NEBRASKA STATE ACCOUNTABILITY

NeSA

MATHEMATICS
ITEM AND SCORING SAMPLER
GRADE 6

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. Which number written in exponential notation is equivalent to 343?

   A. 3^7

   B. 7^3

   C. 7^{49}

   D. 294^{49}

Item Information		
Alignment	MA 6.1.1.b	Represent non-negative whole numbers using exponential notation.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to determine which number written in exponential notation has a value of 343. Option B is the correct answer since $7^3 = 343$. Option A is incorrect since the base and exponent are reversed. Option C is incorrect since $7 \times 49 = 343$. Option D is incorrect since $294 + 49 = 343$.
Focus	Exponential Notation	

2. Owen has $1\frac{1}{2}$ gallons of fruit punch. He pours the punch into glasses that hold $\frac{1}{16}$ gallon. How many glasses can Owen fill with fruit punch?

   A. 11 glasses

   B. 24 glasses

   C. 32 glasses

   D. 48 glasses

Item Information		
Alignment	MA 6.1.2.a	Multiply and divide non-negative fractions and mixed numbers.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem by finding the quotient of $1\frac{1}{2}$ and $\frac{1}{16}$. Option B is the correct answer since $1\frac{1}{2} \div \frac{1}{16} = 24$. Option A is incorrect since 11 is the quotient of 16 and $1\frac{1}{2}$, rounded to the nearest whole number. Option C is incorrect since 32 is the quotient of 2 and $\frac{1}{16}$. Option D is incorrect since 48 is the quotient of 3 and $\frac{1}{16}$.
Focus	Dividing Mixed Numbers and Fractions	

3. **Use the graph below to answer the question.**
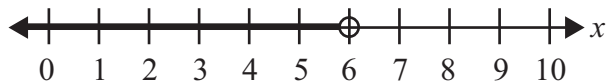
Which inequality is represented by the graph?

A. $x < 6$

B. $x > 6$

C. $x < 0$

D. $x > 0$

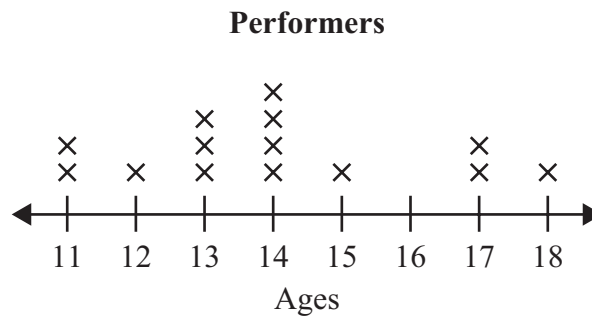| Item Information		
Alignment	MA 6.2.2.g	Represent inequalities on a number line (e.g., graph $x > 3$).
Answer Key	A	**Option Annotations**
Depth of Knowledge	1	The student is asked to write the inequality represented by the graph shown. Option A is the correct answer since the graph shows all values less than 6. Option B is incorrect since the solution set to the inequality includes all values greater than 6. Option C is incorrect since the solution set to the inequality includes all values less than 0. Option D is incorrect since the solution set to the inequality includes all values greater than 0.
Focus	Representing Inequalities on a Number Line	

4. A group of students make a map of the area around their school. They place the school at (0, 0). The nearest store is placed at the point (–5, 7). In which quadrant is the point representing the nearest store?

   A. Quadrant I

   B. Quadrant II

   C. Quadrant III

   D. Quadrant IV

Item Information		
Alignment	MA 6.3.2.c	Identify the quadrant of a given point in the coordinate plane.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to identify the quadrant of the given point in the coordinate plane. Option B is the correct answer since the point (–5, 7) is located in quadrant II of the coordinate plane. Option A is incorrect since both coordinates must be positive in order for the point to be located in quadrant I. Option C is incorrect since both coordinates must be negative in order for the point to be located in quadrant III. Option D is incorrect since the *x*-coordinate must be positive and the *y*-coordinate must be negative in order for the point to be located in quadrant IV.
Focus	Identifying Quadrant of Given Point	

5. A field is in the shape of a trapezoid. The shorter base of the trapezoid is 130 yards long and the longer base is 390 yards long. The distance between the two bases is 75 yards. What is the area of the field?

A. 9,750 yards^2

B. 19,500 yards^2

C. 29,250 yards^2

D. 39,000 yards^2

Item Information		
Alignment	MA 6.3.3.a	Determine the area of quadrilaterals, including parallelograms, trapezoids, and triangles by composition and decomposition of polygons as well as application of formulas.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem by finding the area of the figure described. Option B is the correct answer since $\frac{130 + 390}{2} \times 75 = 19{,}500$. Option A is incorrect since $130 \times 75 = 9{,}750$. Option C is incorrect since $390 \times 75 = 29{,}250$. Option D is incorrect since $(130 + 390) \times 75 = 39{,}000$.
Focus	Area of Trapezoids	

6. **Use the line plot below to answer the question.**

Performers

Ages

The line plot shows the ages of the performers in a play. How many performers are older than 13?

A.   4

B.   8

C. 11

D. 14

Item Information		
Alignment	MA 6.4.2.a	Solve problems using information presented in line plots, dot plots, box plots, and histograms.
Answer Key	B	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem using the line plot shown. Option B is the correct answer since 8 is the number of performers who are older than 13. Option A is incorrect since 4 is the number of performers who are older than 14. Option C is incorrect since 11 is the number of performers who are older than 12. Option D is incorrect since 14 is the total number of performers.
Focus	Solving Problems Using Line Plots	

7. What is 0.3 × 427?

    A.   0.1281

    B.   1.281

    C.   12.81
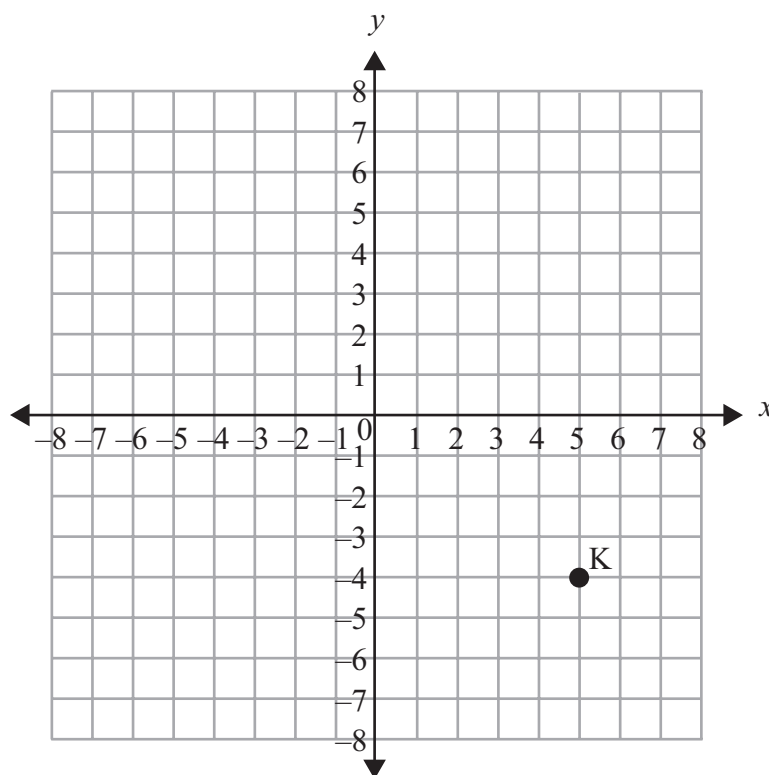
    D. 128.1

Item Information		
Alignment	MA 6.1.2.d	Add, subtract, multiply, and divide decimals using the standard algorithm.
Answer Key	D	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the product of 0.3 and 427. Option D is the correct answer since 0.3 × 427 = 128.1. Option A is incorrect since 0.0003 × 427 = 0.1281. Option B is incorrect since 0.003 × 427 = 1.281. Option C is incorrect since 0.03 × 427 = 12.81.
Focus	Multiplying Decimals	

8. Which expression is the prime factorization of 100?

    A. $2^2 \cdot 5^2$

    B. $2^2 \cdot 25$

    C. $4 \cdot 5^2$

    D. $4 \cdot 25$

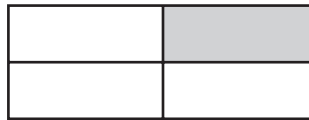| Item Information		
Alignment	MA 6.1.1.a	Determine common factors and common multiples using prime factorization of numbers with and without exponents.
Answer Key	A	**Option Annotations**
Depth of Knowledge	1	The student is asked to determine which expression shows the prime factorization of 100. Option A is the correct answer since $2^2 \cdot 5^2$ is the prime factorization of 100. Option B is incorrect since 25 is not a prime number. Option C is incorrect since 4 is not a prime number. Option D is incorrect since 4 and 25 are not prime numbers.
Focus	Prime Factorization	

9. **Use the coordinate grid below to answer the question.**

Which ordered pair matches point K?

A. (–5, –4)

B. (–4, –5)

C. (–4, 5)

D. (5, –4)

Item Information		
Alignment	MA 6.3.2.a	Identify the ordered pair of a given point in the coordinate plane.
Answer Key	D	**Option Annotations**
Depth of Knowledge	1	The student is asked to identify the ordered pair that represents the point shown on the coordinate plane. Option D is the correct answer since the point is 5 units to the right and 4 units down from the origin. Option A is incorrect since the x-coordinate is negative. Option B is incorrect since the x- and y-coordinates are reversed and both are negative. Option C is incorrect since the x- and y-coordinates are reversed.
Focus	Identifying Ordered Pair of Given Point	

10. Use the picture below to answer the question.

Which lists the fraction, decimal, and percent that represent the shaded part?

A. $\frac{1}{4}$, 0.20, 20%

B. $\frac{1}{4}$, 0.25, 25%

C. $\frac{1}{4}$, 0.4, 40%

D. $\frac{1}{4}$, 0.75, 75%

Item Information		
Alignment	MA 6.1.1.d	Convert among fractions, decimals, and percents using multiple representations.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to determine which list of numbers represents the shaded part of the figure shown. Option B is the correct answer since 1 of the 4 parts of the figure is shaded, and $\frac{1}{4}$, 0.25, and 25% are equivalent representations of the shaded part. Option A is incorrect since the decimal and percent are equivalent to $\frac{1}{5}$. Option C is incorrect since the decimal and percent are equivalent to $\frac{4}{10}$. Option D is incorrect since the decimal and percent are equivalent to $\frac{3}{4}$.
Focus	Equivalent Fractions, Decimals, and Percents With Models	

11. Use the table below to answer the question.

Sale Items

T-shirts	Price
Science Club	$15.00
Student Council	$13.00
Reading Classic	$9.00
Math Club	$15.00

What is the mean price of the t-shirts?

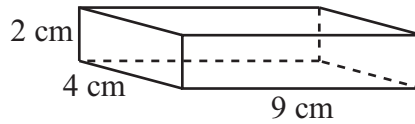A. $12.00

B. $13.00

C. $14.00

D. $15.00

Item Information		
Alignment	MA 6.4.2.c	Find and interpret the mean, median, mode, and range for a set of data.
Answer Key	B	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the mean price of the amounts shown in the table. Option B is the correct answer since 15 + 13 + 9 + 15 = 52, and 52 ÷ 4 = 13. Option A is incorrect since 12 is less than the value of the mean. Option C is incorrect since 14 is the value of the median. Option D is incorrect since 15 is the value of the mode.
Focus	Mean	

12. Which set of integers is in order from least to greatest?

A. –9, –6, –3, 7, 11

B. –3, –6, 7, 11, –9

C. 11, –9, 7, –6, –3

D. 7, 11, –6, –3, –9

Item Information		
Alignment	MA 6.1.1.h	Compare and order integers and absolute value both on the number line and not on the number line.
Answer Key	A	**Option Annotations**
Depth of Knowledge	1	The student is asked to determine which list of integers is in order from least to greatest. Option A is the correct answer since the integers are in order from least to greatest. Option B is incorrect since the negative integers are out of order. Option C is incorrect since the absolute value of the integers is used to order them from greatest to least. Option C is incorrect since the negative integers are out of order.
Focus	Ordering Integers	

13. Use the picture below to answer the question.

What is the volume of the rectangular prism?

A.   15 cubic centimeters

B.   22 cubic centimeters

C.   72 cubic centimeters

D.   124 cubic centimeters

Item Information		
Alignment	MA 6.3.3.c	Apply volume formulas for rectangular prisms.
Answer Key	C	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the volume of the rectangular prism shown. Option C is the correct answer since 2 × 4 × 9 = 72. Option A is incorrect since 2 + 4 + 9 = 15. Option B is incorrect since 2 × 9 + 4 = 22. Option D is incorrect since 124 is the value of the surface area of the rectangular prism.
Focus	Volume of Rectangular Prisms	

14. A salad dressing is made by combining 2 parts vinegar with 5 parts oil. How many ounces of oil should be mixed with 9 ounces of vinegar?

A. 2

B. 3.6

C. 22.5

D. 63

Item Information		
Alignment	MA 6.2.3.d	Solve real-world problems using ratios and unit rates.
Answer Key	C	**Option Annotations**
Depth of Knowledge	1	The student is asked to solve the problem using the given ratio. Option C is the correct answer since 2(4.5) = 9, and 5(4.5) = 22.5. Option A is incorrect since the recipe calls for more oil than vinegar, and 2 is less than 9. Option B is incorrect since 3.6 is the number of ounces of vinegar needed for 9 ounces of oil. Option D is incorrect since 63 is the value of 9 multiplied by the difference of 5 – 2.
Focus	Solving Real-World Problems with Ratios	

15. What is the value of $|3 + 5| - |-4|$?

A. −12

B. −4

C. 4

D. 12

Item Information		
Alignment	MA 6.2.2.c	Evaluate numerical expressions, including absolute value and exponents, with respect to order of operations.
Answer Key	C	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the value of the expression involving absolute value. Option C is the correct answer since $|3 + 5| = 8$, and $|-4| = 4$, so $8 - 4 = 4$. Option A is incorrect since −12 is the value of −8 − 4. Option B is incorrect since −4 is the value of −8 + 4. Option D is incorrect since 12 is the value of 8 + 4.
Focus	Evaluating Expressions with Absolute Value	

16. What is the value of y in the equation $\dfrac{y}{4} = 8$?

- A. 2

- B. 4

- C. 12

- D. 32

Item Information		
Alignment	MA 6.2.2.e	Solve one-step equations with non-negative rational numbers using addition, subtraction, multiplication and division.
Answer Key	D	**Option Annotations**
Depth of Knowledge	1	The student is asked to solve the equation to find the value of the variable. Option D is the correct answer since
Focus	Solving One-Step Equations with Rational Numbers	$\dfrac{y}{4} = 8$, $\dfrac{y}{4} \bullet 4 = 8 \bullet 4$, $y = 32$. Option A is incorrect since 2 is the solution to $4y = 8$, $\dfrac{4y}{4} = \dfrac{8}{4}$, $y = 2$. Option B is incorrect since 4 is the solution to $y + 4 = 8$, $y + 4 - 4 = 8 - 4$, $y = 4$. Option C is incorrect since 12 is the solution to $y - 4 = 8$, $y - 4 + 4 = 8 + 4$, $y = 12$.

17. James has a collection of 100 comic books. He sells $\frac{1}{4}$ of his collection. How many comic books does James sell?

    A.   25 books

    B.   50 books

    C.   75 books

    D.   100 books

Item Information		
Alignment	MA 6.2.3.b	Solve real-world problems involving non-negative rational numbers.
Answer Key	A	**Option Annotations**
Depth of Knowledge	2	The student is asked to solve the problem by multiplying 100 and $\frac{1}{4}$. Option A is the correct answer since $100 \bullet \frac{1}{4} = 25$. Option B is incorrect since $100 \bullet \frac{1}{2} = 50$. Option C is incorrect since $100 \bullet \frac{3}{4} = 75$. Option D is incorrect since $100 \bullet 1 = 100$.
Focus	Solving Real-World Problems with Rational Numbers	

18. Which value of y makes $\dfrac{4(y - 3)}{2} = 6$ true?

    A.   6

    B.   7

    C.   9

    D.   15

Item Information		
Alignment	MA 6.2.2.b	Use substitution to determine if a given value for a variable makes an equation or inequality true.
Answer Key	A	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the value of the variable that makes the equation true. Option A is the correct answer since
Focus	Substitution for Variables in Equations	$\dfrac{4(6-3)}{2} = 6,$ $\dfrac{4(3)}{2} = 6,$ $\dfrac{12}{2} = 6,$ $6 = 6,$ and the equation is true.

The student is asked to find the value of the variable that makes the equation true. Option A is the correct answer since

$$\frac{4(6-3)}{2} = 6,$$

$$\frac{4(3)}{2} = 6,$$

$$\frac{12}{2} = 6,$$

$6 = 6$, and the equation is true.

Option B is incorrect since

$$\frac{4(7-3)}{2} = 6,$$

$$\frac{4(4)}{2} = 6,$$

$$\frac{16}{2} = 6,$$

$8 \neq 6$, and the equation is false.

Option C is incorrect since

$$\frac{4(9-3)}{2} = 6,$$

$$\frac{4(6)}{2} = 6,$$

$$\frac{24}{2} = 6,$$

$12 \neq 6$, and the equation is false.

Option D is incorrect since

$$\frac{4(15-3)}{2} = 6,$$

$$\frac{4(12)}{2} = 6,$$

$$\frac{48}{2} = 6,$$

$24 \neq 6$, and the equation is false.

19. Which algebraic expression represents four times the quantity 22 less than x?

    A. $4(x - 22)$

    B. $(4 \bullet 22) - x$

    C. $4(22 - x)$

    D. $(x \bullet 4) - 22$

Item Information		
Alignment	MA 6.2.1.a	Create algebraic expressions (e.g., one operation, one variable as well as multiple operations, one variable) from word phrases.
Answer Key	A	**Option Annotations**
Depth of Knowledge	2	The student is asked to create an algebraic expression that represents the given word phrase. Option A is the correct answer since $4(x - 22)$ represents four times the quantity 22 less than x. Option B is incorrect since $(4 \bullet 22) - x$ represents x less than the quantity 4 times 22. Option C is incorrect since $4(22 - x)$ represents four times the quantity x less than 22. Option D is incorrect since $(x \bullet 4) - 22$ represents 22 less than the quantity x times 4.
Focus	Creating Algebraic Expressions from Word Phrases	

20. Molly got a haircut for $25 and she left a 15% tip. What was Molly's final cost?

    A. $25.15

    B. $26.50

    C. $27.50

    D. $28.75

Item Information	
Alignment MA 6.2.3.c	Solve real-world problems involving percents of numbers.
Answer Key D	**Option Annotations**
Depth of Knowledge 2	The student is asked to solve the problem by finding 15% of 25 and adding that value to 25. Option D is the correct answer since 15% of 25 is 3.75, and 25 + 3.75 = 28.75. Option A is incorrect since 15% of 100 is added to 25. Option B is incorrect since 15% of 10 is added to 25. Option C is incorrect since 2.5 is added to 25.
Focus Solving Real-World Problems with Percents	

21. Which list orders the numbers from least to greatest?

A. $6.25, 6.5, 6\frac{4}{5}, 6\frac{3}{4}$

B. $6.5, 6.25, 6\frac{3}{4}, 6\frac{4}{5}$

C. $6.25, 6.5, 6\frac{3}{4}, 6\frac{4}{5}$

D. $6.5, 6\frac{4}{5}, 6.25, 6\frac{3}{4}$

Item Information		
Alignment	MA 6.1.1.c	Compare and order rational numbers both on the number line and not on the number line.
Answer Key	C	**Option Annotations**
Depth of Knowledge	2	The student is asked to determine which list of rational numbers is ordered from least to greatest. Option C is the correct answer since the numbers are ordered from least to greatest. Option A is incorrect since the mixed numbers are ordered from greatest to least. Option B is incorrect since the decimals are ordered from greatest to least. Option D is incorrect since the decimals and mixed numbers are ordered from greatest to least.
Focus	Ordering Decimals and Mixed Numbers	

22. Mr. Santoz ordered 8 large pizzas for a class party. After the party only $\frac{5}{6}$ of a sausage pizza and $1\frac{3}{4}$ of a pepperoni pizza remained. Which is the **best** estimate of how many pizzas were eaten?

A. 4

B. 5

C. 6

D. 7

Item Information		
Alignment	MA 6.1.2.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 value of $8 - \frac{5}{6} - 1\frac{3}{4}$ to the nearest whole number. Option B is the correct answer since $\frac{5}{6}$ is closer to 1 than 0, and $1\frac{3}{4}$ is closer to 2 than 1, so $8 - 1 - 2 = 5$. Option A is incorrect since the value is closer to 5 than 4. Option C is incorrect since the value is closer to 5 than 6. Option D is incorrect since the value is closer to 5 than 7.
Focus	Estimating with Fractions	

23. When $n = 11$, what is the value of $10 - (n + 6)$?

    A.   −7

    B.   5

    C.   7

    D. 27

Item Information		
Alignment	MA 6.2.2.d	Given the value of the variable, evaluate algebraic expressions (which may include absolute value) with respect to order of operations (non-negative rational numbers).
Answer Key	A	**Option Annotations**
Depth of Knowledge	1	The student is asked to find the value of the expression when given the value of the variable.
Focus	Evaluating Algebraic Expressions Given Value of Variable	Option A is the correct answer since $10 - (11 + 6) = 10 - 17 = -7$. Option B is incorrect since $10 - 11 + 6 = -1 + 6 = 5$. Option C is incorrect since $11 + 6 - 10 = 17 - 10 = 7$. Option D is incorrect since $10 + 11 + 6 = 21 + 6 = 27$.

AUTO-SCORED CONSTRUCTED RESPONSE ITEMS

24. Move the numbers into the boxes to show the steps in solving the equation.

$$x + 8 = 12$$
$$-\square \ -\square$$
$$x = \square$$

0 1 2 3 4 5 6 7 8 9

Answer Key – Completed Correct Response

Move the numbers into the boxes to show the steps in solving the equation.

$$x + 8 = 12$$
$$-8 \ -8$$
$$x = 4$$

0 1 2 3 4 5 6 7 8 9

Item Information

Alignment	MA 6.2.2.e	Solve one-step equations with non-negative rational numbers using addition, subtraction, multiplication, and division.
Answer Key	See Completed Correct Response	**Option Annotations**
Depth of Knowledge	1	The student is asked to move numbers into the boxes to show the steps in solving the given equation. The number 8 belongs in both of the top boxes since the first step in solving the equation is subtracting 8 from each side of the equal sign. The number 4 belongs in the bottom box since the solution of the equation is 12 − 8 = 4.
Focus	Solving One-Step Equations	

25. **Use the expression below to answer the question.**

$$5x + 3(2x - 7)$$

Enter an expression with exactly two terms that is equivalent to the expression shown.

|							
1	2	3	+	−	×		x
4	5	6	÷				
7	8	9					
0	.						

Answer Key – Completed Correct Response

Use the expression below to answer the question.

$$5x + 3(2x - 7)$$

Enter an expression with exactly two terms that is equivalent to the expression shown.

$11x - 21$

1	2	3	+	−	×		x
4	5	6	÷				
7	8	9					
0	.						

Item Information		
Alignment	MA 6.2.1.b	Recognize and generate equivalent algebraic expressions involving distributive property and combining like terms.
Answer Key	See Completed Correct Response	**Option Annotations**
Depth of Knowledge	2	The student is asked to generate an expression with exactly 2 terms that is equivalent to the expression shown, using the distributive property and combining like terms. The expressions that could be generated are $11x - 21$ or $-21 + 11x$, since $5x + 3(2x - 7) = 5x + 6x - 21 = 11x - 21$.
Focus	Equivalent Expressions Involving Distributive Property and Combining Like Terms	

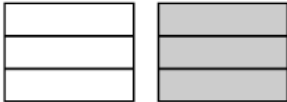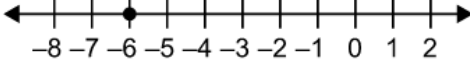**26.** Select **all** of the representations of –6. Select **all**.

(a)

(b)
−8 −7 −6 −5 −4 −3 −2 −1 0 1 2

(c) 6 − 6

(d) negative six

(e)
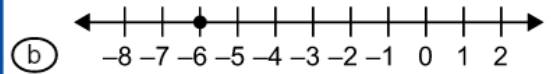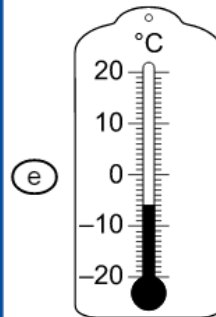
(f) |6|

Answer Key – Completed Correct Response

Select **all** of the representations of –6. Select **all**.

(a)

(b)
–8 –7 –6 –5 –4 –3 –2 –1 0 1 2

(c) 6 – 6

(d) negative six

(e)
°C
20
10
0
–10
–20
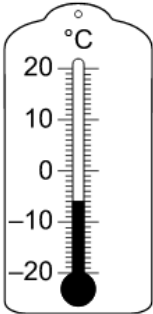
(f) |6|

Item Information		
Alignment	MA 6.1.1.g	Model integers using drawings, words, manipulatives, number lines, and symbols.
Answer Key	B, D, E	**Option Annotations**
Depth of Knowledge	2	The student is asked to determine which representations are equivalent to the integer given. Options B, D, and E are the correct answers since the models are all equivalent to –6. Option A is incorrect since the model shows 2 groups of 3, where half are shaded. Option C is incorrect since the expression is equivalent to 0. Option F is incorrect since the expression represents the absolute value of 6.
Focus	Multiple Representations of Rational Numbers	

NeSA-MATHEMATICS
ITEM AND SCORING SAMPLER
GRADE 6