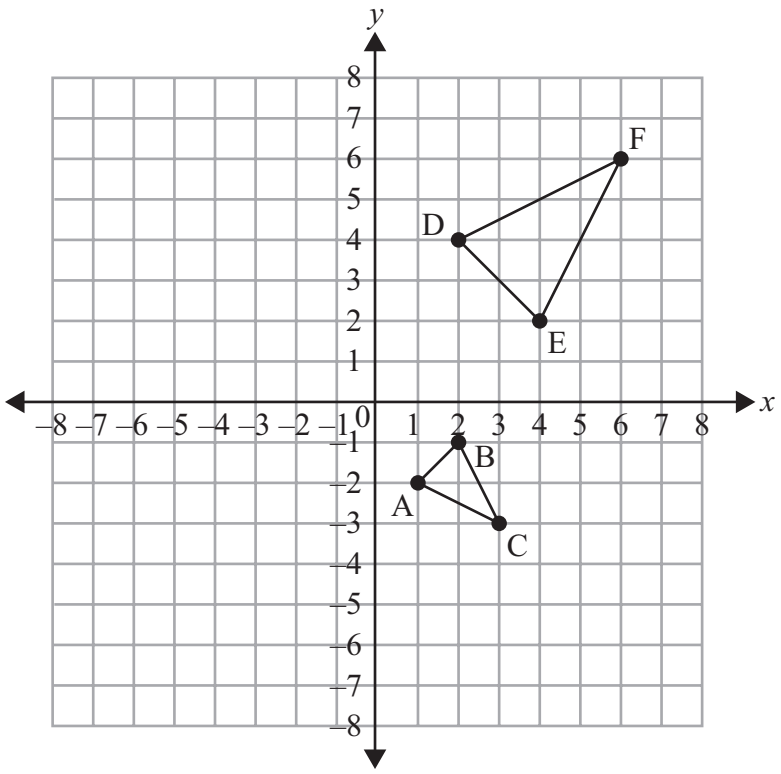
B. The arrow is in quadrant II pointing down.

C. The arrow is in quadrant IV pointing right.

D. The arrow is in quadrant IV pointing down.

Item Information		
Alignment	MA 8.3.2.a	Perform and describe positions and orientation of shapes under single transformations including rotations (in multiples of 90 degrees about the origin), translations, reflections, and dilations on and off the coordinate plane.
Answer Key	D	**Option Annotations**
Depth of Knowledge	2	The student is asked to determine the quadrant and orientation of the arrow after the given transformation is performed. Option D is the correct answer since the arrow is in quadrant IV and is oriented to point down after the transformation. Option A is incorrect since the arrow is not in quadrant II nor oriented to point right after the transformation. Option B is incorrect since the arrow is not in quadrant II after the transformation. Option C is incorrect since the arrow is not oriented to point right after the transformation.
Focus	Orientation of Shape After Rotation	

9. Use the triangles below to answer the question.



Triangles ABC and DEF are similar but not congruent. Which set of transformations could be used to transform triangle ABC onto triangle DEF?

A. A translation 3 units up followed by a rotation 90° counterclockwise about its center.

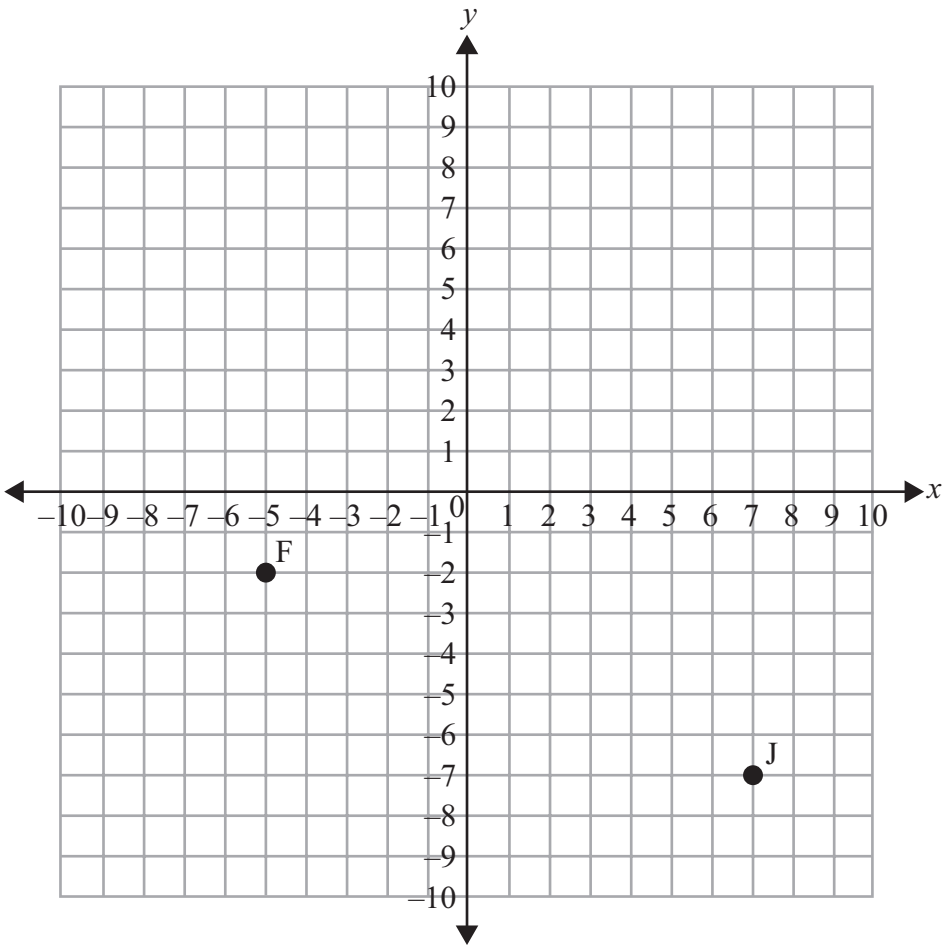
B. A reflection across the *x*-axis followed by a dilation of scale factor 2 about the origin.

C. A reflection across the line $y = x$ followed by a rotation 90° clockwise about the origin.

D. A rotation 90° counterclockwise about the origin followed by a dilation of scale factor 0.5 about the origin.

Item Information		
Alignment	MA 8.3.2.c	Find similar two-dimensional figures and define similarity in terms of a series of transformations.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to determine which set of transformations creates a similar but not congruent triangle to triangle ABC. Option B is the correct answer since the set of transformations transforms triangle ABC onto triangle DEF. Options A and C are incorrect since the sets of transformations create congruent triangles to triangle ABC. Option D is incorrect since the set of transformations does not transform triangle ABC onto triangle DEF.
Focus	Transformations to Form Similar Figures on Coordinate Plane	

10. Use the points on the coordinate plane below to answer the question.



What is the distance between points F and J?

A. 5

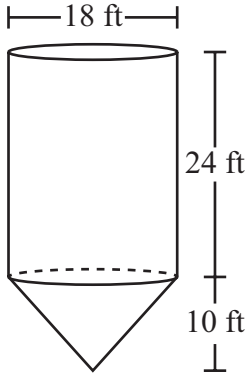
B. 12

C. 13

D. 17

Item Information		
Alignment	MA 8.3.3.c	Find the distance between any two points on the coordinate plane using the Pythagorean Theorem.
Answer Key	C	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the distance between the two points shown on the coordinate plane. Option C is the correct answer since $5^2 + 12^2 = 13^2$. Option A is incorrect since 5 units is the vertical distance between the points. Option B is incorrect since 12 units is the horizontal distance between the two points. Option D is incorrect since 17 units is the sum of the vertical and horizontal distances of the two points.
Focus	Finding Distance Between Two Points on Coordinate Plane	

11. Use the diagram of the grain silo below to answer the question.



What is the maximum amount of grain, in cubic feet, the silo can hold?

A. 246π ft^3

B. 492π ft^3

C. $2{,}214\pi$ ft^3

D. $8{,}856\pi$ ft^3

Item Information		
Alignment	MA 8.3.3.d	Determine the volume of cones, cylinders, and spheres, and solve real-world problems using volumes.
Answer Key	C	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem by finding the volume of the figure shown. Option C is the correct answer since the volume of the cylinder is $\pi \bullet 9^2 \bullet 24 = 1{,}944\pi$, the volume of the cone is $\frac{1}{3}(\pi \bullet 9^2 \bullet 10) = 270$, and $1{,}944\pi + 270\pi = 2{,}214\pi$. Option A is incorrect since 246π is the value that is calculated when the radius 9 is not squared. Option B is incorrect since 492π is the value that is calculated when the value of 9^2 is misrepresented as 18. Option D is incorrect since $8{,}856\pi$ is the value that is found when the diameter 18 is used in place of the radius.
Focus	Solving Real-World Problems with Volumes of Cones and Cylinders	

12. What is the value of |3| – |–19|?

A. –22

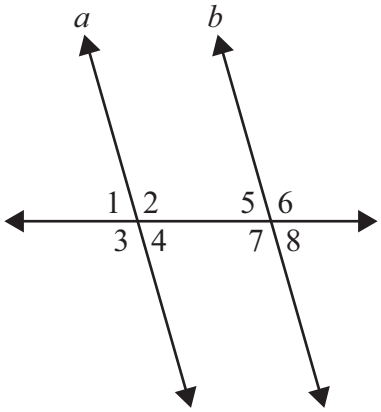
B. –16

C. 16

D. 22

Item Information		
Alignment	MA 8.1.2.c	Simplify numerical expressions involving absolute value.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the value of the expression. Option B is the correct answer since |3| = 3, |–19| = 19, and 3 – 19 = –16. Option A is incorrect since |3| is incorrectly evaluated as –3, and –3 – 19 = –22. Option C is incorrect since |3| is incorrectly evaluated as –3 and |–19| is incorrectly evaluated as –19, and –3 – (–19) = 16. Option D is incorrect since |–19| is incorrectly evaluated as –19, and 3 – (–19) = 22.
Focus	Simplifying Expressions with Absolute Value	

13. Use the figure below to answer the question.



Lines *a* and *b* are parallel. Which two angles are congruent?

A. ∠1 and ∠3

B. ∠1 and ∠4

C. ∠3 and ∠8

D. ∠5 and ∠7

Item Information		
Alignment	MA 8.3.1.b	Identify and apply geometric properties of parallel lines cut by a transversal and the resulting corresponding, alternate interior, and alternate exterior angles to find missing measures.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to use the parallel lines cut by a transversal to identify the pair of congruent angles. Option B is the correct answer since angles 1 and 4 are vertical angles. Options A, C, and D are incorrect since the pairs of angles are supplementary angles.
Focus	Identifying Angles Formed by Parallel Lines Cut by Transversals	

14. Which type of number is –2?

A. integer

B. irrational

C. natural

D. whole

<table>
<tr><th colspan="3">Item Information</th></tr>
<tr><td>Alignment</td><td>MA 8.1.1.a</td><td>Determine subsets of numbers as natural, integer, rational, irrational, or real, based on the definitions of these sets of numbers.</td></tr>
<tr><td>Answer Key</td><td>A</td><td rowspan="3">Option Annotations

The student is asked to classify the given number. Option A is the correct answer since –2 is an integer. Options B, C, and D are incorrect since they show other sets of numbers that –2 does not belong in.</td></tr>
<tr><td>Depth of Knowledge</td><td>1</td></tr>
<tr><td>Focus</td><td>Classifying Integers</td></tr>
</table>

15. What is 2.15×10^{-4} in standard form?

A. –21,500

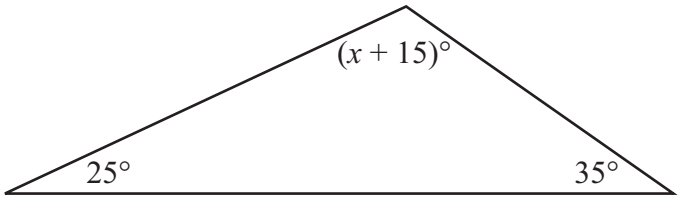
B. –0.000215

C. 0.000215

D. 21,500

Item Information		
Alignment	MA 8.1.1.b	Represent numbers with positive and negative exponents and in scientific notation.
Answer Key	C	**Option Annotations**
Depth of Knowledge	1	The student is asked to use standard form to represent the number given in scientific notation.
Focus	Scientific Notation with Negative Exponents	Option C is the correct answer since $2.15 \times 10^{-4} = 0.000215$. Option A is incorrect since $2.15 \times -(10^4) = -21{,}500$. Option B is incorrect since $2.15 \times -(10^{-4}) = -0.000215$. Option D is incorrect since $2.15 \times 10^4 = 21{,}500$.

16. Use the diagram below to answer the question.



What is the value of *x* in the triangle?

A. 60

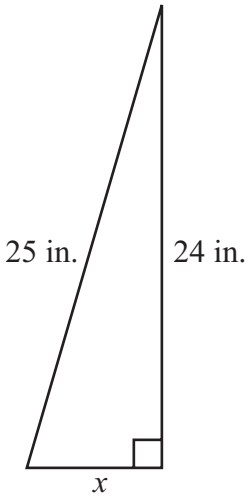
B. 75

C. 105

D. 120

Item Information		
Alignment	MA 8.3.1.a	Determine and use the relationships of the interior angles of a triangle to solve for missing measures.
Answer Key	C	**Option Annotations**
Depth of Knowledge	2	The student is asked to use the diagram of the triangle to find the value of the variable. Option C is the correct answer since 105 + 15 + 25 + 35 = 180. Option A is incorrect since 60 is the sum of the measures of the two bottom angles. Option B is incorrect since 75 is the sum of all numbers labeled in the diagram. Option D is incorrect since 120 is the measure of the top angle.
Focus	Solving for Missing Measures of Angles in Triangles	

17. Use the figure below to answer the question.



Using the Pythagorean theorem, what is the value of x?

A. 1 inch

B. 7 inches

C. 41 inches

D. 49 inches

Item Information		
Alignment	MA 8.3.3.b	Apply the Pythagorean Theorem to find side lengths of triangles and to solve real-world problems.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to use the Pythagorean theorem to find the value of the variable in the triangle shown. Option B is the correct answer since $25^2 - 24^2 = 7^2$. Option A is incorrect since $25 - 24 = 1$. Option C is incorrect since the value of x must be less than 25. Option D is incorrect since $25 + 24 = 49$.
Focus	Finding Side Length of Leg of Right Triangles	

18. Students are rafting on a river. They travel approximately 4.7 miles per day. They raft for three days. What is the BEST estimate of the total distance, in miles, they travel?

A. 12

B. 15

C. 19

D. 25

Item Information		
Alignment	MA 8.1.2.e	Estimate and check reasonableness of answers using appropriate strategies and tools.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem by estimating the product of 4.7 and 3 to the nearest whole number. Option B is the correct answer since 4.7 is closer to 5 than 4, and 5 • 3 = 15. Options A, C, and D are incorrect since the estimates are not as close to the product.
Focus	Estimating with Decimals	

19. What is the value of x in $2x - 2\frac{1}{3} = \frac{2}{3} - 3x$?

A. $x = -\frac{1}{3}$

B. $x = \frac{3}{5}$

C. $x = -3$

D. $x = 15$

Item Information		
Alignment	MA 8.2.2.a	Solve multi-step equations involving rational numbers with the same variable appearing on both sides of the equal sign.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the equation to find the value of the variable. Option B is the correct answer since $2x - 2\frac{1}{3} = \frac{2}{3} - 3x$, $2x - 2\frac{1}{3} + 2\frac{1}{3} = \frac{2}{3} + 2\frac{1}{3} - 3x$, $2x + 3x = 3 - 3x + 3x$, $5x = 3$, $\frac{5x}{5} = \frac{3}{5}$, $x = \frac{3}{5}$. Options A, C, and D are incorrect since the solutions are arrived at through errors in combining like and unlike terms.
Focus	Solving Multi-Step Equations with Fractions and Variables on Both Sides of Equal Sign	

20. Which represents the solution to $3x + 2 < -4$?

A. $x < -2$

B. $x > -2$

C. $x < -\frac{2}{3}$

D. $x > -\frac{2}{3}$

Item Information		
Alignment	MA 8.2.2.b	Solve two-step inequalities involving rational numbers and represent solutions on a number line.
Answer Key	A	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the inequality. Option A is the correct answer since $3x + 2 < -4$, $3x + 2 - 2 < -4 - 2$, $3x < -6$, $x < -2$. Option B is incorrect since the inequality sign is reversed in $x > -2$. Option C is incorrect since $-4 - 2$ is incorrectly combined when solving. Option D is incorrect since $-4 - 2$ is incorrectly combined and the inequality sign is reversed.
Focus	Solving Two-Step Inequalities	

21. Which expression represents m squared times 2.56?

A. $2.56 \bullet m \bullet 2$

B. $2.56m^2$

C. $(2.56m)^2$

D. $2(2.56m)$

Item Information		
Alignment	MA 8.2.1.a	Create algebraic expressions, equations, and inequalities (e.g., two-step, one variable) from word phrases, tables, and pictures.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to create an expression that represents the word phrase. Option B is the correct answer since $2.56m^2$ represents m squared times 2.56. Option A is incorrect since $2.56 \bullet m \bullet 2$ represents m times 2 times 2.56. Option C is incorrect since $(2.56m)^2$ represents the quantity 2.56 times m, squared. Option D is incorrect since $2(2.56m)$ represents 2 times the product of 2.56 and m.
Focus	Creating Algebraic Expressions from Word Phrases	

22. Jenny has $1.65 in quarters and dimes. She has x quarters and 3 times as many dimes as quarters. Which equation represents this situation?

A. $0.10(x) + 0.25(x) = 1.65$

B. $0.10(x) + 0.25(3x) = 1.65$

C. $0.10(3x) + 0.25(x) = 1.65$

D. $0.10(3x) + 0.25(3x) = 1.65$

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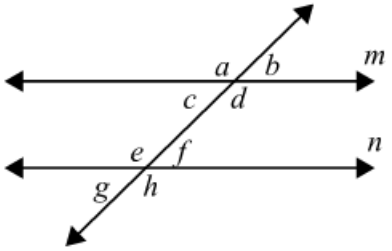
Item Information		
Alignment	MA 8.2.3.a	Describe and write equations from words, patterns, and tables.
Answer Key	C	**Option Annotations**
Depth of Knowledge	3	The student is asked to write an equation to represent the given situation. Option C is the correct answer since the equation shows the values of the coins and amounts multiplied correctly. Option A is incorrect since the equation does not show the value of the dime multiplied by 3 times the number of quarters. Option B is incorrect since the equation shows the value of the quarter multiplied by 3 times the number of quarters, and it does not show this with the value of the dime. Option D is incorrect since the equation shows the value of the quarter multiplied by 3 times the number of quarters.
Focus	Writing Equations from Words	

AUTO-SCORED CONSTRUCTED RESPONSE ITEMS

23. Use the figure below to answer the question.



Line *m* is parallel to line *n*.

Place the correct phrases into the boxes to complete each sentence.

?

Angles *c* and *g* are [ ] angles.

Angles *a* and *h* are [ ] angles.

Angles *d* and *e* are [ ] angles.

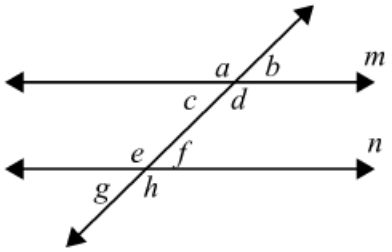
corresponding

alternate interior

alternate exterior

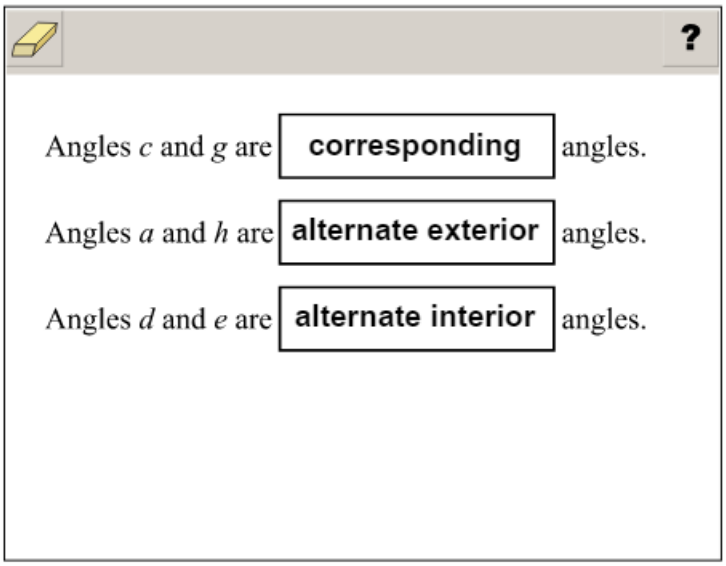
Answer Key – Completed Correct Response

Use the figure below to answer the question.



Line *m* is parallel to line *n*.

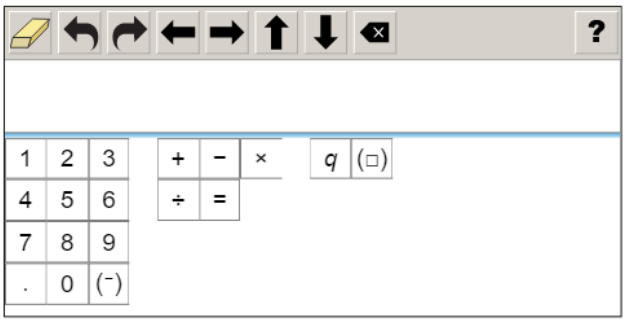
Place the correct phrases into the boxes to complete each sentence.



Item Information		
Alignment	MA 8.3.1.b	Identify and apply geometric properties of parallel lines cut by a transversal and the resulting corresponding, alternate interior, and alternate exterior angles to find missing measures.
Answer Key	See Completed Correct Response	**Option Annotations** The student is asked to place the phrases into the boxes to complete the sentences about the figure shown. The word "corresponding" belongs in the top box since angles *c* and *g* are in corresponding positions of the intersection where the transversal crosses the parallel lines. The words "alternate exterior" belong in the middle box since angles *a* and *h* are on alternate sides of the transversal and are in the exterior of the parallel lines. The words "alternate interior" belong in the bottom box since angles *d* and *e* are on alternate sides of the transversal and in the interior of the parallel lines.
Depth of Knowledge	1	
Focus	Angles Formed by Parallel Lines Cut by Transversal	

24. Dan has 5 coins in his pocket. Each coin is either a nickel or a quarter. The total value of the coins in Dan's pocket is 65 cents.

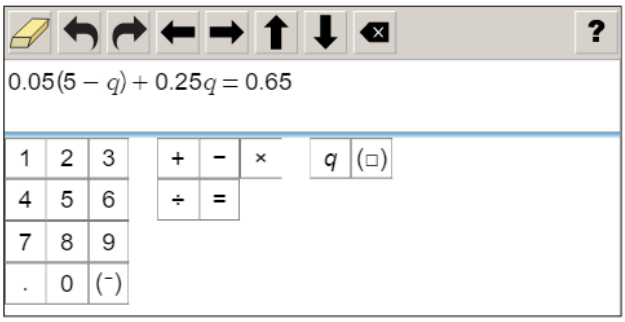
Enter an equation Dan could use to find the number of quarters, q, in his pocket.



Answer Key – Completed Correct Response

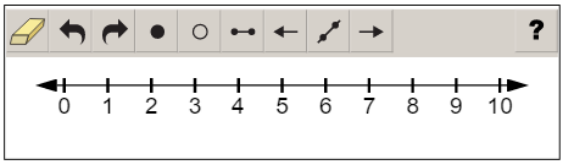
Dan has 5 coins in his pocket. Each coin is either a nickel or a quarter. The total value of the coins in Dan's pocket is 65 cents.

Enter an equation Dan could use to find the number of quarters, q, in his pocket.



Item Information		
Alignment	MA 8.2.3.b	Write a multi-step equation to represent real-world problems using rational numbers in any form.
Answer Key	See Completed Correct Response	**Option Annotations** The student is asked to write an equation that represents the given situation. The equation that should be entered is $0.05(5 - q) + 0.25q = 0.65$ or equivalent since q is the number of quarters and $5 - q$ is the number of nickels.
Depth of Knowledge	3	
Focus	Writing Multi-Step Equation for Real-World Problems	

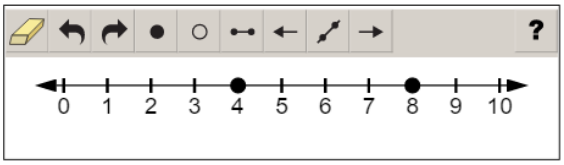
25. Plot the values of the square root of 64 and the cube root of 64 on the number line below. Then, use the drop down menu to select the symbol that makes a true comparison.



$\sqrt{64}$ [▾] $\sqrt[3]{64}$

Answer Key – Completed Correct Response

Plot the values of the square root of 64 and the cube root of 64 on the number line below. Then, use the drop down menu to select the symbol that makes a true comparison.



$\sqrt{64}$ [> ▾] $\sqrt[3]{64}$

Item Information		
Alignment	MA 8.1.2.a	Evaluate the square roots of perfect squares less than or equal to 400 and cube roots of perfect cubes less than or equal to 125.
Answer Key	See Completed Correct Response	**Option Annotations** The student is asked to plot the values of $\sqrt{64}$ and $\sqrt[3]{64}$ on the number line and then to create a true comparison using the drop down menu. The values that should be plotted on the number line are 8 and 4 since $\sqrt{64} = 8$ and $\sqrt[3]{64} = 4$. The comparison should read $\sqrt{64} > \sqrt[3]{64}$ since 8 is greater than 4.
Depth of Knowledge	1	
Focus	Square Roots and Cube Roots	

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GRADE 8