Released Item Guide: Math

Grades 3–8

Grade 3

Score Responses: MAXSCORE = 1.0
SCORE = 1

Tools: ⊘   ▸ ✏ ✏ ✏ ✏ ✏ ✏ ╱ ✕   Contrasts   PNP

Which expressions have the same value as 2 × 12?

Select all the correct answers.

☑ A. 3 × 8

☑ B. 4 × 6

☐ C. 5 × 7

☑ D. 6 × 4

☐ E. 7 × 5

☑ F. 8 × 3

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
3	TE/MR	I	3.OA.C.7	*Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By end of Grade 3, know from memory all products of one-digit numbers.* In this item the student must identify which factors result in the same product as 2 × 12. This addresses the ability to fluently multiply.

TRANSCEND

�**Score Responses:**   MAXSCORE = 1.0
                        SCORE = 1

🔧 Tools: ✅ | ▲ | ⬮ | ⬮ | ✐ | ✐ | ✐ | ✐ | ╱ | ✕ | Contrasts   PNP

What is 63 rounded to the nearest 10?

⦿ A. 60

◯ B. 63

◯ C. 64

◯ D. 70

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
3	MC/MC	I	3.NBT.A.1	*Use place value understanding to round whole numbers to the nearest 10 or 100.* The student is asked to round the number 63 to the nearest 10, thus showing an understanding of place value through rounding.

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✅ | ▲ | ✏ | ✏ | ✏ | ✏ | ✏ | ✏ | / | × | Contrasts | PNP

Kera drew a quadrilateral that had these properties:

- It had no right angles.
- Its sides were all equal in length.

Which word **best** describes the quadrilateral Kera drew?

○   A.   Square

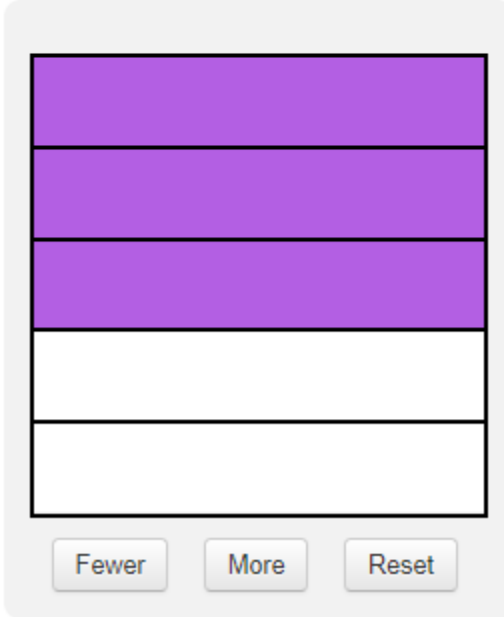◉   B.   Rhombus

○   C.   Rectangle

○   D.   Parallelogram

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
3	MC/MC	II	3.G.A.1	*Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.* The student is given two properties of a quadrilateral and asked to identify the best name for the shape. Although another name might be applicable, rhombus is the most precise name for the quadrilateral. This addresses the understanding of the size and overlap of the categories for shapes and the need for precision in naming the shape to convey as much information about the shape as possible.

TRANSCEND

⊘ Score Responses: MAXSCORE = 1.0
                      SCORE = 1

🔧 Tools: ✅   [↖] [✎] [✎] [✎] [✎] [✎] [✎] [/] [×]   [Contrasts]   [PNP]

Complete the fraction model so that it shows $\frac{3}{5}$ shaded.

Divide the figure into the correct number of equal parts using the Fewer or More buttons. Then select each part that should be shaded.

[Fewer]   [More]   [Reset]

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
3	TE/FM	II	3.NF.A.1	*Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.* The student is asked to create a fraction of the form *a/b*. The student creates the correct number of sections based on the denominator and shades the correct number of sections based on the numerator. This addresses the last part of the standard of understanding that a fraction *a/b* is formed by parts of size 1/*b*.

TRANSCEND

⊘ Score Responses: MAXSCORE = 1.0
                      SCORE = 1

🔧 Tools: ✅ | ▲ | ✎ | ✎ | 📏 | 📏 | 📏 | 📏 | ／ | ✕ | Contrasts   PNP

Lunch starts at 12:20 p.m. and ends at 1:10 p.m. How many minutes long is lunch?

Enter your answer in the box.

| 50 |

Item Table				
Grade	**Type/Subtype**	**DOK**	**Standard**	**Standard Alignment Annotation**
3	TE/TEX	II	3.MD.A.1	*Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.* The student is given two different times and is asked to calculate the elapsed time. This directly addresses the part of the standard dealing with measuring time intervals in minutes.

TRANSCEND

Grade 4

Score Responses: MAXSCORE = 1.0
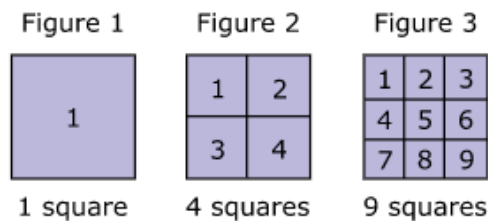SCORE = 1

Tools: ✔ ▸ ✎ ✎ ◹ ◹ ◹ ◹ ╱ ✕   Contrasts   PNP

Evelyn made a pattern using squares. She started with 1 square. Each figure that follows has one more row of squares and one more column of squares than the previous figure.

Figure 1   Figure 2   Figure 3

1 square   4 squares   9 squares

How many squares will Evelyn need to form Figure 6 in the pattern?

○ A. 49

◉ B. 36

○ C. 25

○ D. 16

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
4	MC/MC	III	4.OA.C.5	*Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* This item defines a pattern in which the elements are squares subdivided into rows and columns. The first three elements of the pattern are given, and the student is asked to find the sixth element of the pattern, which connects directly with the "generate a number or shape pattern that follows a given rule" aspect of 4.OA.C.5.

TR\NSCEND

✔ Score Responses: MAXSCORE = 1.0
                       SCORE = 1

🔧 Tools: ✓   [↖] [✐] [✐] [✎] [✎] [✎] [✎] [/] [✕]   [Contrasts]   [PNP]

The figure shows the locations of the towns of Appleton, Baytown, Comal, Ducktown, Edgewater, and Fayette and the roads between them. The distances shown are in miles.
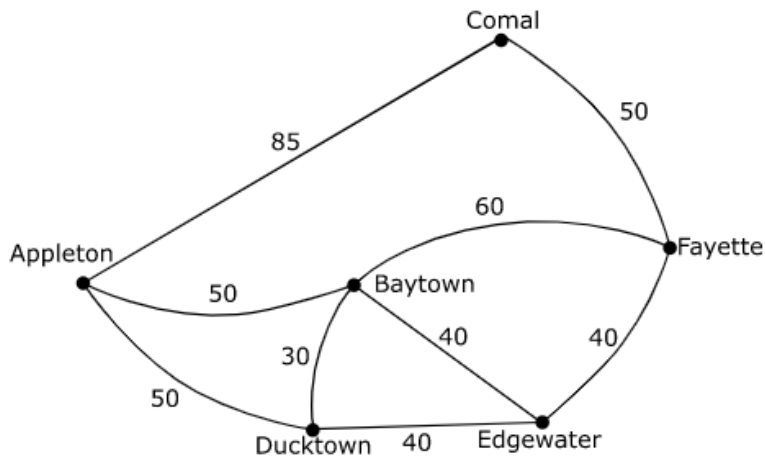
Which of these is the shortest route from Comal to Ducktown?

○   A. Comal to Appleton to Ducktown

○   B. Comal to Fayette to Baytown to Ducktown

○   C. Comal to Appleton to Baytown to Ducktown

◉   D. Comal to Fayette to Edgewater to Ducktown

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
4	MC/MC	II	4.MD.A.2	*Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.* The student is asked to solve a real-world problem in which addition must be used to determine and compare the distances of different possible routes between two towns. This task aligns with the concept in 4.MD.A.2 of using "four operations to solve word problems involving distances."

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✅   [▲] [✎] [✎] [📏] [📏] [📏] [📏] [✏] [✕]   [Contrasts]   [PNP]

Use symbols to compare the numbers.

Select each correct answer.

454,314,654 [< ▼] 454,341,654

479,864,516 [> ▼] 479,684,516

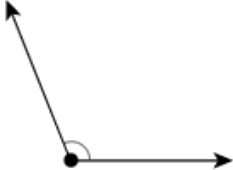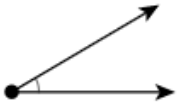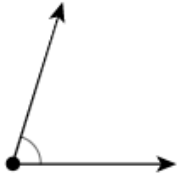437,698,147 [= ▼] 437,698,147

457,466,545 [> ▼] 457,466,455

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
4	TE/IC	I	4.NBT.A.2	*Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.* This item aligns with the second sentence of 4.NBT.A.2 by asking the student to compare four pairs of nine-digit numbers and to express the relationship for each pair by selecting the correct inequality or equality symbol. In each pair, the two numbers differ by, at most, one or two digits, so that the student must carefully compare the corresponding place values of the numbers.

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
                       SCORE = 1

🔧 Tools:

Classify each angle in the table as acute, right, or obtuse.

Select all the correct answers.

	Acute angle	Right angle	Obtuse angle
	○	○	⦿
	⦿	○	○
	⦿	○	○
	○	⦿	○
	○	○	⦿

Item Table				
Grade	**Type/Subtype**	**DOK**	**Standard**	**Standard Alignment Annotation**
4	TE/MTG	I	4.G.A.1	*Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.* This item requires the student to identify given angles as acute, right, or obtuse, a task that aligns with the first sentence of 4.G.A.1.

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
                     SCORE = 1

🔧 Tools: ✅ | ↖ | ✎ | ✎ | 📏 | 📏 | 📏 | 📏 | ╱ | ✕ | Contrasts   PNP

Oscar started with 14 meters of ribbon. He cut off and used a piece of ribbon that was $9\frac{1}{4}$ meters long. What was the length of the ribbon he had left?

○ A. $4\frac{1}{4}$ meters

◉ B. $4\frac{3}{4}$ meters

○ C. $5\frac{1}{4}$ meters

○ D. $5\frac{3}{4}$ meters

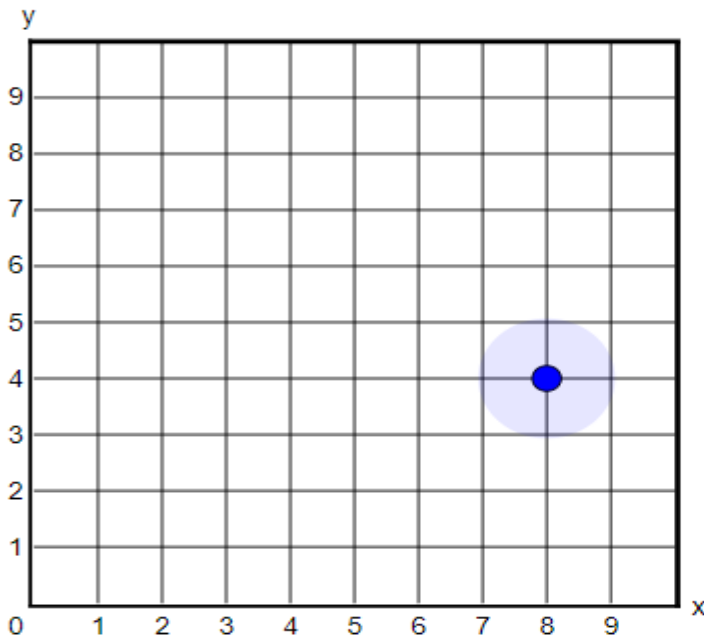| Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
4	MC/MC	II	4.NF.B.3	*Understand a fraction a/b with a > 1 as a sum of fractions 1/b.* The student is given a word problem that involves finding the value of $14-9\frac{1}{4}$. One approach to solving this is to convert the two values in the expression to fractions of the form *a/b* where *a* > 1, as described in 4.NF.B.3, and then convert the result back to a mixed number.

TR∧NSCEND

Grade 5

✔ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✅ | ▲ | ✎ | ✎ | ✐ | ✐ | ✐ | ✐ | ✓ | ✕ | Contrasts | PNP

Jasmine plotted a point that is located 3 units from the point (5, 4) and 2 units from the point (8, 6). Plot a point that could be the point Jasmine plotted.

Select a location on the coordinate grid to plot the point.

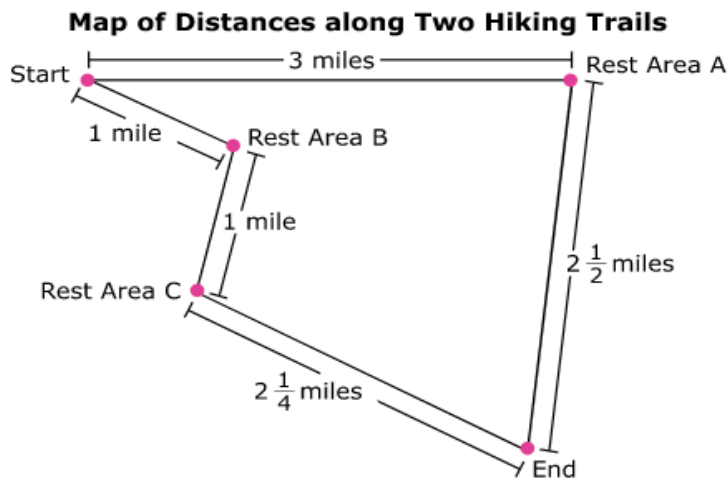| Item Table				
Grade	**Type/Subtype**	**DOK**	**Standard**	**Standard Alignment Annotation**
5	TE/PG	II	5.G.A.2	*Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.* The student is asked to plot a point located at given distances from two other points. This requires the student to identify the location of the two given points and then correctly plot the point in relation to those given points. This relates to both graphing points and interpreting the points in context.

TRANSCEND

Score Responses: MAXSCORE = 1.0
                   SCORE = 1

Tools: ✓ | ↖ | ✎ | ✎ | ✐ | ✐ | ✐ | ✐ | ✐ | / | ✕ | Contrasts   PNP

Two hiking trails have the same start point and end point.

- Trail 1 passes through Rest Area A.
- Trail 2 passes through Rest Area B and Rest Area C.

The map shows the distances along the two trails in miles.

Map of Distances along Two Hiking Trails

How much shorter is Trail 2 than Trail 1?

○ A. $\frac{3}{4}$ mile

◉ B. $1\frac{1}{4}$ miles

○ C. $1\frac{3}{4}$ miles

○ D. $2\frac{1}{4}$ miles

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
5	MC/MC	II	5.NF.A.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7 by observing that 3/7 < 1/2. The student is required to find two sums and then calculate the difference of the two sums. The numbers consist of whole numbers and mixed numbers, thus addressing the component of the standard dealing with solving word problems involving addition and subtraction of fractions.

TRANSCEND

Score Responses: MAXSCORE = 1.0
                   SCORE = 1

Tools: [✓]   [↖] [◗] [◗] [✐] [✐] [✐] [✐] [/] [×]   [Contrasts]   [PNP]

A biologist captured a lizard that is 86 millimeters in length. What is the length of the lizard in centimeters?

○   A. 0.086 centimeter

○   B. 0.86 centimeter

◉   C. 8.6 centimeters

○   D. 860 centimeters

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
5	MC/MC	I	5.MD.A.1	*Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step real world problems.* The student is given a measurement in millimeters and is asked to identify the equivalent measurement in centimeters. This directly addresses converting among different-sized standard measurement units.

TRANSCEND

○ Score Responses: MAXSCORE = 1.0
                      SCORE = 1

✦ Tools: ✓   ▲ ✎ ✎ 📏 📏 📏 📏 ✐ ✕   Contrasts   PNP

Evaluate the expression.

$$21 \div (3 + 4) \times (4 - 2)$$

Enter your answer in the box.

6

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
5	TE/TEX	II	5.OA.A.1	*Use parentheses, brackets, or braces in numerical expressions and evaluate expressions with these symbols.* The student is given an expression with two sets of grouping symbols. This directly addresses evaluating expressions using grouping symbols.

TR\NSCEND

⚊ Get Responses: Variable RESPONSE = ["B_choice15664","C_choice15665","F_fMSFG"]

✔ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✅ | ▶ | ✎ | ✎ | ▱ | ▱ | ▱ | ▱ | / | ✕ | Contrasts   PNP

Which pairs of numbers are compared correctly?

Select all the correct answers.

☐   A. 0.424 > 0.43

☑   B. 0.67 < 0.672

☑   C. 0.9 > 0.882

☐   D. 0.547 < 0.546

☐   E. 0.719 > 0.72

☑   F. 0.284 < 0.314

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation

5	TE/MR	I	5.NBT.A.3	*Read, write, and compare decimals to thousandths.*
				   a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).
				   b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
				
				The student is asked to identify pairs of numbers that are compared correctly. These numbers go to the thousandths, thus directly addressing the standard of comparing two decimals to thousandths using symbols.

TRANSCEND

Grade 6

Score Responses: MAXSCORE = 1.0
                    SCORE = 1

Tools: [✓]   [▶] [◖] [◗] [✎] [✎] [✎] [✎] [/] [×]   [Contrasts]   [PNP]

An expression is shown.

$$3x^2 + 10y + 5z + 7$$

Evaluate the expression for $x = 3$, $y = 0$, and $z = 2$.

Enter your answer in the box.

44

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
6	TE/TEX	II	6.EE.A.2	*Write, read, and evaluate expressions in which letters stand for numbers.* In this item, the student is given a polynomial expression and values for the three variables in the expression. The task is to evaluate the expression for the given values of the variables, which represents direct alignment with 6.EE.A.2.

TRANSCEND

✓ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✓ | ↖ | ✏ | ✏ | 📏 | 📏 | 📏 | 📏 | ✎ | ✕ | Contrasts | PNP

An electronics store advertises 25% off the regular price of any stereo. What is the amount of the discount on a $300 stereo?

○ A. $25

◉ B. $75

○ C. $225

○ D. $275

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
6	MC/MC	II	6.RP.A.3	*Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.* This item involves a context in which the sale price of an item is determined by a percentage off the regular price. The student is asked to find the amount of the discount. This connects directly with 6.RP.A.3 since the student must use a ratio, in this case represented as a percentage, to solve a real-world problem.

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
                       SCORE = 1

🔧 Tools: ⦿   ▸   ✎   ✎   ✐   ✐   ✐   ✐   ╱   ✕   Contrasts   PNP

Four points are shown on the coordinate grid.
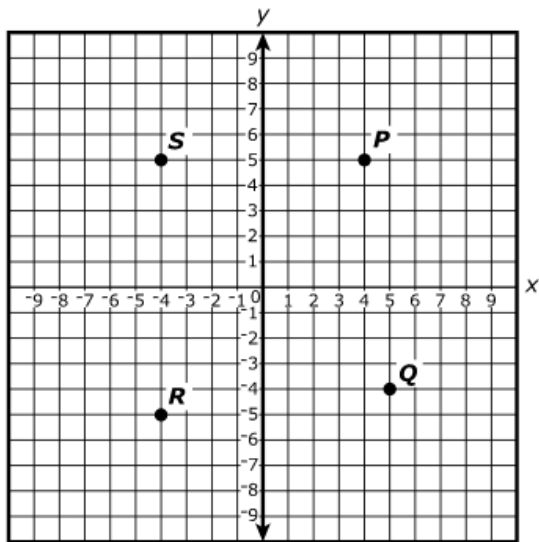
Which point is located at (−4, 5)?

○   A. Point *P*

○   B. Point *Q*
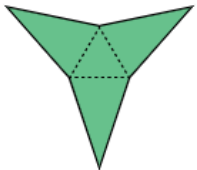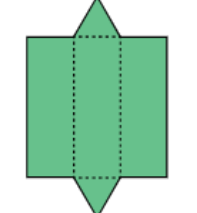
○   C. Point *R*

◉   D. Point *S*
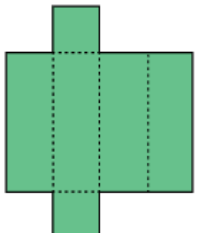
Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
6	MC/MC	I	6.NS.C.6	*Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.* In this item, the student is asked to identify which of four points shown on a coordinate grid represents the location of a given ordered pair in which one of the coordinates is negative. The task aligns with the concept in 6.NS.C.6 of representing points in the plane with negative number coordinates.

TRANSCEND

Score Responses: MAXSCORE = 1.0
                   SCORE = 1

Tools: [toolbar icons]   Contrasts   PNP

Identify the figure that can be made from each net.
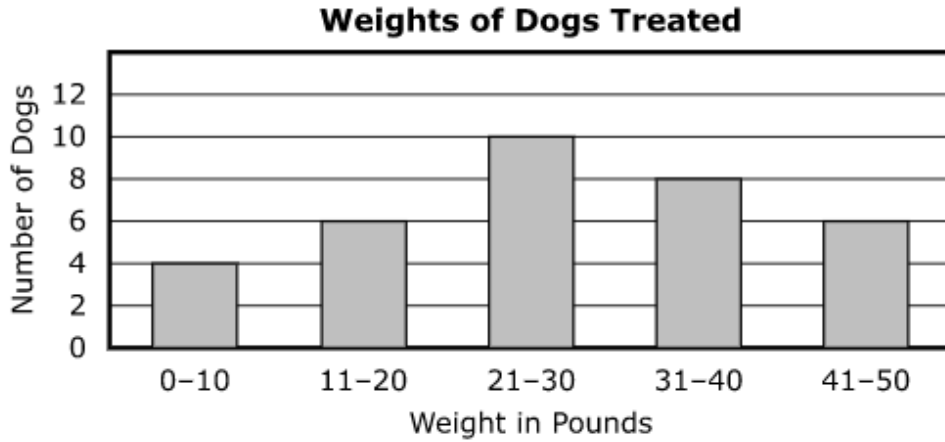
Select all the correct answers.

	Triangular pyramid	Triangular prism	Rectangular prism	Square pyramid
[net 1]	⦿	○	○	○
[net 2]	○	○	○	⦿
[net 3]	○	⦿	○	○
[net 4]	○	○	⦿	○

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
6	TE/MTG	I	6.G.A.4	*Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.* The student is asked to identify the three-dimensional figures represented by four different nets, each consisting of rectangles and triangles, as described in the first component of 6.G.A.4.

⊘ Score Responses:　　MAXSCORE = 1.0
　　　　　　　　　　　　SCORE = 1

🔧 Tools:　　　✅　　| ▲ | ✏ | ✏ | ✐ | ✐ | ✐ | ✐ | ／ | ✕ |　Contrasts　　PNP

The histogram shows the weights of the dogs that were treated at a free animal clinic on Saturday.

Weights of Dogs Treated

Complete the sentences by selecting the correct answers from the drop-down menus.

The total number of dogs that were treated at the free animal clinic on Saturday was

| 34 ▼ | . The number of dogs that weighed more than 30 pounds was

| 14 ▼ | .

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
6	TE/IC	II	6.SP.B.5a	*Summarize numerical data sets in relation to their context, such as by: Reporting the number of observations.* The student is given a real-world context in which a data set is summarized by a histogram. In direct alignment with 6.SP.B.5a, the student must analyze the histogram to determine the total number of observations and the number of observations associated with a particular subset of the data.

TRΛNSCEND

Grade 7

✔ Score Responses: MAXSCORE = 1.0
                      SCORE = 1

🔧 Tools: ✅   [▲] [✏] [✏] [✏] [✏] [✏] [✏] [✏] [✕]   Contrasts   PNP

Mr. Allison earns an annual base salary of $35,000 plus 8% of his annual sales. If he earned a total of $41,000 last year, which equation could be used to determine a, the amount of Mr. Allison's annual sales?

⦿   A. $35{,}000 + 0.08a = 41{,}000$

○   B. $35{,}000 + 8a = 41{,}000$

○   C. $8 + a = 41{,}000$

○   D. $0.08a = 41{,}000$

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
7	MC/MC	II	7.EE.B.4	*Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.* a. *Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* b. *Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.* The student is given information about salary and sales and is asked to identify an equation that could be used to determine the sales. This addresses the first part of the overall standard by using variables to represent quantities and constructing simple equations to solve problems.

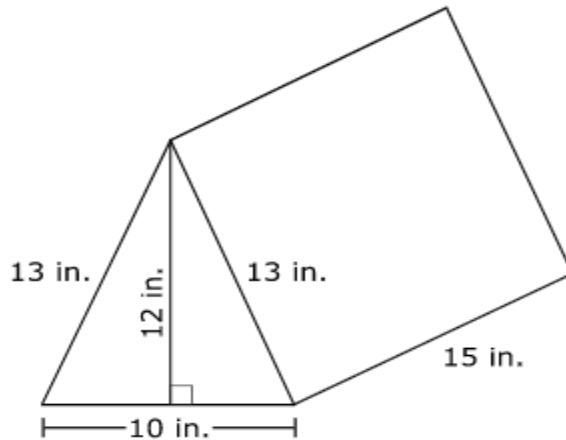TR⅄NSCEND

✓ Score Responses: MAXSCORE = 1.0
                       SCORE = 1

🔧 Tools: ✓   [arrow] [pen] [pen] [pencil] [pencil] [pencil] [pencil] [line] [×]   Contrasts   PNP

A paper company is manufacturing a new gift box in the shape of a right triangular prism, as shown.

13 in.   12 in.   13 in.

15 in.

10 in.

What is the total surface area of all five faces of the gift box?

○   A. 405 square inches

○   B. 510 square inches

◉   C. 660 square inches

○   D. 810 square inches

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
7	MC/MC	II	7.G.B.6	*Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.* The student is given a triangular prism and is asked to find the surface area. To do this, the student must find the area of 2 triangles of the same size and 3 rectangles of two different sizes. In doing so, the student demonstrates the ability to solve real-world problems involving surface area.

TRANSCEND

Score Responses: MAXSCORE = 1.0
SCORE = 1

Tools: [toolbar icons] Contrasts PNP

What is the value of the expression shown?

$$-\frac{1}{2} - \left(-\frac{1}{2}\right) - \frac{1}{2}$$

○ A. $-\frac{3}{2}$

◉ B. $-\frac{1}{2}$

○ C. $\frac{1}{2}$

○ D. $\frac{3}{2}$

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
7	MC/MC	I	7.NS.A.1	*Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.* *a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* *b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.* *c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.* *d. Apply properties of operations as strategies to add and subtract rational numbers.* The student is asked to solve a subtraction problem involving negative fractions. This assesses the understanding of subtraction as the additive inverse.

TRANSCEND

✔ Score Responses: MAXSCORE = 1.0
                       SCORE = 1

🔧 Tools: ✅   [↖] [✏] [✏] [✏] [✏] [✏] [✏] [/] [×]   Contrasts   PNP

The probabilities of four events are shown in the table. What is the likelihood of each event?

Select all the correct answers.

Event Probability	Impossible	Unlikely	Likely	Certain
0.87	○	○	⊙	○
0	⊙	○	○	○
0.03	○	⊙	○	○
1	○	○	○	⊙

**Item Table**				
Grade	**Type/Subtype**	**DOK**	**Standard**	**Standard Alignment Annotation**
7	TE/MTG	II	7.SP.C.5	*Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.* The student is given four probabilities expressed as decimals. Each of these must be matched with the appropriate word description: impossible, unlikely, likely, or certain. This assesses the understanding of the terms and how they relate to a numerical probability.

TR\NSCEND

✔ Score Responses: MAXSCORE = 1.0
SCORE = 1

🔧 Tools: ✅   ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ ▮ × | Contrasts | PNP

The length of a 10-minute video is decreased by 45% when the video is edited.
What is the length of the edited video?

Move the correct answer to each box. Each answer may be used more than once.
Not all answers will be used.

| 0 | 3 | 4 | 5 | 30 | 35 | 40 | 50 |

| 5 | minutes | 30 | seconds

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
7	TE/GM	II	7.RP.A.3	*Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.* In this item the student must calculate the new length of a video after it has decreased by 45%. This relates directly to using proportional relationships involving percent problems. The item has added rigor due to the need to consider minutes and seconds and not just a straight percent calculation.

TRANSCEND

Grade 8

● Score Responses: MAXSCORE = 1.0
SCORE = 1

⚡ Tools: ✅ | ↖ | ✐ | ✐ | ✐ | ✐ | ✐ | ✐ | ╱ | ✕ | Contrasts | PNP |

A linear function includes the points (1, 3) and (−1, −5).

Complete the sentences by selecting the correct answers from the drop-down menus.

The slope of the line represented by the function is [4 ▾]. The value of the

function when x = 0 is [−1 ▾].

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
8	TE/IC	II	8.F.B.4	*Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.* The student is given two points and must identify the slope and the value of *y* when *x* is 0. This directly addresses the second sentence of the standard requiring students to determine the rate of change and the initial value of a function.

TR∧NSCEND

● Score Responses: MAXSCORE = 1.0
                     SCORE = 1

⚡ Tools: ✅ | ▲ | ✏ | ✏ | ✎ | ✎ | ✎ | ✎ | ╱ | ✕ | Contrasts   PNP

The scatterplot shows the relationship between h, the height of a tomato plant in inches, and d, the number of days since it was planted.

Height of Tomato Plant
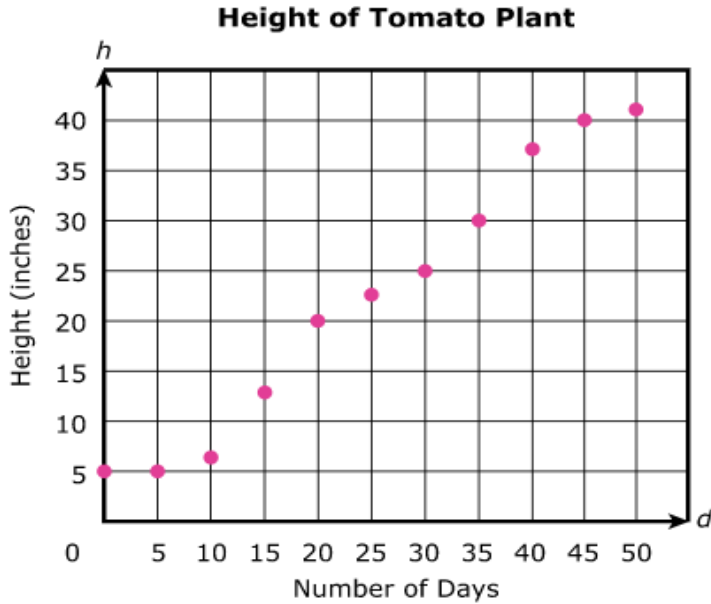
Which equation represents a line of best fit for the data?

○ A. $h = -4d + 2$

○ B. $h = 4d + 2$

○ C. $h = -\frac{4}{5}d + 2$

◉ D. $h = \frac{4}{5}d + 2$

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
8	MC/MC	II	8.SP.A.2	*Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.* The student is given a line plot and is asked to identify the equation for the line of best fit. The student should be able to identify that the slope must be positive and that the slope is close to 1. The *y*-intercept in all four choices is the same, so the focus is only on the slope. Thus the match to a line of best fit is more informal rather than calculated.

TR∧NSCEND

Score Responses: MAXSCORE = 1.0
                    SCORE = 1

Tools: ✔ | ↖ | ✎ | ✎ | ▱ | ▱ | ▱ | ▱ | ╱ | ✕ | Contrasts | PNP

Which expression has a value between 11 and 12?

○ A. $\sqrt{115}$

○ B. $\sqrt{120}$

◉ C. $\sqrt{130}$

○ D. $\sqrt{145}$

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
8	MC/MC	II	8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., (pi)^2). For example, by truncating the decimal expansion of sqrt2 (square root of 2), show that sqrt2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. The student is given the numbers 11 and 12 and asked to identify the value that would be between them. These values are all expressed as square roots. This addresses estimating the value of an expression using square roots.

TRANSCEND

Score Responses: MAXSCORE = 1.0
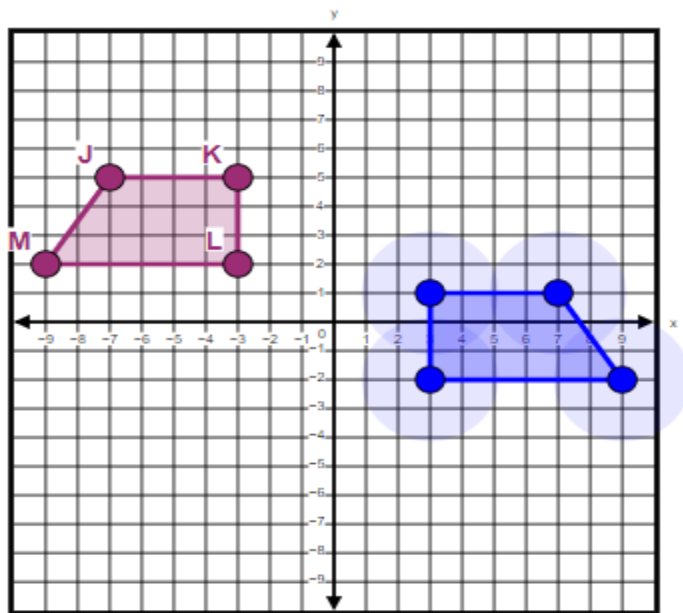SCORE = 1

Tools:

Contrasts   PNP

Trapezoid *JKLM* is shown on the coordinate grid.

Maria applied this two-step transformation to trapezoid *JKLM*:

- Step 1: Reflect over the *y*-axis.
- Step 2: Translate 4 units down.

Graph the polygon that is the result of Maria's two-step transformation.

To graph a polygon, plot the vertices in the correct order. Your points will be connected in the order that they are plotted.

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
8	TE/PG	II	8.G.A.3	*Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.* The student is presented with a figure on a coordinate grid. A transformation using two steps is described. The student must then match the steps to graph the transformed figure. This shows the ability to describe the effect of a transformation using coordinates.

TRANSCEND

✓ Score Responses: MAXSCORE = 1.0
                     SCORE = 1

🔧 Tools: ✓ | ▲ | ✏ | ✏ | ✎ | ✎ | ✎ | ✎ | / | ✕ | Contrasts   PNP

Which expression represents the solution to the equation shown?

$$x^3 = 2$$

○ A. $\sqrt[2]{3}$

◉ B. $\sqrt[3]{2}$

○ C. $2\sqrt{3}$

○ D. $3\sqrt{2}$

Item Table				
Grade	Type/Subtype	DOK	Standard	Standard Alignment Annotation
8	MC/MC	I	8.EE.A.2	*Use square root and cube root symbols to represent solutions to equations of the form x^2 = p and x^3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that sqrt2 is irrational.* The student is given an equation that is solved by finding a cube root. This addresses the first part of the standard by using a cube root symbol to represent a solution.

TR∧NSCEND