Tennessee Comprehensive Assessment Program

TCAP

TNReady—Math
Grades 3–8 Item Release

TN Department of Education

Published under contract with the Tennessee Department of Education by Questar Assessment Inc., 5550 Upper 147th Street West, Minneapolis, MN 55124.

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Table of Contents

Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
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Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN322500

Label	TN322500	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.NF.A.3c	**Standard 1 Text**	Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. For example, express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point on a number line diagram.

What number goes in the box to make the equation true?

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

A. 1

B. 2

C. 4

D. 8

TN311824

Label	TN311824	**Max Points**	1
Item Grade	03	**Rationale1**	7
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	7	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.OA.A.4	**Standard 1 Text**	Determine the unknown whole number in a multiplication or division equation relating three whole numbers within 100. For example, determine the unknown number that makes the equation true in each of the equations: 8 x ? = 48, 5 = ? ÷ 3, 6 x 6 =?

Here is an equation.

$$8 \times \square = 56$$

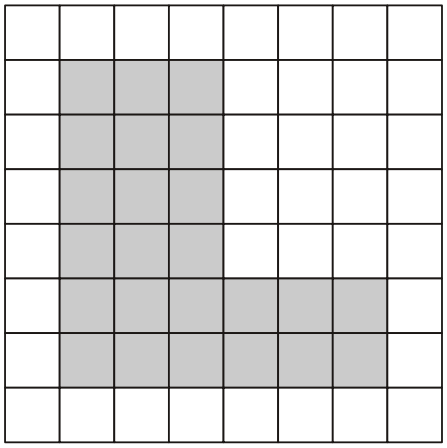
What number goes in the box to make the equation **true**? Enter your answer in the space provided.

TN032350

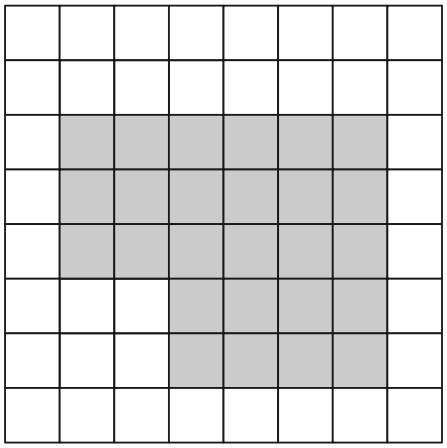
Label	TN032350	**Max Points**	1
Item Grade	03	**Rationale1**	correct
Item Content	Math	**Rationale2**	miscounted; area is 26 square units
Item Type	choice	**Rationale3**	miscounted; area is 27 square units
Key	1,4,5	**Rationale4**	correct
DOK	1	**Rationale5**	correct
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.MD.C.6	**Standard 1 Text**	Measure areas by counting unit squares (square centimeters, square meters, square inches, square feet, and improvised units).

Which shaded figures have an area of 24 square units? Choose the **three** correct answers.

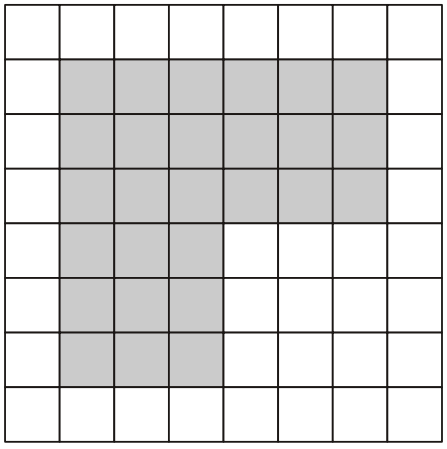
A.



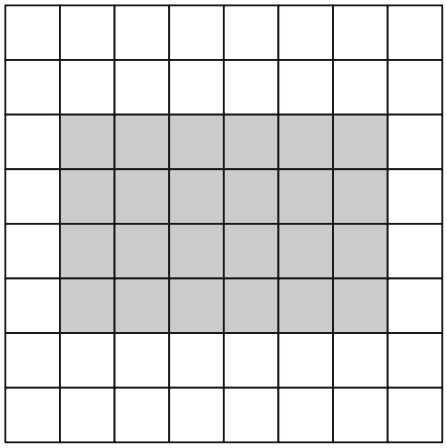
B.



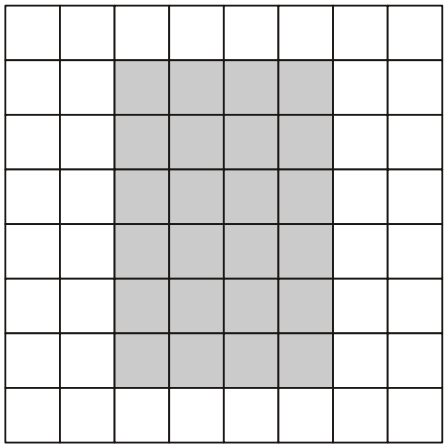
C.



D.



E.



TN332704

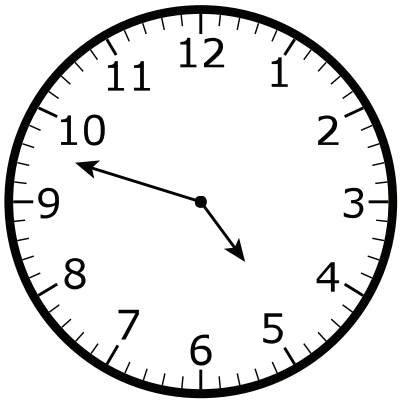
Label	TN332704	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	896	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.NBT.A.2	**Standard 1 Text**	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

What is the sum of 639 and 257? Enter your answer in the space provided.

TN582850

Label	TN582850	**Max Points**	1
Item Grade	03	**Rationale1**	correct
Item Content	Math	**Rationale2**	reads clock to nearest 5 minutes
Item Type	choice	**Rationale3**	reverses clock hands; reads minutes as 5 minutes instead of 24 minutes
Key	1	**Rationale4**	reverses clock hands
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.MD.A.1	**Standard 1 Text**	Tell and write time to the nearest minute and measure time intervals in minutes. Solve contextual problems involving addition and subtraction of time intervals in minutes. For example, students may use a number line to determine the difference between the start time and the end time of lunch.

Lucy put some muffins in an oven at the time shown on this clock.



At what time did Lucy put the muffins in the oven?

A. 4:48

B. 4:50

C. 9:05

D. 9:24

TN422518

Label	TN422518	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.OA.D.8	**Standard 1 Text**	Solve two-step contextual problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding (See Table 1 - Addition and Subtraction Situations and Table 2 - Multiplication and Division Situations).

Bella sold boxes of cookies to her neighbors to raise money for her basketball team. She sold:

- 4 boxes to Mr. Jacobs
- 6 boxes to Mrs. Harris

Each box had 9 cookies. How many total cookies did Bella sell?

A. 10

B. 19

C. 90

D. 100

TN411990

Label	TN411990	**Max Points**	1 | 1 | 1
Item Grade	03	**Rationale1**	21; 42; 63
Item Content	Math	**Rationale2**	
Item Type	composite	**Rationale3**	
Key	21 | 42 | 63	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.OA.C.7	**Standard 1 Text**	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of 3rd grade, know from memory all products of two one-digit numbers and related division facts.

Find each product. Enter your answers in the spaces provided.

$3 \times 7 =$ _____

$6 \times 7 =$ _____

$9 \times 7 =$ _____

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TN121823

Label	TN121823	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	1	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.OA.A.1	**Standard 1 Text**	Interpret the factors and products in whole number multiplication equations (e.g., 4 x 7 is 4 groups of 7 objects with a total of 28 objects or 4 strings measuring 7 inches each with a total of 28 inches.)

Which expression is shown by the picture?

A. 5×4

B. 5×5

C. 20×4

D. 20×5

TN906981

Label	TN906981	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	match	**Rationale3**	
Key	A1,B2,B3,D4,B5	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.G.A.1	**Standard 1 Text**	Understand that shapes in different categories may share attributes and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals and draw examples of quadrilaterals that do not belong to any of these subcategories.

Decide how many vertices each shape has. Mark the correct box in the table for **each** shape.

	3 vertices	**4 vertices**	**5 vertices**	**6 vertices**
triangle				
rhombus				
rectangle				
hexagon				
trapezoid				

TN021037

Label	TN021037	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	27 (bottles)	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.OA.D.8	**Standard 1 Text**	Solve two-step contextual problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding (See Table 1 - Addition and Subtraction Situations and Table 2 - Multiplication and Division Situations).

Kenneth brought bottles of water to soccer practice.

- He brought 3 packs of bottles.
- Each pack had 12 bottles.
- There were 9 bottles left at the end of practice.

How many bottles of water were used during practice?

TN942315

Label	TN942315	**Max Points**	1
Item Grade	03	**Rationale1**	correct
Item Content	Math	**Rationale2**	distance around the figure
Item Type	choice	**Rationale3**	one-dimensional attribute of some figures
Key	1	**Rationale4**	one-dimensional attribute of some figures
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.MD.C.5	**Standard 1 Text**	Recognize area as an attribute of plane figures and understand concepts of area measurement.

Marvin draws a figure on a piece of paper.

Which of these represents the amount of space inside of the figure?

A. area

B. width

C. length

D. perimeter

TN721734

Label	TN721734	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler			
Standard 1 Code	3.OA.B.6	**Standard 1 Text**	Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.

Which is another equation that can be used to solve $56 \div 7 = a$?

A. $56 - 7 = a$

B. $56 - a = 7$

C. $a \times 56 = 7$

D. $a \times 7 = 56$

TN622511

Label	TN622511	**Max Points**	1
Item Grade	03	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2,3,5	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	3.NF.A.3d	**Standard 1 Text**	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Use the symbols >, =, or < to show the relationship and justify the conclusions.

A comparison is shown.

$$\frac{5}{8} < \square$$

Choose the **three** fractions that will make the comparison true.

A. $\frac{1}{8}$

B. $\frac{5}{1}$

C. $\frac{5}{6}$

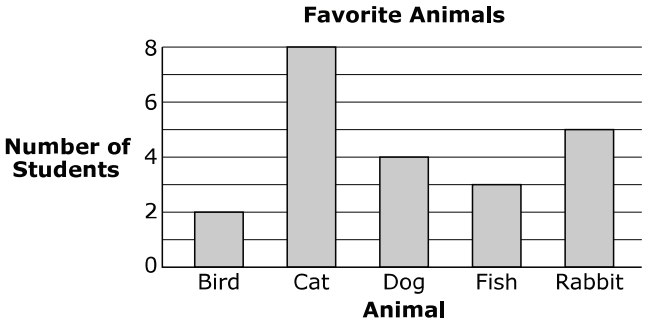
D. $\frac{5}{8}$

E. $\frac{6}{8}$

TN366462

Label	TN366462	**Max Points**	1
Item Grade	03	**Rationale1**	correct
Item Content	Math	**Rationale2**	cat-dog; 8-4
Item Type	choice	**Rationale3**	cat-fish; 8-3
Key	1	**Rationale4**	cat-(1 dog and 1 fish); 8-1-1
DOK	2	**Rationale5**	N/A
Difficulty	M	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	3.MD.B.3	**Standard 1 Text**	Draw a scaled pictograph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled graphs.

This bar graph shows the favorite animal of some students in a class.



How many **more** students have a favorite animal of cat than have a favorite animal of dog or fish?

A. 1

B. 4

C. 5

D. 6

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DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
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Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN652426

Label	TN652426	**Max Points**	1
Item Grade	04	**Rationale1**	correct
Item Content	Math	**Rationale2**	difference is 4000
Item Type	choice	**Rationale3**	correct
Key	1,3,4	**Rationale4**	correct
DOK	1	**Rationale5**	sum is 6810
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NBT.B.4	**Standard 1 Text**	Fluently add and subtract within 1,000,000 using appropriate strategies and algorithms.

Which sums and differences are equal to 5000? Choose the **three** correct answers.

A. $2500 + 2500$

B. $8432 - 4432$

C. $7269 - 2269$

D. $3208 + 1792$

E. $4910 + 1900$

TN232710

Label	TN232710	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	1	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.OA.A.3	**Standard 1 Text**	Solve multi-step contextual problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Ben had 5 sheets of stickers.

- Each sheet had 12 stickers on it.
- Ben gave 23 stickers to his sister.
- He gave 16 stickers to his brother.

Which equation can be used to determine s, how many stickers Ben has left?

A. $(5 \times 12) - 23 - 16 = s$

B. $(12 + 5) - 23 + 16 = s$

C. $(5 \times 12) - 23 + 16 = s$

D. $(12 \times 5) + 23 - 16 = s$

TN032646

Label	TN032646	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	501	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NBT.B.6	**Standard 1 Text**	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

What is the quotient? Enter your answer in the space provided.

$3507 \div 7$

TN866595

Label	TN866595	**Max Points**	1
Item Grade	04	**Rationale1**	correct justification, but incorrect description
Item Content	Math	**Rationale2**	uses odd start value and odd number in rule to recognize that all numbers in pattern are odd
Item Type	choice	**Rationale3**	correct
Key	3	**Rationale4**	correct description, but incorrect justification
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.OA.C.5	**Standard 1 Text**	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.

Juan writes a number pattern.

- The pattern starts with 63.
- The pattern uses the rule subtract 5.

Which sentence about the numbers in Juan's pattern is **true**?

A. All of the numbers are odd because an odd number is subtracted.

B. All of the numbers are odd because the pattern starts with an odd number.

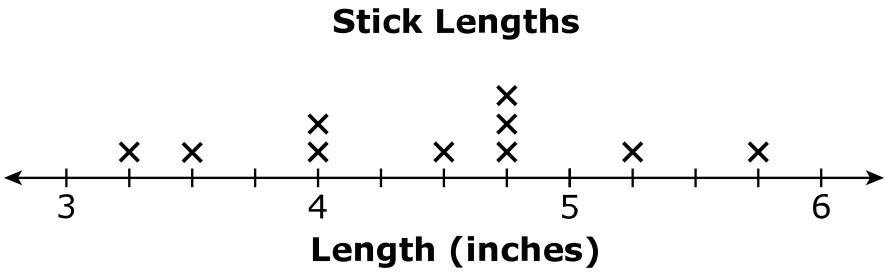
C. The numbers switch between odd and even because an odd number is subtracted.

D. The numbers switch between odd and even because the pattern starts with an odd number.

TN502908

Label	TN502908	**Max Points**	1
Item Grade	04	**Rationale1**	4 3/4 - 3 1/4; uses 4 3/4 as longest stick since it has the greatest number of Xs
Item Content	Math	**Rationale2**	misreads line plot and finds difference in greatest and least numbers of Xs; 3-1
Item Type	choice	**Rationale3**	correct
Key	3	**Rationale4**	6 3/4 - 3 1/4; misreads longest stick as 6 3/4 since the X is close to the 6 on the number line
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.MD.B.4	**Standard 1 Text**	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

This line plot shows the lengths of 10 sticks.



What is the difference in the lengths, in inches, of the **longest** and **shortest** sticks?

A. $1\frac{2}{4}$

B. 2

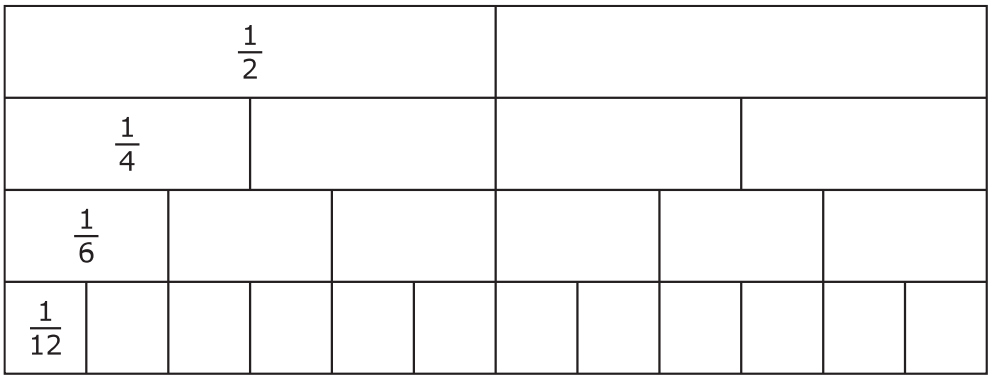
C. $2\frac{2}{4}$

D. $3\frac{2}{4}$

TN525736

Label	TN525736	**Max Points**	1
Item Grade	04	**Rationale1**	The student correctly used the distributive property to create an equivalent expression.
Item Content	Math	**Rationale2**	The student may have thought the total charge of 20 + 16x was the amount charged for a single lawn.
Item Type	choice	**Rationale3**	The student may have noticed that this expression is equivalent, but failed to see that it does not accurately express the amount charged for each lawn.
Key	2,4,5	**Rationale4**	The student may have noticed that this expression is equivalent, but failed to see that it does not accurately express the amount charged for each lawn.
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NF.A.1	**Standard 1 Text**	

Use the fraction model to help answer the question.



Choose **all** the fractions that are equivalent to $\frac{3}{6}$.

A. $\frac{8}{12}$

B. $\frac{6}{12}$

C. $\frac{7}{12}$

D. $\frac{2}{4}$

E. $\frac{1}{2}$

F. $\frac{3}{4}$

TN732958

Label	TN732958	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4,5	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.OA.A.1	**Standard 1 Text**	Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.

Sammy writes this equation.

$$12 = 6 \times 2$$

Which statements describe his equation? Choose the **two** correct answers.

A. 6 is 12 more than 2.

B. 12 is 6 more than 2.

C. 2 is 12 times as many as 6.

D. 12 is 2 times as many as 6.

E. 12 is 6 times as many as 2.

F. 12 is 2 more than 6.

TN224221

Label	TN224221	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NBT.A.1	**Standard 1 Text**	

Choose the answer that correctly fills the blank.

The value of the digit 4 in the number 8421 is _____ times the value of the digit 4 in the number 2148.

A. one

B. ten

C. one hundred

D. one thousand

TN535335

Label	TN535335	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	match	**Rationale3**	
Key	C1,A2,B3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NF.B.4b	**Standard 1 Text**	Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a whole number by a fraction . For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)

Mark the correct boxes in the table to show which expressions are equivalent.

	$12 \times \frac{1}{4}$	$9 \times \frac{1}{8}$	$9 \times \frac{1}{4}$
$3 \times \frac{3}{4}$			
$4 \times \frac{3}{4}$			
$3 \times \frac{3}{8}$			

TN062925

Label	TN062925	**Max Points**	1
Item Grade	04	**Rationale1**	used “one-degree angles”
Item Content	Math	**Rationale2**	subtracted 1 from 40
Item Type	choice	**Rationale3**	correct
Key	3	**Rationale4**	added 1 to 40
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.MD.C.5b	**Standard 1 Text**	Understand that an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles. An angle that turns through n one-degree angles is said to have an angle measure of n degrees and represents a fractional portion of the circle.

An angle turns through 40 one-degree angles.

What is the measure, in degrees, of the angle?

A. 1

B. 39

C. 40

D. 41

TN032408

Label	TN032408	**Max Points**	1
Item Grade	04	**Rationale1**	correct
Item Content	Math	**Rationale2**	the 8 has a value that is 1/10 of the 8 in 50,800
Item Type	choice	**Rationale3**	focuses on "80" as 10x8 without considering actual place value
Key	1	**Rationale4**	the 8 has the same value of the 8 in 50,800
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NBT.A.1	**Standard 1 Text**	Recognize that in a multi-digit whole number (less than or equal to 1,000,000), a digit in one place represents 10 times as much as it represents in the place to its right. For example, recognize that 7 in 700 is 10 times bigger than the 7 in 70 because 700 ÷ 70 = 10 and 70 x 10 = 700.

In which number does the 8 have a value that is 10 times the value of the 8 in 50,800?

A. 68,000

B. 77,080

C. 80,000

D. 90,810

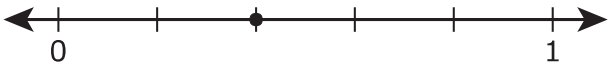
TN125741

Label	TN125741	**Max Points**	1
Item Grade	04	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	4.NF.A.1	**Standard 1 Text**	

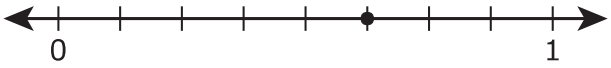
A fraction is shown on the number line.

Which number line shows an equivalent fraction?

A.

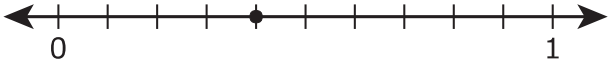


B.



C.

D.



TN226113

Label	TN226113	**Max Points**	1 | 1 | 1
Item Grade	04	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	composite	**Rationale3**	N/A
Key	2 | 1 | 2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	4.NF.C.7	**Standard 1 Text**	N/A

In each part, choose the correct answer for each box to make a true comparison.

Part A

$1.41 \square 1.39$

A. $<$

B. $>$

C. $=$

Part B

$2.13 \square 2.2$

A. $<$

B. $>$

C. $=$

Part C

$5.5 \square 5.06$

A. $<$

B. $>$

C. $=$

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TNReady—Math
Grade 4 Item Release
Spring 2018

Tennessee Comprehensive Assessment Program

TCAP

TNReady—Math
Grade 5 Item Release

TN Department of Education

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Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN557559

Label	TN557559	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3,4,5	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NBT.B.6	**Standard 1 Text**	

Which values are greater than or equal to $3876 \div 68$?

Select **all** that apply.

A. 55

B. 56

C. 57

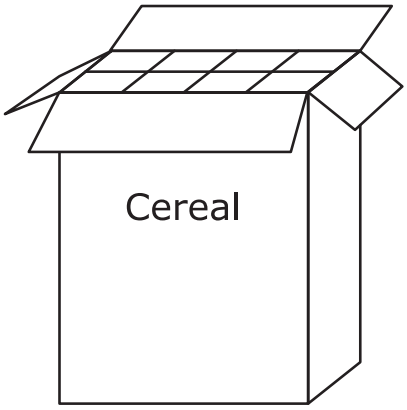
D. 58

E. 59

TN327210

Label	TN327210	**Max Points**	1
Item Grade	05	**Rationale1**	The student thinks packing with cubes measures area.
Item Content	Math	**Rationale2**	The student thinks packing with cubes measures mass.
Item Type	choice	**Rationale3**	The student thinks packing with cubes measures height.
Key	4	**Rationale4**	Correct. Cubic units measure volume.
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.MD.C.3	**Standard 1 Text**	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

A small cereal box can be packed full with 40 unit cubes.



What do the 40 cubes in the box measure?

A. the area of the cereal box

B. the mass of the cereal box

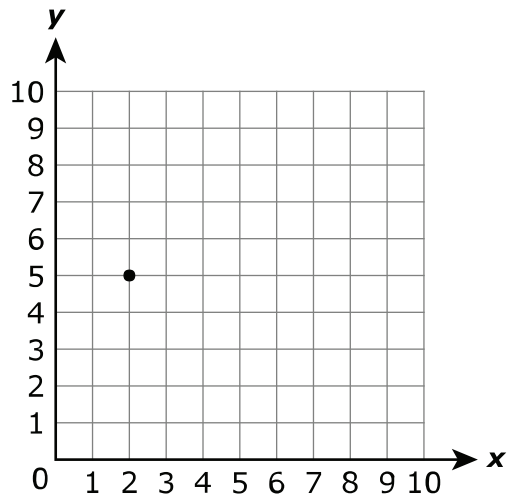
C. the height of the cereal box

D. the volume of the cereal box

TN957678

Label	TN957678	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.G.A.1	**Standard 1 Text**	

Which ordered pair describes the point shown on the graph?



A. $(1, 4)$

B. $(2, 5)$

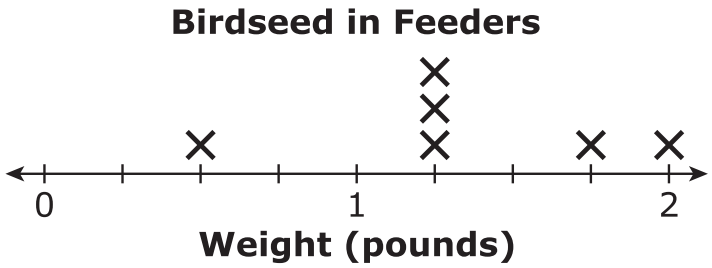
C. $(3, 6)$

D. $(5, 2)$

TN468024

Label	TN468024	**Max Points**	1
Item Grade	05	**Rationale1**	Rubric: only 1 ¾ and 2 are at least 1 ½.
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	2	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.MD.B.2	**Standard 1 Text**	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

This line plot below shows the weights of birdseed in the feeders in Kate's back yard.



Key
Each ✕ represents 1 feeder.

How many feeders have **more than** $1\frac{1}{2}$ pounds of birdseed in them?

Enter your answer in the space provided.

TN001573

Label	TN001573	**Max Points**	1
Item Grade	05	**Rationale1**	rounds 3.348 to 3.35; then rounds 3.35 to 3.4
Item Content	Math	**Rationale2**	correct
Item Type	choice	**Rationale3**	rounds down
Key	2	**Rationale4**	rounds down
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NBT.A.4	**Standard 1 Text**	Round decimals to the nearest hundredth, tenth, or whole number using understanding of place value.

Which number, when rounded to the nearest tenth, gives an answer of 3.4?

A. 3.348

B. 3.362

C. 3.471

D. 3.483

TN657470

Label	TN657470	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2,4	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NF.B.5b	**Standard 1 Text**	

Jonathan is finding the product of 8 and $\frac{3}{4}$. Which of the following statements are true? Select the **two** correct answers.

A. The product will be greater than 8 because $\frac{3}{4}$ is less than 1.

B. The product will be less than 8 because $\frac{3}{4}$ is less than 1.

C. The product will be less than 8 because $\frac{3}{4}$ is greater than 1.

D. The product will be greater than 4 because $\frac{3}{4}$ is greater than $\frac{1}{2}$.

E. The product will be greater than 4 because $\frac{3}{4}$ is less than $\frac{1}{2}$.

TN388055

Label	TN388055	**Max Points**	1
Item Grade	05	**Rationale1**	(13 – 9)/12 = 4/12 = 1/3
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	(13-9)/12,1/3,4/12	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NF.A.1	**Standard 1 Text**	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)

What is $1\frac{1}{12} - \frac{3}{4}$?

Enter your answer in the space provided.

TN120185

Label	TN120185	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NBT.A.3	**Standard 1 Text**	

Which shows eleven and two hundred four thousandths?

A. 1.124

B. 11.024

C. 11.204

D. 11.240

TN920188

Label	TN920188	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2,5	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.MD.C.5a	**Standard 1 Text**	

The first layer of a rectangular prism can be packed with 20 unit cubes, without gaps or overlaps. The prism is 6 unit cubes tall.

Select **all** expressions that represent the volume of the prism.

A. $20 + 6$

B. 20×6

C. $20 \times 6 \times 6$

D. $20 \times 20 \times 6$

E. $20 + 20 + 20 + 20 + 20 + 20$

TN761540

Label	TN761540	**Max Points**	1
Item Grade	05	**Rationale1**	Correct.
Item Content	Math	**Rationale2**	The student sees that successive numbers in Pattern B are all multiples of 6, and is confused about what that implies.
Item Type	choice	**Rationale3**	The student compares only the numbers in the first row.
Key	1	**Rationale4**	The student compares only the numbers in the second row.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.OA.B.3a	**Standard 1 Text**	

The first few numbers in two number patterns are shown in the table.

Pattern A	Pattern B
Add 2	**Add 6**
2	6
4	12
6	18
8	
10	

Both patterns continue. Which statement correctly compares the numbers in each row?

A. The number in Pattern B is 3 times the number in Pattern A.

B. The number in Pattern B is 6 times the number in Pattern A.

C. The number in Pattern B is 4 more than the number in Pattern A.

D. The number in Pattern B is 8 more than the number in Pattern A.

TN320172

Label	TN320172	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	28	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NF.B.7b	**Standard 1 Text**	

Mr. Clark has 7 chocolate bars to share equally with all the students in his class. He gives each student $\frac{1}{4}$ of a chocolate bar. None of the chocolate is left over after sharing the bars among his students.

How many students are in Mr. Clark's class?

TN277187

Label	TN277187	**Max Points**	1
Item Grade	05	**Rationale1**	The student estimates only the number of pounds of carrots in the soup.
Item Content	Math	**Rationale2**	The student under-estimates the combined weights.
Item Type	choice	**Rationale3**	Correct. Estimates adding more than 3/4 to more than 1 1/4
Key	3	**Rationale4**	The student over-estimates the combined weights.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.NF.A.2	**Standard 1 Text**	Solve contextual problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators. 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 3/7 <1/2.

Olivia is making lunch.

- She uses $1\frac{3}{8}$ pounds of carrots in soup.
- She uses $\frac{4}{5}$ pound of carrots in a salad.

About how many pounds of carrots did Olivia use in all?

A. between 1 and $1\frac{1}{2}$ pounds

B. between $1\frac{1}{2}$ and 2 pounds

C. between 2 and $2\frac{1}{2}$ pounds

D. between $2\frac{1}{2}$ and 3 pounds

TN020269

Label	TN020269	**Max Points**	1
Item Grade	05	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	1	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	5.MD.C.5b	**Standard 1 Text**	

A soup company makes a container in the shape of a rectangular prism with a length of 3 inches, a width of 4 inches, and a height of 6 inches.

What is the volume of the soup container?

A. 72 in^3

B. 24 in^3

C. 13 in^3

D. 12 in^3

TN457631

Label	TN457631	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.OA.A.2	**Standard 1 Text**	N/A

Which expression correctly shows sixteen minus two, divided by the sum of three and four?

A. $(16 + 2 \div 3) + 4$

B. $(16 \div 2) - (3 + 4)$

C. $(16 \times 2) \div (3 + 4)$

D. $(16 - 2) \div (3 + 4)$

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Grade 6 Item Release

TN Department of Education

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Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

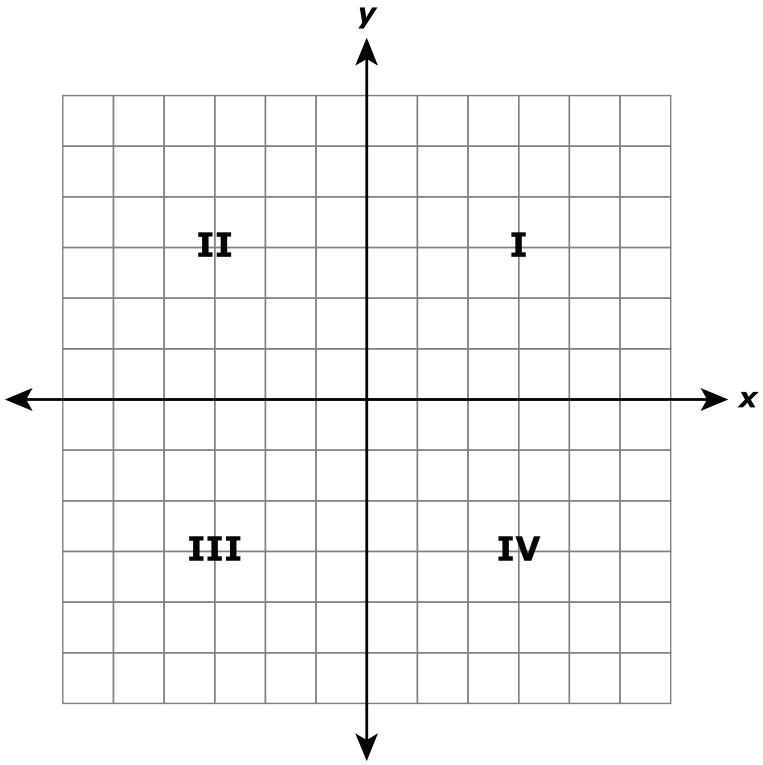
METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN220304

Label	TN220304	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.NS.C.6b	**Standard 1 Text**	

In which quadrant is the ordered pair $(50, -100)$ located on the coordinate plane?



A. Quadrant I

B. Quadrant II

C. Quadrant III

D. Quadrant IV

TN720351

Label	TN720351	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	-15	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.NS.C.5	**Standard 1 Text**	

Write an integer in the space provided to describe 15°F below 0°F.

°F

TN920299

Label	TN920299	**Max Points**	1
Item Grade	06	**Rationale1**	126/3 = 42; 42 x 5 = 210
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	210	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.RP.A.3b	**Standard 1 Text**	

Michelle bakes 126 mini muffins in 3 hours. At this rate, how many mini muffins could she bake in 5 hours?

TN220281

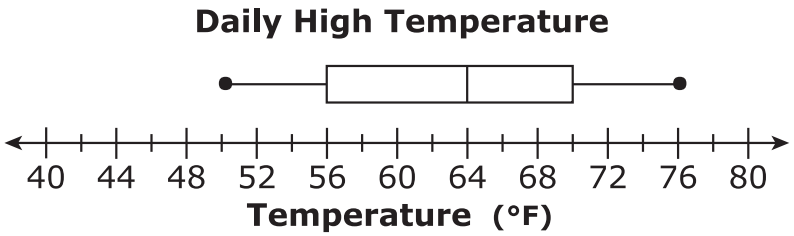
Label	TN220281	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	125	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.EE.A.1	**Standard 1 Text**	

Evaluate the expression 5^3.

TN519402

Label	TN519402	**Max Points**	1
Item Grade	06	**Rationale1**	This is the IQR.
Item Content	Math	**Rationale2**	Correct. Difference between minimum and maximum.
Item Type	choice	**Rationale3**	This is the difference between highest and lowest value on scale.
Key	2	**Rationale4**	This is the maximum value.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.SP.B.5c	**Standard 1 Text**	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

Simone recorded the daily high temperature over several months. The box plot summarizes her information.



What is the range of the temperatures?

A. 14

B. 26

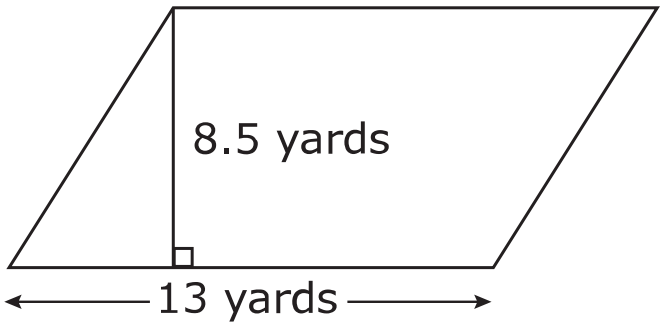
C. 40

D. 76

TN612723

Label	TN612723	**Max Points**	1
Item Grade	06	**Rationale1**	Added 2 times the base and 2 times the height
Item Content	Math	**Rationale2**	Multiplied but did not carry correctly
Item Type	choice	**Rationale3**	correct
Key	3	**Rationale4**	Decimal place error.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.G.A.1	**Standard 1 Text**	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

A local community center has a playground in the shape of a parallelogram.



What is the area, in square yards, of the playground?

A. 43.0

B. 89.5

C. 110.5

D. 1,105.0

TN458061

Label	TN458061	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.NS.B.4	**Standard 1 Text**	

What is the greatest common factor of 90 and 72?

A. 4

B. 6

C. 12

D. 18

TN420327

Label	TN420327	**Max Points**	1
Item Grade	06	**Rationale1**	(27 x .036) - 5 = 9.72 - 5 = 4.72
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	4.72	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.EE.A.2c	**Standard 1 Text**	

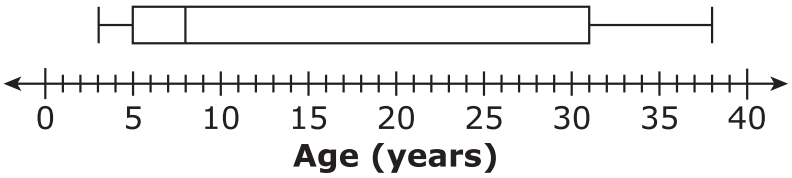
Evaluate $3^3 \cdot x^2 - 25 \div 5$ when $x = 0.6$.

TN546997

Label	TN546997	**Max Points**	1
Item Grade	06	**Rationale1**	Student identifies Q2 that represents the median.
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	8	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.SP.B.4	**Standard 1 Text**	

The box plot shows the ages of people attending the school carnival.

Ages at the Carnival



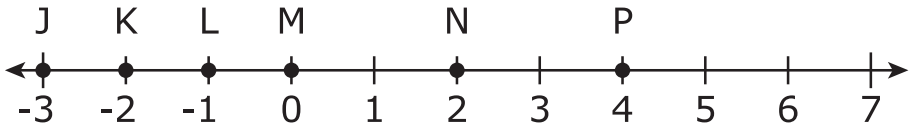
What is the median age?

Enter your answer in the space provided.

TN962695

Label	TN962695	**Max Points**	1
Item Grade	06	**Rationale1**	Since -3 + 0 = -3, confuses identity with opposite.
Item Content	Math	**Rationale2**	Selects the two points farthest to the left and right of zero.
Item Type	choice	**Rationale3**	Correct. K and N are 2 units from zero and have opposite signs.
Key	3	**Rationale4**	Selects the second points plotted left and right from zero.
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.NS.C.6a	**Standard 1 Text**	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself. For example, - (-3) = 3, and that 0 is its own opposite.

Several points are located on the number line shown.



Which pair of points represents opposite numbers?

A. Point J and point M

B. Point J and point P

C. Point K and point N

D. Point K and point P

TN520307

Label	TN520307	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	36	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.EE.A.1	**Standard 1 Text**	

Evaluate the expression $\frac{1}{4}(10 - 3 + 5)^2$.

TN320336

Label	TN320336	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.NS.A.1	**Standard 1 Text**	

A piece of wood is $\frac{6}{8}$ foot long. It needs to be cut into pieces that are $\frac{1}{4}$ foot long each. How many pieces will there be?

A. 1

B. 2

C. 3

D. 4

TN658476

Label	TN658476	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4,5	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.EE.B.5	**Standard 1 Text**	

Select **all** of the values of x that make $x + 3 > 5$ true.

A. 0

B. 1

C. 2

D. 3

E. 4

TN420347

Label	TN420347	**Max Points**	1
Item Grade	06	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	2	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	6.RP.A.3a	**Standard 1 Text**	

Marcus is making a ratio table to use when mixing pints of paint colors. He will use this table to mix an identical color.

Color A (pints)	Color B (pints)
5	8
10	?
15	24
20	32

What is the missing value in the ratio table?

A. 13

B. 16

C. 18

D. 19

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TNReady—Math
Grade 6 Item Release
Spring 2018

Tennessee Comprehensive Assessment Program

TCAP

TNReady—Math
Grade 7 Item Release

TN Department of Education

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Table of Contents

Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

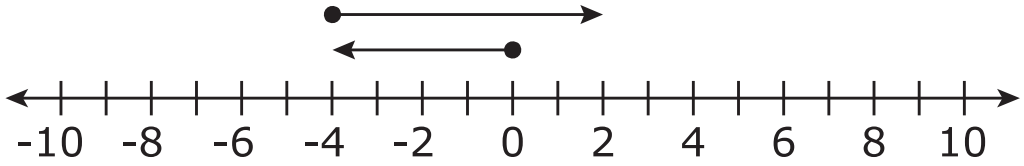
Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN855964

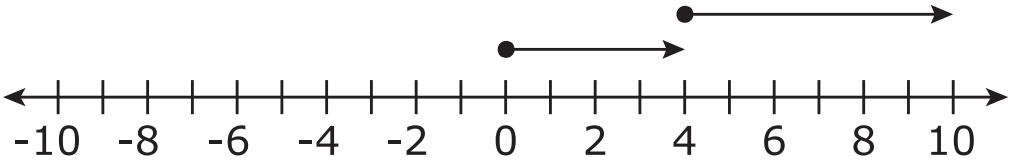
Label	TN855964	**Max Points**	1
Item Grade	07	**Rationale1**	This number line models −4 + 6.
Item Content	Math	**Rationale2**	This number line models 4 + 6.
Item Type	choice	**Rationale3**	This number line models 4 and 6.
Key	4	**Rationale4**	Correct. This number line correctly shows 4 + −6 : 4 in the positive direction, added to 6 in the negative direction, ending at −2.
DOK	1	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.NS.A.1b	**Standard 1 Text**	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.

Which number line represents $4 + -6$?

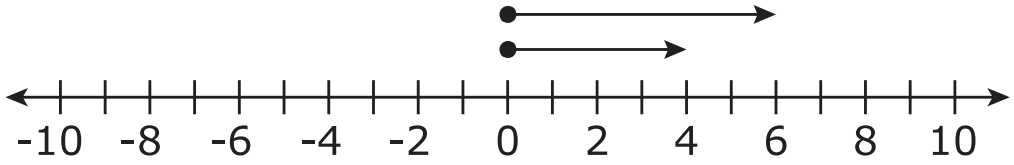
A.



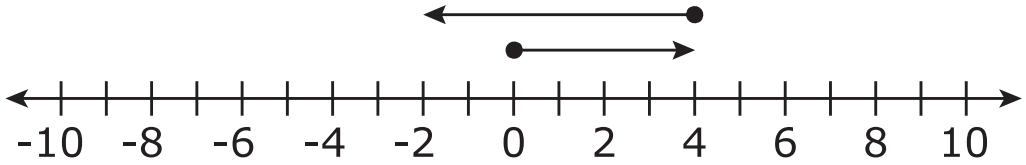
B.



C.



D.



TN577103

Label	TN577103	**Max Points**	1
Item Grade	07	**Rationale1**	The student ignores the cost of the salad.
Item Content	Math	**Rationale2**	Correct.
Item Type	choice	**Rationale3**	The student does not realize that this strategy radically underestimates the costs of both the salad and the sandwiches.
Key	2	**Rationale4**	The student overestimates the cost of the salad, and underestimates the cost of the sandwiches.
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.EE.B.3b	**Standard 1 Text**	Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals). b. Assess the reasonableness of answers using mental computation and estimation strategies.

Ezra and Sophie are planning a picnic for a group of friends.

- They have $100 to spend.
- They will buy one large salad for $28.50.
- They will also buy some sandwiches for $4.85 each.

Ezra thinks they can buy at least 20 sandwiches, but Sophie thinks they can buy no more than 14 sandwiches.

Which estimation strategy will show who is correct?

A. Each sandwich costs about $5, so 20 sandwiches cost about $100, so Ezra is right.

B. Each sandwich costs about $5, so 14 sandwiches cost about $70, so Sophie is right.

C. Each sandwich costs about $4, so 20 sandwiches cost about $80, so Ezra is right.

D. Each sandwich costs about $4, so 14 sandwiches cost about $55, so Sophie is right.

TN358375

Label	TN358375	**Max Points**	1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3,5	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.SP.A.2	**Standard 1 Text**	

The manager of a toy store needs to determine what types of items his customers are most interested in buying. The manager conducted two random surveys. The survey results are shown in the table.

	Sample 1	Sample 2
Board Games	22	28
Toy Cars and Trucks	30	20
Balls and Sporting Equipment	48	52
Total	100	100

Select the **two** inferences that can be made based on the given data.

A. The store manager should order more board games than both of the other types of items combined.

B. The store manager should order more toy cars and trucks than either of the other types of items.

C. The store manager should order more balls and sporting equipment than either of the other types of items.

D. The store manager should order approximately half as many balls and sporting equipment as toy cars and trucks.

E. The store manager should order approximately twice as many balls and sporting equipment as toy cars and trucks.

TN958319

Label	TN958319	**Max Points**	1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.RP.A.1	**Standard 1 Text**	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.

Jackson mows $\frac{1}{3}$ of his neighbor's lawn in $\frac{1}{6}$ of an hour. At this rate, how many lawns of the same size could he mow in one hour?

A. $\frac{1}{6}$

B. $\frac{1}{2}$

C. 2

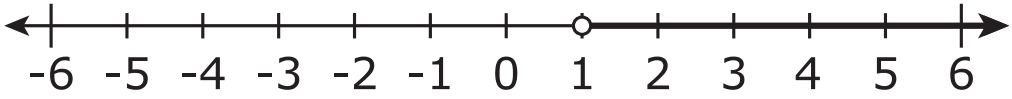
D. 18

TN362149

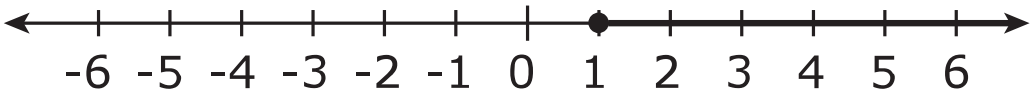
Label	TN362149	**Max Points**	1
Item Grade	07	**Rationale1**	x<1, not x>1
Item Content	Math	**Rationale2**	x cannot be equal to 1
Item Type	choice	**Rationale3**	Correct. 4x-10, 4x<4, x<1
Key	3	**Rationale4**	x cannot be equal to 1
DOK	2	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.EE.B.4b	**Standard 1 Text**	

Which number line shows the solution to the inequality $4x - 10 < -6$?

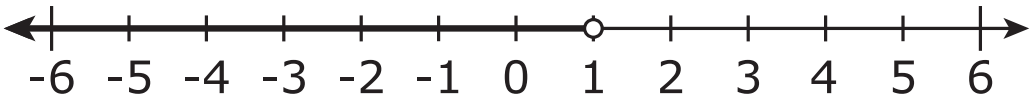
A.



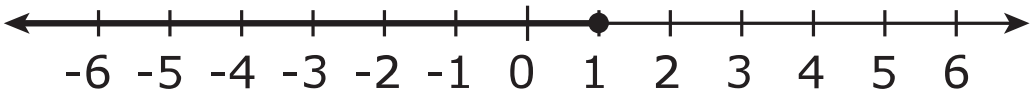
B.



C.



D.



TN320586

Label	TN320586	**Max Points**	1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	1,4	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.NS.A.1b	**Standard 1 Text**	

Cierra is playing a game on a number line. Her game piece is on the number 3. She picks a card that says "move 8 spaces."

Select **all** the numbers that are 8 spaces from Cierra's current position.

A. 11

B. 8

C. -4

D. -5

E. -8

TN576184

Label	TN576184	**Max Points**	1
Item Grade	07	**Rationale1**	1/8 has been confused with 1.8.
Item Content	Math	**Rationale2**	The constant of proportionality is inverted.
Item Type	choice	**Rationale3**	Correct: 3.6 is a value for y, but $x \neq 1$.
Key	3	**Rationale4**	3.6 is a value for y, but $x \neq 1$.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.RP.A.2c	**Standard 1 Text**	Recognize and represent proportional relationships between quantities.

The table shows a proportional relationship between x and y.

x	*y*
2	3.6
5	9
6	10.8
10	18

Which equation could be used to represent the relationship shown in the table?

A. $y = \frac{1}{8}x$

B. $y = \frac{5}{9}x$

C. $y = 1.8x$

D. $y = 3.6x$

TN028444

Label	TN028444	**Max Points**	1 | 1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	composite	**Rationale3**	
Key	4 | 3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.EE.B.4b | 7.EE.B.4b	**Standard 1 Text**	

Jackson has up to $7\frac{1}{2}$ hours to spend at an amusement park. He will spend $1\frac{1}{2}$ of those hours at the water park. He will spend x hours at each of the 3 other sections in the amusement park.

Part A
Select the inequality that can be solved to determine the number of hours Jackson can spend in each one of the other sections.

A. $1\frac{1}{2}x + 3 \leq 7\frac{1}{2}$

B. $3x + 1\frac{1}{2} \geq 7\frac{1}{2}$

C. $1\frac{1}{2}x + 3 \geq 7\frac{1}{2}$

D. $3x + 1\frac{1}{2} \leq 7\frac{1}{2}$

Part B

Select the number line that shows the solution set for the possible amounts of time Jackson can spend in each one of the other sections.

A.

B.

C.

D.

TN275958

Label	TN275958	**Max Points**	1
Item Grade	07	**Rationale1**	Correct. Because the data varies so much, more data needs to be collected to make predictions.
Item Content	Math	**Rationale2**	Jenny and Frank's data is not similar.
Item Type	choice	**Rationale3**	Correct. Because the data varies, more data needs to be collected to make predictions.
Key	1,3	**Rationale4**	Because of the variation in the data, this prediction cannot be made.
DOK	2	**Rationale5**	Because of the variation in the data, this prediction cannot be made.
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.SP.A.2	**Standard 1 Text**	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Jenny and Frank each survey 20 students in the seventh grade to determine which student will win the election for class president. They both record their data in a table.

Jenny's Survey

Richard	Meghan
18	2

Frank's Survey

Richard	Meghan
3	17

Which statements are true about Jenny's and Frank's survey results? Select **all** that apply.

A. The variation between the results is great. The results are not reasonable.

B. Jenny and Frank have similar data. The results are reasonable.

C. Jenny and Frank should collect more data before making predictions about the election.

D. A good prediction based on the data is that Richard will win the election.

E. A good prediction based on the data is that Meghan will win the election.

TN462828

Label	TN462828	**Max Points**	1
Item Grade	07	**Rationale1**	Probabilities must be between 0 and 1. Divide 5 by the total number of envelopes.
Item Content	Math	**Rationale2**	This is the probability that a car is chosen.
Item Type	choice	**Rationale3**	This is the probability that an electronic is chosen.
Key	4	**Rationale4**	Correct. 10 envelopes, 5 contain vacations. 5/10=1/2 probability a vacation is chosen.
DOK	2	**Rationale5**	
Difficulty	L	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.SP.C.7a	**Standard 1 Text**	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.

On a game show, a contestant randomly chooses an envelope and wins the prize that is written inside. There are 3 envelopes containing a car, 5 envelopes containing a vacation, and 2 envelopes containing electronics.

What is the probability that a contestant picks a vacation?

A. 5

B. $\frac{3}{10}$

C. $\frac{1}{5}$

D. $\frac{1}{2}$

TN967048

Label	TN967048	**Max Points**	1
Item Grade	07	**Rationale1**	The student adds the three numbers given.
Item Content	Math	**Rationale2**	Correct
Item Type	choice	**Rationale3**	Instead of multiplying 34 and 9.25, the student puts the digits together, then subtracts the cost of the skateboard (349.25 – 120.50).
Key	2	**Rationale4**	The student finds Jim's earnings, then adds the cost of the skateboard instead of subtracting.
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.EE.B.3a	**Standard 1 Text**	Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers presented in any form (whole numbers, fractions, and decimals). a. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.

Jim works 34 hours and earns $9.25 per hour. He spends $120.75 on a skateboard.

How much does Jim have left from his earnings after buying his skateboard?

A. $164.00

B. $193.75

C. $228.50

D. $435.25

TN620559

Label	TN620559	**Max Points**	1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	1	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.NS.A.2b	**Standard 1 Text**	

Which is always true about the quotient of two integers, x and y, expressed as $\frac{x}{y}$?

A. It is positive if both x and y are negative.

B. It is negative if both x and y are negative.

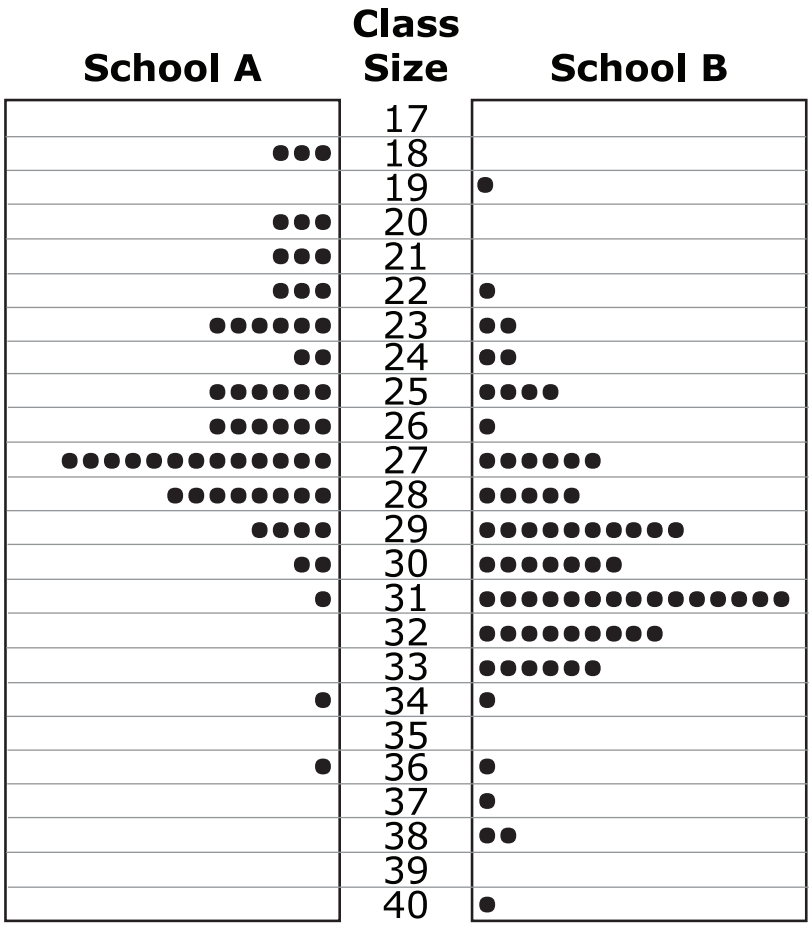
C. It is positive if y is greater than x.

D. It is negative if y is greater than x.

TN277701

Label	TN277701	**Max Points**	1
Item Grade	07	**Rationale1**	Correct. The center in school A is around 27 students, while the center in school B is around 31 students.
Item Content	Math	**Rationale2**	Most classes in school B range from 27 to 33 students, while most classes in school A range from 23 to 29 students.
Item Type	choice	**Rationale3**	Even though the central tendency is smaller in school A, there are classes in school B that are larger than some classes in school A.
Key	1	**Rationale4**	The dot plots have some overlapping numbers, but the central numbers are smaller for School A.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.SP.B.3	**Standard 1 Text**	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

The dot plots show the class sizes at two schools.



How do the class sizes compare between the two schools?

A. Overall, classes from school A are smaller.

B. Overall, classes from school B are smaller.

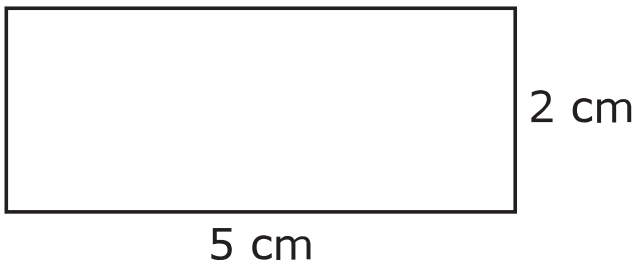
C. All classes at School A are smaller than the classes at school B.

D. There is no difference in class size between the two schools.

TN558337

Label	TN558337	**Max Points**	1
Item Grade	07	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	7.G.A.1	**Standard 1 Text**	

A rectangle is shown. The rectangle will be enlarged by a scale factor of 1.5.



What will be the perimeter of the enlarged rectangle?

A. 10.5 cm

B. 14 cm

C. 21 cm

D. 22.5 cm

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Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

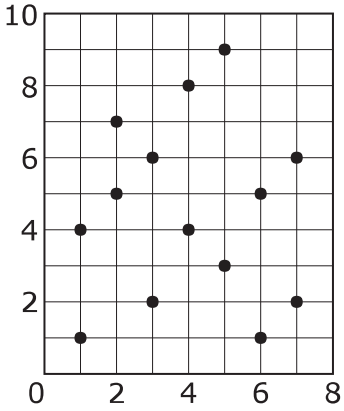
Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN113597

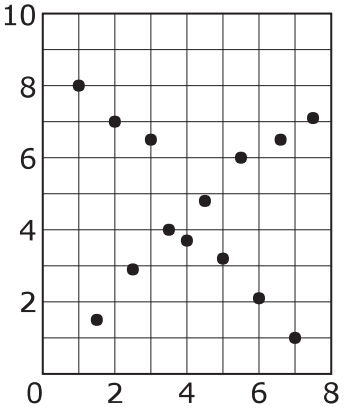
Label	TN113597	**Max Points**	1
Item Grade	08	**Rationale1**	Cloud of dots, no clear line.
Item Content	Math	**Rationale2**	Data points form a curved line, not a straight line.
Item Type	choice	**Rationale3**	No single straight line
Key	4	**Rationale4**	Correct. The data points have a clear straight trend line.
DOK	1	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.SP.A.2	**Standard 1 Text**	

For which graph would a straight line be most appropriately used to model the relationship between two variables?

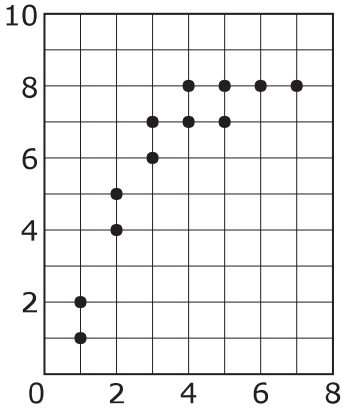
A.



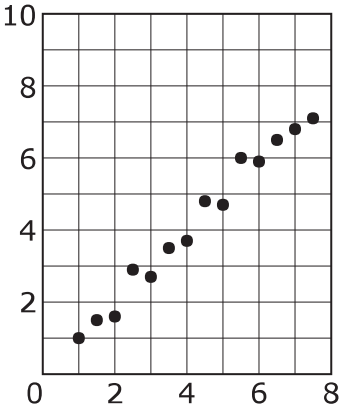
C.



B.



D.



TN136805

Label	TN136805	**Max Points**	1
Item Grade	08	**Rationale1**	Divided 18 by 11, made a decimal place error, and a repeating decimal error.
Item Content	Math	**Rationale2**	Divided 18 by 11 and made a decimal place error.
Item Type	choice	**Rationale3**	Correct
Key	3	**Rationale4**	Made a repeating decimal error
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.1	**Standard 1 Text**	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually or terminates, and convert a decimal expansion which repeats eventually or terminates into a rational number.

Which decimal is equivalent to $\frac{11}{18}$?

A. $0.16\overline{3}$

B. $0.1\overline{63}$

C. $0.6\overline{1}$

D. $0.\overline{61}$

TN916760

Label	TN916760	**Max Points**	1
Item Grade	08	**Rationale1**	Made an error in integer computation.
Item Content	Math	**Rationale2**	Correct
Item Type	choice	**Rationale3**	Made an error in integer computation.
Key	2	**Rationale4**	Confused reasoning for no solutions and infinitely many solutions.
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.EE.C.7a	**Standard 1 Text**	Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).

Which equation has infinitely many solutions?

A. $3x - 2 = 2 - 3x$

B. $x + 3x + 6 = 6 + 4x$

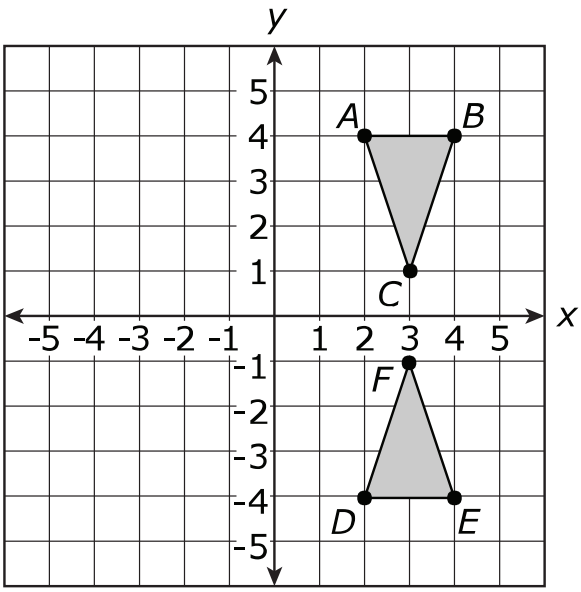
C. $2x + 7x - 5 = -9x + 5$

D. $4x - 5x + 3 = -5x + 4x - 3$

TN557126

Label	TN557126	**Max Points**	1
Item Grade	08	**Rationale1**	Correct. A reflection preserves the length of the segments of corresponding sides.
Item Content	Math	**Rationale2**	Correct. A reflection preserves the length of the segments of corresponding sides. C. Identified a pair of non-corresponding sides.
Item Type	choice	**Rationale3**	Identified a pair of non-corresponding sides.
Key	1,2,5	**Rationale4**	Identified a pair of non-corresponding sides.
DOK	2	**Rationale5**	Correct. A reflection preserves the length of the segments of corresponding sides.
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.G.A.1a	**Standard 1 Text**	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.

Triangle ABC is reflected over the x-axis to create triangle DEF.



Which statements about triangles ABC and DEF are true?

Select **all** that apply.

A. The length of $\overline{AB}$ is equal to the length of $\overline{DE}$.

B. The length of $\overline{BC}$ is equal to the length of $\overline{EF}$.

C. The length of $\overline{AC}$ is equal to the length of $\overline{ED}$.

D. The length of $\overline{AB}$ is equal to the length of $\overline{DF}$.

E. The perimeter of triangle ABC is equal to the perimeter of triangle DEF.

TN920627

Label	TN920627	**Max Points**	1
Item Grade		**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4	**Rationale4**	
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.EE.A.2	**Standard 1 Text**	

When Jack solved an equation on his homework, he calculated a solution of ± 4. Which of the equations below did Jack solve?

A. $x^2 = 2$

B. $x^2 = 4$

C. $x^2 = 8$

D. $x^2 = 16$

TN920607

Label	TN920607	**Max Points**	1
Item Grade		**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	4	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.EE.C.7b	**Standard 1 Text**	

What is the value of v in the equation $-25 = -(4v + 7) + 10$?

A. $v = 25$

B. $v = -7$

C. $v = 2$

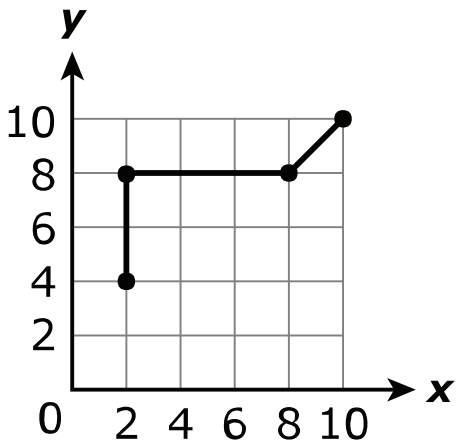
D. $v = 7$

TN020647

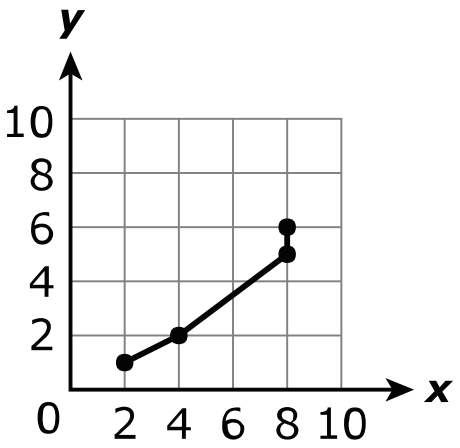
Label	TN020647	**Max Points**	1
Item Grade	08	**Rationale1**	The student may have failed to see that this is not a function because x=2 is related to two different y-values.
Item Content	Math	**Rationale2**	The student may have failed to see that this is not a function because x=4 is related to two different y-values.
Item Type	choice	**Rationale3**	The student may have failed to notice that this is not a function because x=8 is related to two different y-values.
Key	4	**Rationale4**	The student correctly noticed that this graph shows a function because each value of x is related to, at most, one value of y.
DOK	1	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.F.A.1	**Standard 1 Text**	

Which graph shows a function?

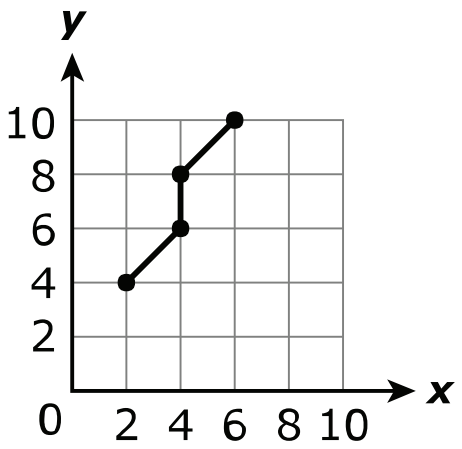
A.



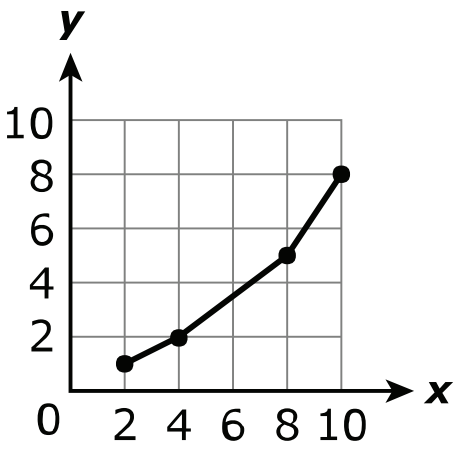
C.



B.



D.



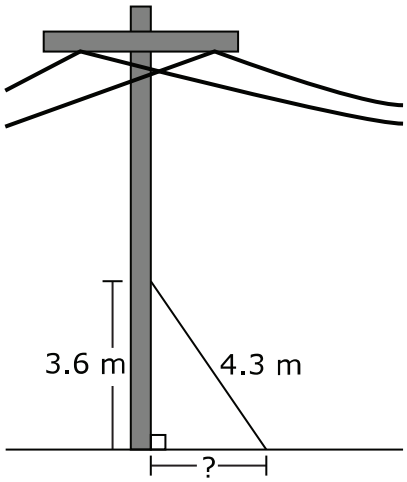
TN014004

Label	TN014004	**Max Points**	1
Item Grade	08	**Rationale1**	4.3^2 − 3.6^2 ≈ 2.35^2
Item Content	Math	**Rationale2**	
Item Type	textEntry	**Rationale3**	
Key	2.35	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.G.B.5	**Standard 1 Text**	

The diagram shows how workers attached a support cable to a telephone pole.

The cable is 4.3 meters in length.

One end of the cable is attached 3.6 meters up the pole and the other end is attached to the ground.



What is the distance, in meters, along the ground from the base of the pole to the end of the cable? Round your answer to the nearest hundredth of a meter.

Enter your answer in the space provided.

meters

TN820614

Label	TN820614	**Max Points**	1
Item Grade		**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	3	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.G.B.5	**Standard 1 Text**	

The direct linear distance from the park to an elementary school is 5.21 miles. The direct linear distance from the elementary school to the library is 4.4 miles, and the direct linear distance from the library to the park is 2.79 miles. Do these three locations form a right triangle?

A. Yes; since 5.21 is equal to $\sqrt{4.4 + 2.79}$, the locations form a right triangle.

B. No; since $4.4 + 2.79$ does not equal 5.21, the locations do not form a right triangle.

C. Yes; since $(4.4)^2 + (2.79)^2$ is equivalent to $(5.21)^2$, the locations form a right triangle.

D. No; since 2.79 is much shorter in distance than the other two distances, the locations do not form a triangle.

TN320634

Label	TN320634	**Max Points**	1
Item Grade		**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty		**Rationale6**	
Calculator	Yes	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.EE.A.3	**Standard 1 Text**	

A biologist is growing a specific type of bacteria. In one container there are 2×10^2 bacteria. In a second container there are 8×10^4 bacteria. How many times more bacteria are growing in the second container than the first?

A. 4 times

B. 40 times

C. 400 times

D. 4000 times

TN279040

Label	TN279040	**Max Points**	1
Item Grade	08	**Rationale1**	this is using slope and not y-intercept to solve starting altitude
Item Content	Math	**Rationale2**	Ryan's starting altitude is 20 ft higher (50 to 30 ft)
Item Type	choice	**Rationale3**	Uli: 10(4) + 30 = 70, Ryan: 20(4) + 50 = 130
Key	4	**Rationale4**	Correct
DOK	2	**Rationale5**	N/A
Difficulty	H	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	8.F.A.2	**Standard 1 Text**	N/A

Sam and Ryan are hiking different trails on a mountain. Sam's altitude during his hike can be represented by the expression $10h + 30$, where h is the number of hours he hikes. Ryan's altitude during his hike can be represented by the table:

Time (hours)	0	1	2	3
Altitude (feet)	50	70	90	110

Which statement is true?

A. Ryan starts at an altitude that is 10 feet higher than Sam's starting altitude.

B. Sam starts at an altitude that is 20 feet higher than Ryan's starting altitude.

C. After 4 hours, Sam will be at an altitude 60 feet above Ryan's location.

D. After 4 hours, Ryan will be at an altitude 60 feet above Sam's location.

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TN Department of Education

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SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN721543

Label	TN721543	**Max Points**	1
Item Grade	03	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	35	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	3.MD.A.1	**Standard 1 Text**	N/A

Avery started his homework at 6:20 P.M. He finished his homework at 6:55 P.M.

How many minutes did Avery spend on his homework?

TN622504

Label	TN622504	**Max Points**	1
Item Grade	03	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1,3,5	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	3.NF.A.3b	**Standard 1 Text**	N/A

Choose all the fractions equivalent to $\frac{2}{4}$.

- ☐ $\frac{1}{2}$
- ☐ $\frac{1}{3}$
- ☐ $\frac{3}{6}$
- ☐ $\frac{4}{6}$
- ☐ $\frac{4}{8}$

TN722485

Label	TN722485	**Max Points**	1
Item Grade	03	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	3.OA.A.2	**Standard 1 Text**	N/A

Ms. Jackson is putting all of her cookies into bags.

- She has 12 cookies and 3 bags.
- She will put the same number of cookies into each bag.

Which expression can she use to find the number of cookies she will put in each bag?

M $12 + 3$

P $12 - 3$

R 12×3

S $12 \div 3$

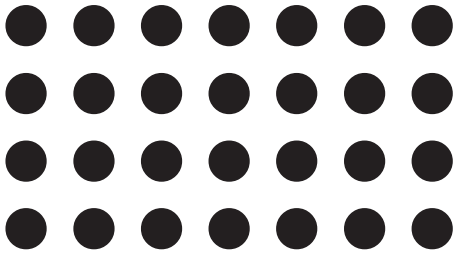
TN321818

Label	TN321818	**Max Points**	1
Item Grade	03	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	3	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	N/A		
Standard 1 Code	3.OA.A.3	**Standard 1 Text**	N/A

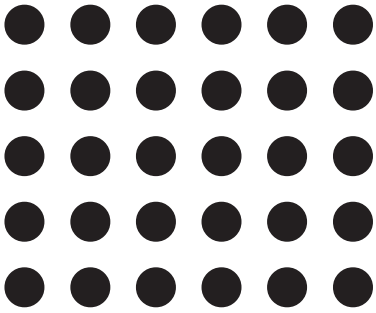
Liz is helping her teacher set up 32 chairs for the class play.

Which array shows one way Liz can set up all the chairs?

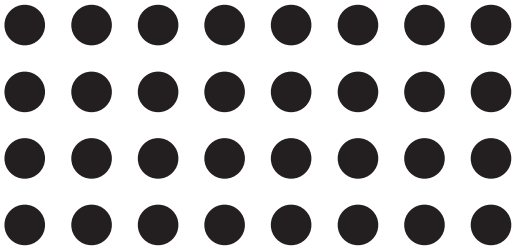
A



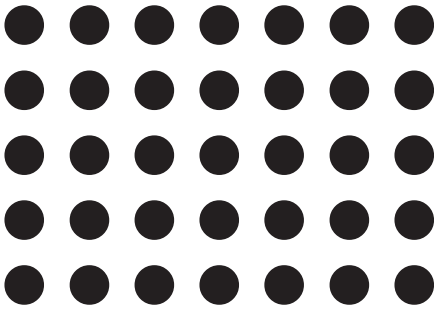
B



C



D



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Tennessee Comprehensive
Assessment Program TCAP
TNReady—Math
Grade 7 Item Release
Spring 2017

Tennessee Comprehensive Assessment Program

TCAP

TNReady—Math
Grade 4 Item Release

TN Department of Education

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SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

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TN026967

Label	TN026967	**Max Points**	1
Item Grade	04	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	23	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	4.OA.A.3	**Standard 1 Text**	N/A

A teacher is setting up 204 chairs in rows for a concert. Each row can fit 9 chairs.

What is the **least** number of rows needed to fit all of the chairs?

TN522542

Label	TN522542	**Max Points**	1
Item Grade	04	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1,4,5	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	4.NBT.B.5	**Standard 1 Text**	N/A

An area model is shown.

×	40	7
60	2400	420
5	?	35

One number is missing.

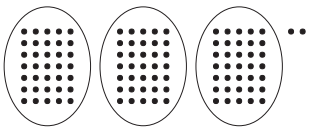
Choose the **three** true statements about the area model.

- ☐ The product of the area model is 3055.
- ☐ The missing number is 20.
- ☐ The model shows 407 × 605.
- ☐ The missing number is 200.
- ☐ The model shows 47 × 65.

TN222564

Label	TN222564	**Max Points**	1
Item Grade	04	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	4.NBT.B.6	**Standard 1 Text**	N/A

Which expression is represented by the model?



M $35 \div 3$

P $35 \div 2$

R $105 \div 3$

S $107 \div 3$

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Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
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TN720275

Label	TN720275	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	extendedText	**Rationale3**	N/A
Key	na	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.NF.B.4b	**Standard 1 Text**	N/A

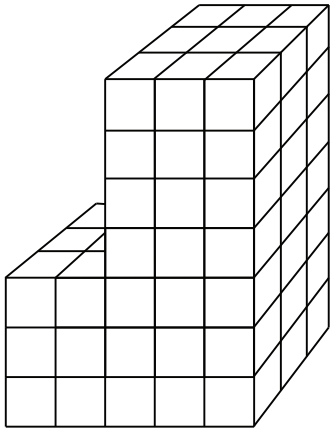
The width of a rectangle is $\frac{1}{2}$ meter. The length of the rectangle is $1\frac{2}{3}$ meters.

What is the area, in square meters, of the rectangle?

TN820170

Label	TN820170	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.MD.C.5c	**Standard 1 Text**	N/A

What is the volume of this figure?



A 105 cubic units

B 81 cubic units

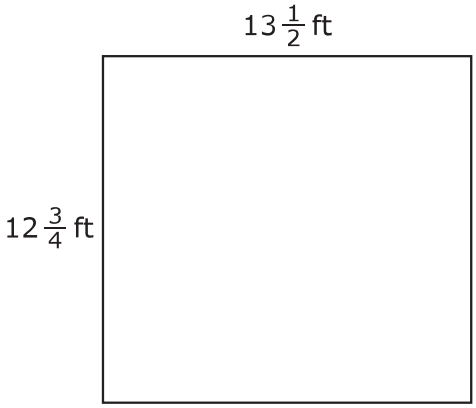
C 45 cubic units

D 36 cubic units

TN320263

Label	TN320263	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.NF.B.4b	**Standard 1 Text**	N/A

The lengths of the sides of a room are shown.



What is the area of the room?

M $26\frac{1}{4}\text{ft}^2$

P $52\frac{1}{2}\text{ft}^2$

R $156\frac{3}{8}\text{ft}^2$

S $172\frac{1}{8}\text{ft}^2$

TN120179

Label	TN120179	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.MD.C.5b	**Standard 1 Text**	N/A

A cube has a side length of 6 centimeters. What is the volume of the cube?

A $18\ cm^3$

B $36\ cm^3$

C $144\ cm^3$

D $216\ cm^3$

TN420249

Label	TN420249	**Max Points**	1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	extendedText	**Rationale3**	N/A
Key	na	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.NF.B.7c	**Standard 1 Text**	N/A

Pam made $\frac{1}{2}$ gallon of tea for 10 people. Each person gets the same amount of tea.

How much tea, in gallons, will each person get?

TN720252

Label	TN720252	**Max Points**	1 | 1 | 1
Item Grade	05	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	Composite	**Rationale3**	N/A
Key	< | < | <	**Rationale4**	N/A
DOK	1	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	5.NBT.A.3	**Standard 1 Text**	N/A

Write symbols (<, >, or =) in the spaces in your answer document to correctly compare the numbers.

3.011 ☐ 3.1

4.002 ☐ 4.022

5.16 ☐ 5.161

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Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
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TN720310

Label	TN720310	**Max Points**	1
Item Grade	06	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	6.RP.A.3b	**Standard 1 Text**	N/A

What is the unit price of a granola bar if 8 granola bars cost $4.16?

A $0.42

B $0.52

C $1.92

D $5.20

TN320340

Label	TN320340	**Max Points**	1
Item Grade	06	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	6.EE.B.8	**Standard 1 Text**	N/A

With his phone/data plan, Matthew gets 350 free minutes each month to talk on his phone.

Which inequality represents the number of minutes, x, that he can talk for free each month?

M $x < 350$

P $x \leq 350$

R $x > 350$

S $x \geq 350$

TN820316

Label	TN820316	**Max Points**	1
Item Grade	06	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	N/A	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	6.NS.C.7b	**Standard 1 Text**	N/A

Which choice shows the numbers in order from least to greatest?

A $0,\ 24,\ -25,\ |-28|$

B $-25,\ 0,\ 24,\ |-28|$

C $|-28|,\ -25,\ 0,\ 24$

D $|-28|,\ 24,\ 0,\ -25$

TN120333

Label	TN120333	**Max Points**	1
Item Grade	06	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	6.RP.A.3c	**Standard 1 Text**	N/A

Of the 220 tickets available for a school play, 45% have been sold. What is the number of tickets that have sold?

M 99

P 175

R 489

S 990

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Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

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TN220580

Label	TN220580	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.EE.A.2	**Standard 1 Text**	N/A

Maria needs to determine the lengths of the sides of a rectangle. She knows only the perimeter of the rectangle. She knows the formula for perimeter is $2l + 2w = P$.

Which shows how Maria can rewrite the equation to help her find possible lengths and widths for any rectangle?

A $l = 2P - w$

B $l + w = \frac{P}{2}$

C $l + w = P$

D $l + w = 2P$

TN020590

Label	TN020590	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	4	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	No	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.EE.A.2	**Standard 1 Text**	N/A

Ana needs to find the height of a triangle. She already knows the area of the triangle. She knows that the formula for finding the area of a triangle is $A = \frac{1}{2}b \cdot h$.

Which equation shows how she can rewrite this formula to help her find the height of the triangle?

M $A - \frac{b}{2} = h$

P $h = \frac{A}{2} + \frac{b}{2}$

R $h = \frac{Ab}{2}$

S $\frac{2A}{b} = h$

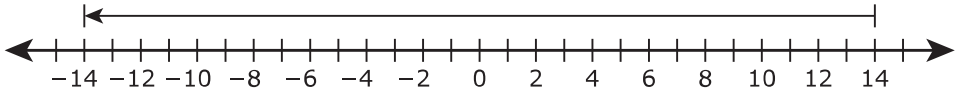
TN620576

Label	TN620576	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.NS.A.1c	**Standard 1 Text**	N/A

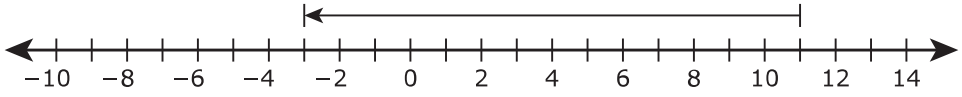
The temperature in Nome, Alaska, dropped 14°F during one day.

Which number line shows this change in temperature?

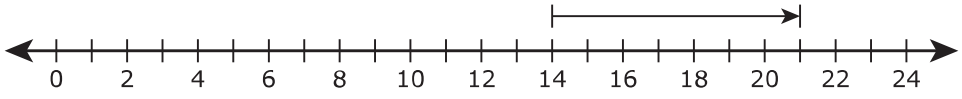
A



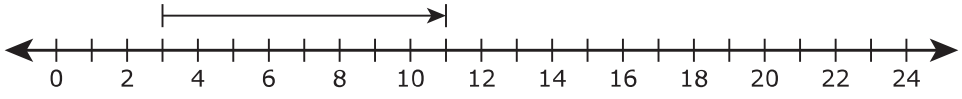
B



C



D



TN420573

Label	TN420573	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	28%	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.RP.A.3	**Standard 1 Text**	N/A

An item on the sale rack at a local supermarket was marked $3.42. The original price of the item was $4.75.

What was the percent of the discount?

TN620569

Label	TN620569	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	match	**Rationale3**	N/A
Key	D1,C2,A3	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.EE.A.1	**Standard 1 Text**	N/A

For each expression given in the first column, select an equivalent expression.

	$3x - 10$	$5x - 20$	$8x + 3$	$12x - 3$	$12x - 13$
$4\,(3x - 2) + 5$					
$\frac{1}{2}(6 - 4x) + 10x$					
$2 + 3\,(x - 4)$					

TN420550

Label	TN420550	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	2	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.EE.A.1	**Standard 1 Text**	N/A

Which expression is equivalent to $\frac{3}{5}(2x - 15) + 2$?

M $\frac{6x - 43}{5}$

P $\frac{6}{5}x - 7$

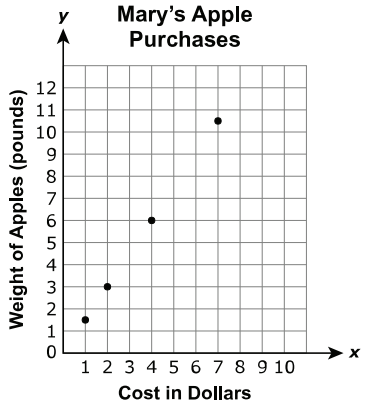
R $\frac{6}{5}x - 13$

S $\frac{6x - 9}{5}$

TN520583

Label	TN520583	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	7.5	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.RP.A.2b	**Standard 1 Text**	N/A

Mary buys apples at the store. She paid $1.00, $2.00, $4.00, and $7.00 for apples on four different days. The graph shows the number of pounds Mary got for each amount she paid.



One day Mary paid $5.00 for apples at the same store.

Using the relationship shown in the graph, how many pounds of apples did Mary buy?

TN920553

Label	TN920553	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	f=12d	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.RP.A.2c	**Standard 1 Text**	N/A

Tamir gets paid $12 for every day he feeds and walks his neighbor's dog. Write an equation that would represent the relationship between the amount of money Tamir gets paid and the number of days he takes care of the dog.

Use *f* to represent the total amount of money and *d* to represent the number of days.

TN220562

Label	TN220562	**Max Points**	1
Item Grade	07	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	textEntry	**Rationale3**	N/A
Key	na	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	7.RP.A.3	**Standard 1 Text**	N/A

Melissa is buying a sweater. The original cost of the sweater is $18.00.

The sweater is 15% off, and sales tax is 8%.

How much will the sweater cost?

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TNReady—Math
Grade 7 Item Release
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Tennessee Comprehensive Assessment Program

TCAP

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Grade 8 Item Release

TN Department of Education

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Metadata Interpretation Guide – Math

SAMPLE METADATA TABLE

Label	TN0045532	**Max Points**	1
Item Grade	8	**Rationale1**	
Item Content	Math	**Rationale2**	
Item Type	Choice	**Rationale3**	
Key	3	**Rationale4**	
DOK	2	**Rationale5**	
Difficulty	M	**Rationale6**	
Calculator	No	**Sample Answer**	
Ruler	None		
Standard 1 Code	8.NS.A.2	**Standard 1**	
Standard 2 Code	8.NS.A.2	**Standard 2**	

METADATA DEFINITIONS

Label: Unique letter/number code used to identify the item.	**Max Points**: Maximum score points possible for this item.
Item Grade (if listed): Grade level in 3-8 or EOC	**Rationale1** (if listed): Reason why this answer choice is correct or incorrect.
Item Content (if listed): Subject being tested. (e.g., ELA, Algebra I, etc.).	**Rationale2** (if listed): Reason why this answer choice is correct or incorrect.
Item Type: For example, "Choice" for multiple choice questions, "Match" for matching tables, "Composite" for two-part items.	**Rationale3** (if listed): Reason why this answer choice is correct or incorrect.
Key: Correct answer. 1=A, 2=B, etc. This may be blank for constructed response items where students write or type their responses.	**Rationale4** (if listed): Reason why this answer choice is correct or incorrect.
DOK (if listed): Depth of Knowledge (cognitive complexity) is measured on a four-point scale. 1=recall; 2=skill/concept; 3=strategic thinking; 4=extended thinking.	**Rationale5** (if listed): Reason why this answer choice is correct or incorrect.
Difficulty (if listed): Level of difficulty.	**Rationale6** (if listed): Reason why this answer choice is correct or incorrect.
Calculator (if listed): Yes for items that permit calculator use.	**Protractor** (if listed): Yes for items that permit protractor use.
Ruler (if listed): Yes for items that permit a ruler.	**Sample Answer** (if listed): An example of an answer a student could provide.
Standard 1 Code (if listed): Content standard assessed.	**Standard 1** (if listed): Text of the content standard assessed.
Standard 2 Code (if listed): Content standard assessed. This is the primary code used for the Integrated Math courses.	**Standard 2** (if listed): Text of the content standard assessed.

TN420611

Label	TN420611	**Max Points**	1
Item Grade	N/A	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1,3,4	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	8.EE.A.3	**Standard 1 Text**	N/A

In a biology experiment, four groups of fruit flies were fed different fruits. At the end of the experiment, the average lengths of the fruit flies were recorded.

Group	1	2	3	4
Length (meters)	1.0×10^{-4}	2.0×10^{-3}	4.0×10^{-6}	8.0×10^{-5}

Which statements are true regarding the average lengths of the fruit flies?

Select **all** that apply.

- ☐ Group 2 is 20 times larger than Group 1.
- ☐ Group 2 is 400 times smaller than Group 4.
- ☐ Group 4 is 20 times larger than Group 3.
- ☐ Group 3 is 500 times smaller than Group 2.
- ☐ Group 1 is 80 times larger than Group 4.

TN329161

Label	TN329161	**Max Points**	1 | 1 | 1
Item Grade	08	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	Composite	**Rationale3**	N/A
Key	1 | 1,6 | 1	**Rationale4**	N/A
DOK	3	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	8.F.B.4	**Standard 1 Text**	N/A

Billy is training for a long-distance running event. During one training session, he records the miles run after every 5 minutes.

Time in Minutes, *x*	Miles Run, *y*
5	0.625
10	1.25
15	1.875
20	2.5
25	3.125
30	3.75

He notices the table shows a linear relationship.

Select one answer for each box to correctly complete the sentences regarding Billy's training session.

Part A

The rate of change for the table is __**S**__.

Box S
0.125
0.625

M 0.125

P 0.625

Part B

This means that Billy runs __**T**__ for each __**V**__.

Box T
an additional 0.125 of a mile
an additional 0.625 of a mile
0.125 more minutes
0.625 more minutes

Box V
mile run
minute run

- ☐ an additional 0.125 of a mile
- ☐ an additional 0.625 of a mile
- ☐ 0.125 more minutes
- ☐ 0.625 more minutes
- ☐ mile run
- ☐ minute run

Part C

The equation of the line that models the linear relationship is __**W**__.

Box W
$y = 0.125x$
$y = 0.625x$
$y = 0.125x + 5$
$y = 0.625x + 5$

- M $y = 0.125x$
- P $y = 0.625x$
- R $y = 0.123x + 5$
- S $y = 0.625x + 5$

TN720617

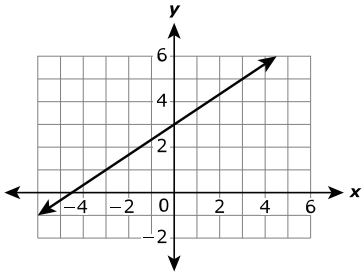
Label	TN720617	**Max Points**	1
Item Grade	N/A	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1,3,5	**Rationale4**	N/A
DOK	2	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	8.F.A.2	**Standard 1 Text**	N/A

Identify **all** the linear functions with a rate of change greater than or equal to 1.5.

☐

x	*y*
−2	−5
0	2
2	9
4	16

☐



☐ $y = \frac{3}{2}x - 1$

☐

y	−8	−4	0	4
x	−13	−8	−3	2

☐ *y* is four more than three times the value of *x*

TN120623

Label	TN120623	**Max Points**	1
Item Grade	N/A	**Rationale1**	N/A
Item Content	Math	**Rationale2**	N/A
Item Type	choice	**Rationale3**	N/A
Key	1	**Rationale4**	N/A
DOK	3	**Rationale5**	N/A
Difficulty	N/A	**Rationale6**	N/A
Calculator	Yes	**Sample Answer**	N/A
Ruler	None		
Standard 1 Code	8.EE.C.7b	**Standard 1 Text**	N/A

Twice the difference of a number n and seven is equal to four less than the product of five and the number n. What is the value of n?

M $n = -\frac{10}{3}$

P $n = -1$

R $n = 1$

S $n = \frac{10}{7}$

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