



Our Students. Their Moment.

**New York State Testing Program
Grade 6 Common Core
Mathematics Test**

Released Questions

July 2015



THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK /
ALBANY, NY 12234

New York State Testing Program Grade 6 Common Core Mathematics Test

Released Questions

With the adoption of the New York P-12 Common Core Learning Standards (CCLS) in ELA/Literacy and Mathematics, the Board of Regents signaled a shift in both instruction and assessment. Starting in Spring 2013, New York State began administering tests designed to assess student performance in accordance with the instructional shifts and the rigor demanded by the Common Core State Standards (CCSS). To aid in the transition to new assessments, New York State has released a number of resources, including test blueprints and specifications, sample questions, and criteria for writing assessment questions. These resources can be found at <http://www.engageny.org/common-core-assessments>.

New York State administered the ELA/Literacy and Mathematics Common Core tests in April 2015 and is now making a portion of the questions from those tests available for review and use. These released questions will help students, families, educators, and the public better understand how tests have changed to assess the instructional shifts demanded by the Common Core and to assess the rigor required to ensure that all students are on track to college and career readiness.

Released Questions Are Teaching Tools

The released questions are intended to help educators, students, families, and the public understand how the Common Core is different. The questions demonstrate the way the Common Core should drive instruction and how tests have changed to better assess student performance in accordance with the instructional shifts demanded by the Common Core. They are also intended to help educators identify how the rigor of the State tests can inform classroom instruction and local assessment.

Understanding Math Questions

Multiple Choice

Multiple-choice questions are designed to assess CCLS for Mathematics. Mathematics multiple-choice questions will mainly be used to assess standard algorithms and conceptual standards. Multiple-choice questions incorporate both Standards and Standards for Mathematical Practices, some in real-world applications. Many multiple-choice questions require students to complete multiple steps. Likewise, many of these questions are linked to more than one standard, drawing on the simultaneous application of multiple skills and concepts. Within answer choices, distractors will all be based on plausible missteps.

Short and extended constructed-response questions may refer to the scoring rubric, which can be found in the Educator Guide to the 2015 Grade 6 Common Core Mathematics Test at <http://www.engageny.org/resource/test-guides-for-english-language-arts-and-mathematics>.

Short Response

Short-response questions require students to complete a task and show their work. Like multiple-choice questions, short-response questions will often require multiple steps, the application of multiple mathematics

skills, and real-world applications. Many of the short-response questions will cover conceptual and application Standards.

Extended Response

Extended-response questions ask students to show their work in completing two or more tasks or a more extensive problem. Extended-response questions allow students to show their understanding of mathematical procedures, conceptual understanding, and application. Extended-response questions may also assess student reasoning and the ability to critique the arguments of others.

CCLS Alignment

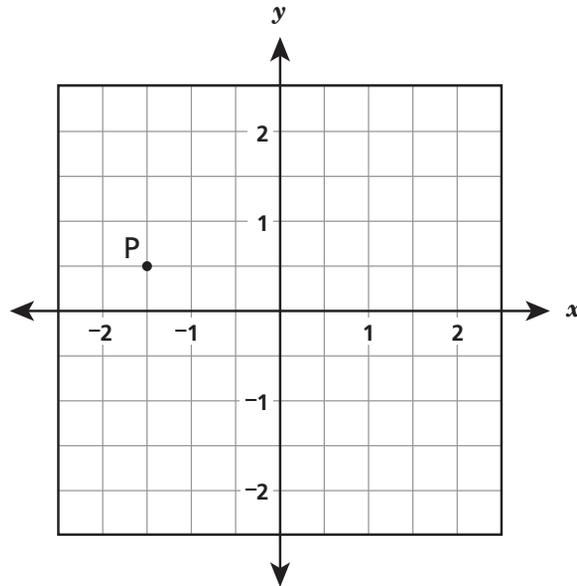
The alignment(s) to the Common Core Learning Standards for Mathematics are intended to identify the primary analytic skills necessary to successfully answer each question. However, some questions measure proficiencies described in multiple standards, including a balanced combination of procedure and conceptual understanding. For example, two-point and three-point constructed-response questions require students to show an understanding of mathematical procedures, concepts, and applications.

Released Questions Do Not Comprise a "Mini" Test

This document is NOT intended to show how operational tests look or to provide information about how teachers should administer the test; rather, the purpose of the released questions is to provide an overview of how the new test reflects the demands of the Common Core.

The released questions do not represent the full spectrum of standards assessed on the State tests, nor do they represent the full spectrum of how the Common Core should be taught and assessed in the classroom. It should not be assumed that a particular standard will be measured with an identical question in future assessments. Specific criteria for writing test questions as well as additional instruction and assessment information is available at <http://www.engageny.org/common-core-assessments>.

One full-credit student response is provided with each released constructed-response question. The example is provided to illustrate one of many ways students can achieve full credit in answering the test question. The sample response is not intended to represent a best response nor does it illustrate the only way a student could earn full credit.

2What is the x -coordinate of point P on the coordinate grid?

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

Key: A**Primary CCLS: 6.NS.6,c**

Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

Secondary CCLS: None**Percentage of Students Statewide Who Answered Correctly: 77%**

134060032_2

3

Arnold's entire workout consisted of 10 minutes of warm-up exercises, 25 minutes of lifting weights, and 15 minutes on the treadmill. What was the ratio of the number of minutes he lifted weights to the total number of minutes of his entire workout?

- A** 1 : 1
- B** 1 : 2
- C** 3 : 10
- D** 5 : 8

Key: B

Primary CCLS: 6.RP.1

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

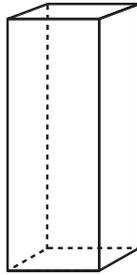
For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."

Secondary CCLS: 6.RP.3

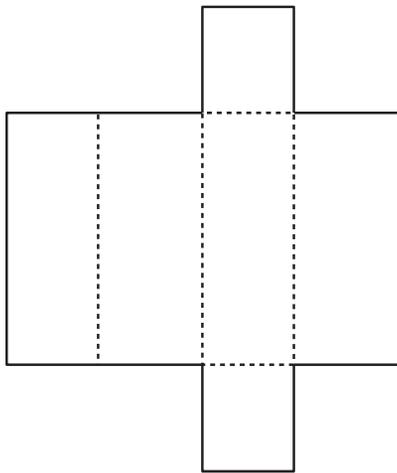
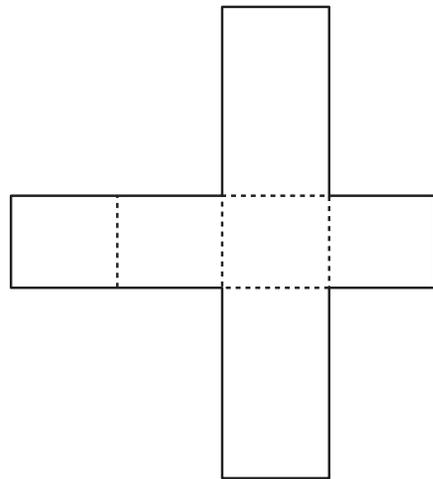
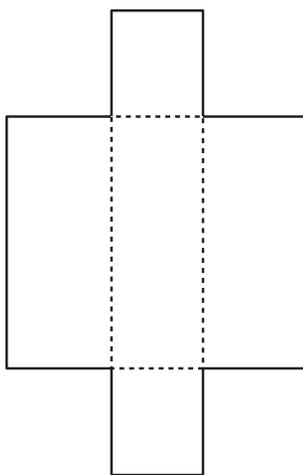
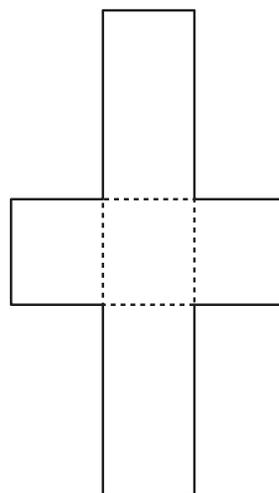
Percentage of Students Statewide Who Answered Correctly: 58%

4

A rectangular prism is shown below.



Which figure represents the net of the rectangular prism?

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

Key: A

Primary CCLS: 6.G,4

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 76%

124060604_4

5

Wyatt hiked 6 miles in 2 hours. At this same rate, what is the total number of miles Wyatt could hike in 9 hours?

A 3

B 7

C 21

D 27

Key: D

Primary CCLS: 6.RP,3,b

Solve unit rate problems including those involving unit pricing and constant speed.

For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 72%

11

A punch recipe requires 2 cups of cranberry juice to make 3 gallons of punch. Using the same recipe, what is the amount of cranberry juice needed for 1 gallon of punch?

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

Key: D**Primary CCLS: 6.RP,2**

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."

Secondary CCLS: None**Percentage of Students Statewide Who Answered Correctly: 54%**

134060055_2

15 Omar has $2\frac{3}{4}$ cups of dough to make dumplings. If he uses $\frac{3}{16}$ cup of dough for each dumpling, how many whole dumplings can Omar make?

- A** 13
- B** 14
- C** 15
- D** 16

Key: B

Primary CCLS: 6.NS,1

Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general, $(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}$.) How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many $\frac{3}{4}$ -cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$ mi and area $\frac{1}{2}$ square mi?

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 56%

134060005_4

16 What is the solution of the equation below?

$$x + 8.63 = 11.001$$

- A** $x = 19.631$
- B** $x = 10.138$
- C** $x = 3.471$
- D** $x = 2.371$

Key: D

Primary CCLS: 6.EE,7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

Secondary CCLS: 6.NS,3

Percentage of Students Statewide Who Answered Correctly: 73%

14406007_3

18

A high-speed elevator can rise 480 feet in 30 seconds. Which expression represents the rate, in feet per minute, of the elevator?

- A** 480×30
- B** $480 \div 30$
- C** 480×2
- D** $480 \div 2$

Key: C

Primary CCLS: 6.RP,2

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

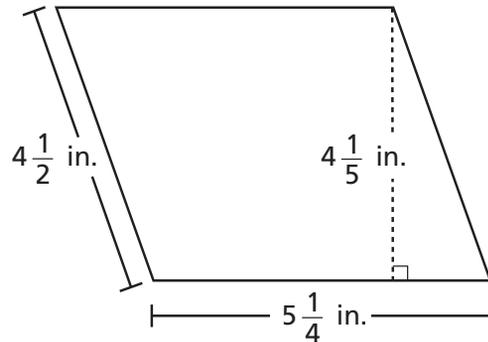
For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."

Secondary CCLS: 6.RP,3,d

Percentage of Students Statewide Who Answered Correctly: 40%

21

Erica drew the parallelogram below.



Which expression can Erica use to find the area of the parallelogram?

- A** $5\frac{1}{4} \times 4\frac{1}{5}$
- B** $\frac{1}{2} \left(5\frac{1}{4} \times 4\frac{1}{5} \right)$
- C** $2 \times \left(5\frac{1}{4} + 4\frac{1}{2} \right)$
- D** $5\frac{1}{4} \times 4\frac{1}{2}$

Key: A**Primary CCLS: 6.G.1**

Find the area of right triangles, other triangles, special quadrilaterals, and polygon sby composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Secondary CCLS: None**Percentage of Students Statewide Who Answered Correctly: 40%**

25What is the value of $\frac{5}{6} \div \frac{3}{7}$?

- A** $\frac{15}{42}$
- B** $\frac{18}{35}$
- C** $\frac{35}{18}$
- D** $\frac{42}{15}$

Key: C**Primary CCLS: 6.NS.1**

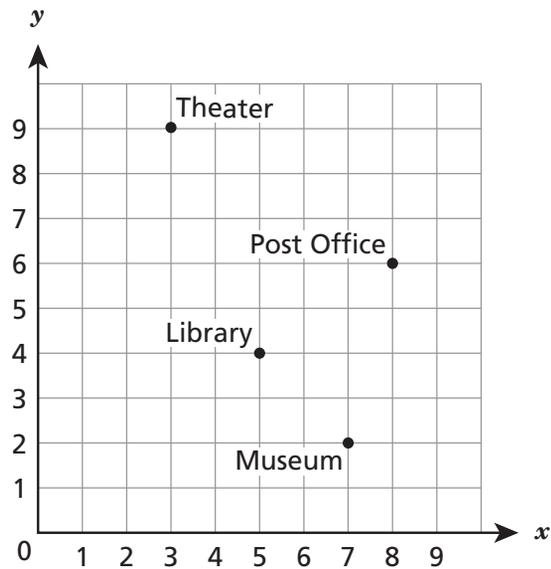
Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

For example, create a story context for $(\frac{2}{3}) \div (\frac{3}{4})$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}$ because $\frac{3}{4}$ of $\frac{8}{9}$ is $\frac{2}{3}$. (In general, $(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}$.) How much chocolate will each person get if 3 people share $\frac{1}{2}$ lb of chocolate equally? How many $\frac{3}{4}$ -cup servings are in $\frac{2}{3}$ of a cup of yogurt? How wide is a rectangular strip of land with length $\frac{3}{4}$ mi and area $\frac{1}{2}$ square mi?

Secondary CCLS: None**Percentage of Students Statewide Who Answered Correctly: 65%**

26

The points plotted on the coordinate grid below show different locations in a city. The grid lines represent the city's streets.



The city plans to build a parking lot at the location represented by the coordinates (8, 4). Which building is the shortest driving distance from the parking lot?

- A theater
- B library
- C museum
- D post office

Key: D

Primary CCLS: 5.G.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 64%

144060077_3

27

Solve the equation below.

$$0.3r = 2.1$$

- A** $r = 0.7$
- B** $r = 1.8$
- C** $r = 7$
- D** $r = 18$

Key: C

Primary CCLS: 6.EE,7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 48%

144060014_4

28

A group of students organized a car wash to raise money for a local charity. The students charged \$5.00 for each car they washed. In 3 hours, they washed 12 cars. At that rate, how much money could they earn from washing cars for eight hours?

- A** \$40.00
- B** \$60.00
- C** \$85.00
- D** \$160.00

Key: D

Primary CCLS: 6.RP,3,b

Solve unit rate problems including those involving unit pricing and constant speed.

For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

Secondary CCLS: 6.RP,2

Percentage of Students Statewide Who Answered Correctly: 59%

30

Madison and Pedro each created a number pattern that began with the number 0.

- Madison used the rule "Add 4."
- Pedro used the rule "Add 12."

Which statement is true about each corresponding pair of numbers in the two patterns?

- A** Each number in Pedro's pattern is 8 less than the corresponding number in Madison's pattern.
- B** Each number in Pedro's pattern is 8 more than the corresponding number in Madison's pattern.
- C** Each number in Pedro's pattern is 3 times less than the corresponding number in Madison's pattern.
- D** Each number in Pedro's pattern is 3 times more than the corresponding number in Madison's pattern.

calculators allowed

Key: D

Primary CCLS: 5.OA,3

Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 46%

134060029_3

33

Kelly saves \$5 every week. Which expression represents the amount of money, in dollars, Kelly will save in w weeks?

A $5 + w$

B $5 - w$

C $5w$

D $\frac{5}{w}$

calculators allowed

Key: C

Primary CCLS: 6.EE,6

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 75%

134060402_2

35

What is the greatest common factor of 56 and 92?

A 2

B 4

C 7

D 8

calculators allowed

Key: B

Primary CCLS: 6.NS,4

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

For example, express $36 + 8$ as $4(9 + 2)$.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 65%

134060087_3

36

A museum has an aquarium in the shape of a right rectangular prism that is 22.9 meters long, 7.5 meters wide, and 4.6 meters high. What is the volume, rounded to the nearest cubic meter, of the aquarium?

- A 280
- B 623
- C 790
- D 1,288

calculators allowed

Key: C

Primary CCLS: 6.G,2

Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

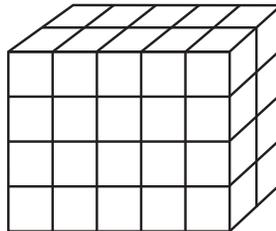
Secondary CCLS: 6.NS,3

Percentage of Students Statewide Who Answered Correctly: 78%

134060088_4

39

The right rectangular prism shown below is made of equal-sized cubes. The side length of each cube is $2\frac{1}{2}$ inches.



What is the volume, in cubic inches, of the right rectangular prism?

- A 50
- B 100
- C 250
- D 625

calculators allowed

Key: D

Primary CCLS: 6.G,2

Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 27%

134060039_3

40

The water level in an ocean bay changes at an average rate of 3 meters per hour. At this rate, how many hours would it take for the water level to change 12 meters?

A $\frac{1}{4}$

B $\frac{1}{3}$

C 4

D 36

calculators allowed

Key: C

Primary CCLS: 6.RP,2

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $\frac{3}{4}$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 77%

134060041_2

41

A company paid \$48 for 2 cases of printer paper. Each case contained 12 packages of paper. Next month the company's office manager needs to order 180 packages of the same paper. If the price per package does not change, what would be the total cost of next month's order?

- A \$90
- B \$360
- C \$720
- D \$1,140

calculators allowed

Key: B

Primary CCLS: 6.RP,3,b

Solve unit rate problems including those involving unit pricing and constant speed.

For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 52%

134060018_4

42

Which two expressions are equivalent for any value of y ?

- A $3(3y + 3)$ and $6y + 6$
- B $3(3y + 3)$ and $9y + 6$
- C $9(y + 3)$ and $12 + 9y$
- D $9(y + 3)$ and $27 + 9y$

calculators allowed

Key: D

Primary CCLS: 6.EE,4

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

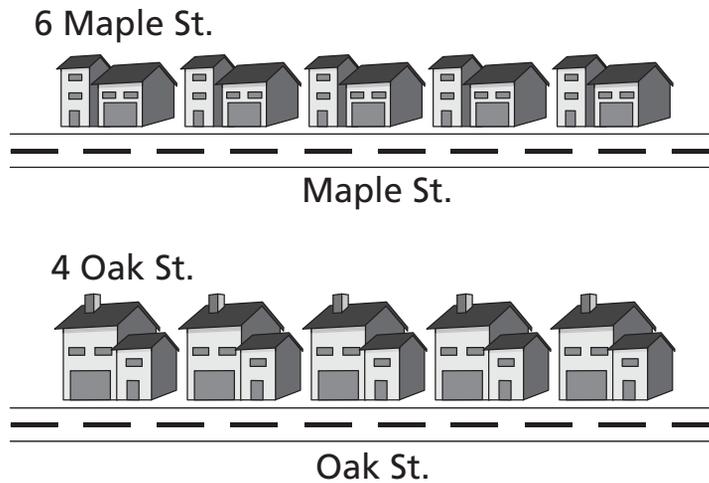
For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 51%

43

The picture below shows the five houses on Maple Street and the five houses on Oak Street.



- Each house number on Maple Street is six more than the house number to its left.
- Each house number on Oak Street is eight more than the house number to its left.

How much greater is the house number of the last house on Oak Street than the house number of the last house on Maple Street?

- A** 2
- B** 6
- C** 8
- D** 10

calculators allowed

Key: B

Primary CCLS: 5.OA,3

Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 27%

134060024_2

44

Which equation has the solution $x = 2$?

A $2x - 3 = 19$

B $3x + 2 = 8$

C $4x - 4 = -4$

D $5x + 1 = 10$

calculators allowed

Key: B

Primary CCLS: 6.EE,5

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 76%

134060048_3

46

At a concert, 20% of the audience members were teenagers. If the number of teenagers at the concert was 360, what was the total number of audience members?

A 432

B 450

C 1,800

D 7,200

calculators allowed

Key: C

Primary CCLS: 6.RP,3,c

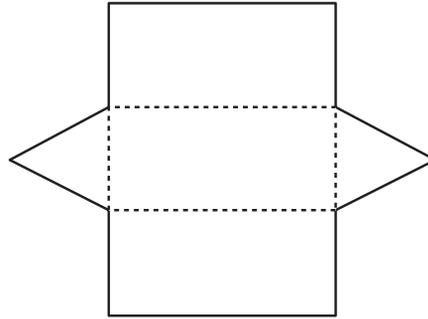
Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Secondary CCLS: None

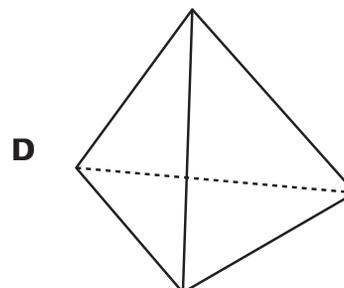
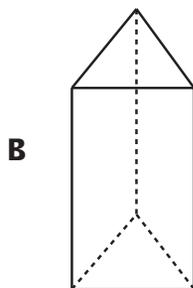
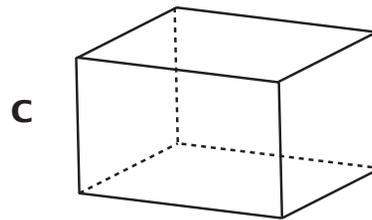
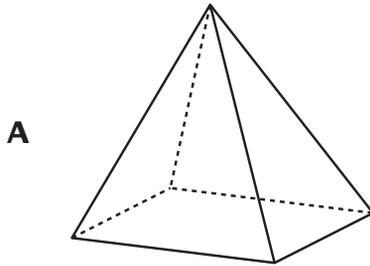
Percentage of Students Statewide Who Answered Correctly: 60%

47

The net below represents a three-dimensional object.



Which three-dimensional object can be formed from the net?



calculators allowed

Key: B

Primary CCLS: 6.G.4

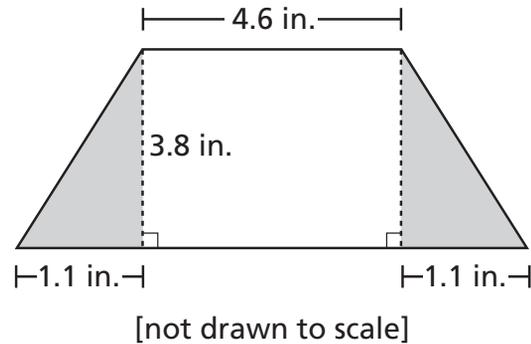
Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 89%

48

The trapezoid shown below has an area of 21.66 square inches.



What is the total area of the shaded sections of the trapezoid?

- A 2.09 square inches
- B 4.18 square inches
- C 4.86 square inches
- D 8.74 square inches

calculators allowed

Key: B

Primary CCLS: 6.G.1

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.

Secondary CCLS: 6.NS.3

Percentage of Students Statewide Who Answered Correctly: 54%

124060610_3

50

Which expression is equivalent to the expression below?

$$g + g + g + g + g + g$$

- A $6 + g$
- B g^6
- C $6g$
- D $\frac{g}{6}$

calculators allowed

Key: C

Primary CCLS: 6.EE,3

Apply the properties of operations to generate equivalent expressions.

For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 46%

124060029_3

54

Keith wants to plot -8 and -9 on a number line. Which statement is true?

- A Keith should plot -8 to the left of -9 because $-8 < -9$.
- B Keith should plot -8 to the left of -9 because $-8 > -9$.
- C Keith should plot -9 to the left of -8 because $-9 < -8$.
- D Keith should plot -9 to the left of -8 because $-9 > -8$.

calculators allowed

Key: C

Primary CCLS: 6.NS,7,a

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.

Secondary CCLS: None

Percentage of Students Statewide Who Answered Correctly: 55%

56

A leaky faucet is losing water and is filling a 5-gallon bucket every 20 hours. At that rate, how many gallons of water will the faucet leak in 48 hours?

Show your work.

Answer _____ gallons

calculators allowed

Primary CCLS: 6.RP,3,b

Solve unit rate problems including those involving unit pricing and constant speed.

For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

Secondary CCLS: None

Statewide Average Points Earned: 1.19 out of 2

56

A leaky faucet is losing water and is filling a 5-gallon bucket every 20 hours. At that rate, how many gallons of water will the faucet leak in 48 hours?

Show your work.

$$\frac{5 \text{ gallon bucket}}{20 \text{ hours}} = \frac{g}{48 \text{ hours}} = 12$$

$$5 \times 4 = 20$$

$$4 \overline{) 48}$$

Answer 12 gallons

Score Point 2 (out of 2 points)

This response includes the correct solution (12) and demonstrates a thorough understanding of the mathematical concepts in the task. A correct proportion is set up ($\frac{5 \text{ gallon bucket}}{20 \text{ hours}} = \frac{g}{48 \text{ hours}}$) to determine the correct solution.

57 Find the value of the expression.

$$24\frac{3}{5} + 4^3 \times \left(8\frac{1}{5} - 2\right)$$

Show your work.

Answer _____

calculators allowed

Primary CCLS: 6.EE.1

Write and evaluate numerical expressions involving whole-number exponents.

Secondary CCLS: None

Statewide Average Points Earned: 0.92 out of 2

57

Find the value of the expression.

$$24\frac{3}{5} + 4^3 \times \left(8\frac{1}{5} - 2\right)$$

Show your work.

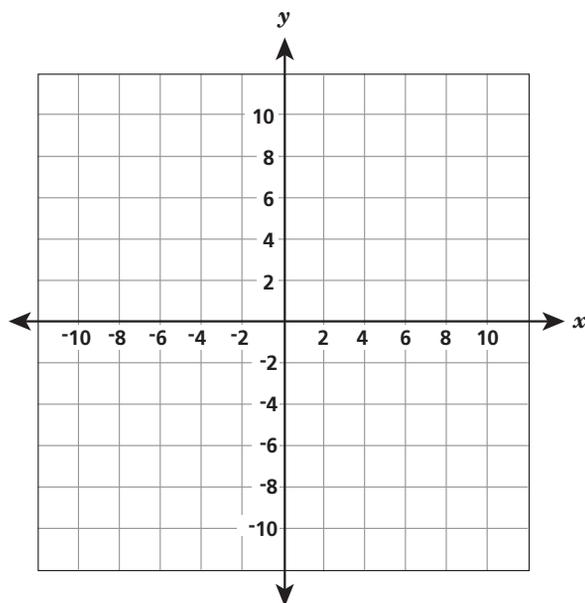
$$\begin{aligned} 24\frac{3}{5} + 4^3 \times (8\frac{1}{5} - 2) &= 24\frac{3}{5} + 64 \\ 24\frac{3}{5} + 4^3 \times 6\frac{1}{5} &= 24\frac{3}{5} + 64 \times 6\frac{1}{5} \\ 24\frac{3}{5} + 64 \times 6\frac{1}{5} &= 24\frac{3}{5} + 396\frac{4}{5} \\ 24\frac{3}{5} + 396\frac{4}{5} &= 421\frac{2}{5} \end{aligned}$$

Answer 421 $\frac{2}{5}$ **Score Point 2 (out of 2 points)**

This response includes the correct solution ($421\frac{2}{5}$) and demonstrates a thorough understanding of the mathematical concepts in the task. The response clearly demonstrates the correct order of operations, and all calculations are correct. The parentheses are resolved first ($8\frac{1}{5} - 2$), then the exponent (64), then multiplication ($64 \times 6\frac{1}{5}$), and finally the addition ($24\frac{3}{5} + 396\frac{4}{5}$).

59

The endpoints of a line segment can be represented on a coordinate grid by the points $A(-4, 1)$ and $C(-4, -3)$. Graph and label each of the endpoints of the line segment on the coordinate grid below.



What is the distance, in units, between point A and point C ?

Answer _____ units

calculators allowed

Primary CCLS: 6.NS,8

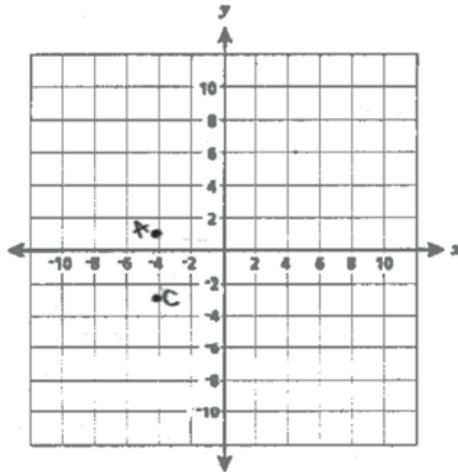
Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Secondary CCLS: None

Statewide Average Points Earned: 0.92 out of 2

59

The endpoints of a line segment can be represented on a coordinate grid by the points $A(-4, 1)$ and $C(-4, -3)$. Graph and label each of the endpoints of the line segment on the coordinate grid below.



What is the distance, in units, between point A and point C?

Answer 4 units

Score Point 2 (out of 2 points)

This response answers the question correctly and demonstrates a thorough understanding of the mathematical concepts in the task. This response correctly graphs and labels endpoints A and C on the coordinate grid and provides a correct answer of 4 units.

60

To convert a temperature from degrees Celsius to degrees Fahrenheit, the temperature in degrees Celsius is multiplied by 1.8, and then 32 is added to the product.

Write an expression that can be used to convert a temperature from degrees Celsius, C , to degrees Fahrenheit, and then use that expression to convert 25 degrees Celsius to degrees Fahrenheit.

Show your work.

Answer _____ degrees Fahrenheit

calculators allowed

Primary CCLS: 6.EE,2,a

Write expressions that record operations with numbers and with letters standing for numbers.

For example, express the calculation "Subtract y from 5" as $5 - y$.

Secondary CCLS: 6.EE,2,c

Statewide Average Points Earned: 0.98 out of 2

60

To convert a temperature from degrees Celsius to degrees Fahrenheit, the temperature in degrees Celsius is multiplied by 1.8, and then 32 is added to the product.

Write an expression that can be used to convert a temperature from degrees Celsius, C , to degrees Fahrenheit, and then use that expression to convert 25 degrees Celsius to degrees Fahrenheit.

Show your work.

Expression
 $1.8C + 32$

$$\begin{array}{r} 25 \\ \times 1.8 \\ \hline 200 \\ + 45 \\ \hline 450 \end{array}$$

$$\begin{array}{r} 45 \\ + 32 \\ \hline 77 \end{array}$$

Answer 77 degrees Fahrenheit

Score Point 2 (out of 2 points)

This response demonstrates a thorough understanding of the concepts in the task. A correct expression is provided ($1.8C + 32$), and sufficient work is shown to support a correct answer ($25 \times 1.8 = 45.0$) and then ($45 + 32 = 77$).

62

Michelle makes jewelry boxes containing drawers of equal size. The numbers of drawers in three different jewelry boxes and the corresponding total volumes of the drawers are shown in the table below.

JEWELRY BOXES

Number of Drawers	Total Volume (cubic inches)
2	5
3	7.5
4	10

Write an equation for the relationship between the number of drawers in the jewelry box, d , and the total volume of the drawers in the jewelry box, V . Use your equation to determine the number of drawers in a jewelry box with a total volume of 17.5 cubic inches.

Show your work.

Answer _____ drawers

calculators allowed

Primary CCLS: 6.EE,9

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

Secondary CCLS: None**Statewide Average Points Earned: 1.26 out of 3**

Michelle makes jewelry boxes containing drawers of equal size. The numbers of drawers in three different jewelry boxes and the corresponding total volumes of the drawers are shown in the table below.

JEWELRY BOXES

Number of Drawers	Total Volume (cubic inches)
2	5
3	7.5
4	10

Write an equation for the relationship between the number of drawers in the jewelry box, d , and the total volume of the drawers in the jewelry box, V . Use your equation to determine the number of drawers in a jewelry box with a total volume of 17.5 cubic inches.

Show your work.

Equation
 $2.5d = V$

$$\begin{array}{r} 2.5 \overline{) 17.5} \\ \underline{-17.5} \\ 0 \end{array}$$

Answer 7 drawers

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. A correct equation is provided ($2.5d = V$), and sufficient work is shown to support a correct answer (7).

64

Jorge bought a crate of floor tiles for \$95.94. The crate had 6 boxes of floor tiles. Each box contained 20 floor tiles.

Write and solve an equation to determine the cost per box, b . Then write and solve a second equation to determine the cost per tile, t , to the nearest cent.

Show your work.

Answer \$ _____ per box

 \$ _____ per tile

calculators allowed

Primary CCLS: 6.EE,7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

Secondary CCLS: None

Statewide Average Points Earned: 1.11 out of 3

64

Jorge bought a crate of floor tiles for \$95.94. The crate had 6 boxes of floor tiles. Each box contained 20 floor tiles.

Write and solve an equation to determine the cost per box, b . Then write and solve a second equation to determine the cost per tile, t , to the nearest cent.

Show your work.

$$\begin{aligned}95.94 \div 6 &= b \\95.94 \div 6 &= \boxed{15.99} \\15.99 \div 20 &= t \\15.99 \div 20 &= \boxed{0.80}\end{aligned}$$

Answer \$ 15.99 per box
 \$ 0.80 per tile

Score Point 3 (out of 3 points)

This response demonstrates a thorough understanding of the concepts in the task. A correct equation for determining the cost per box ($95.94 \div 6 = b$) is provided and solved, leading to the correct answer (15.99). A correct equation for determining the cost per tile ($15.99 \div 20 = t$) is also provided and solved for the correct answer (0.80) which is rounded to the nearest cent.

65

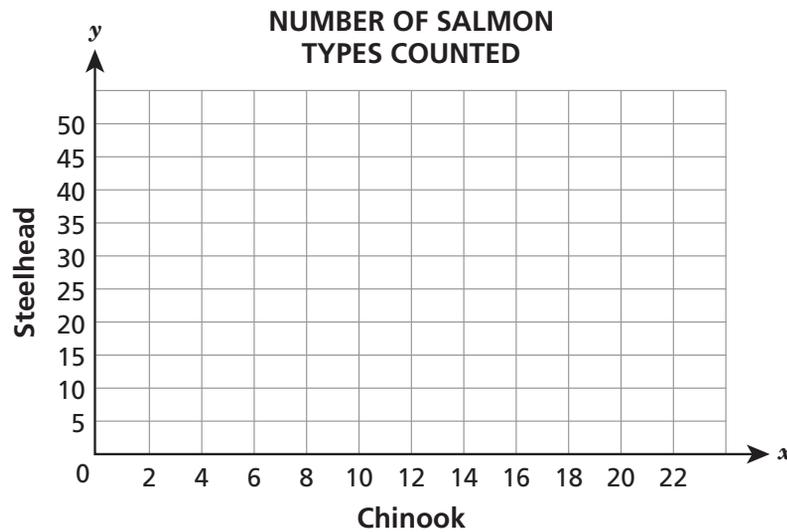
A biologist counted the number of two types of salmon (Chinook and Steelhead) at a dam. He used the table below to record the number of salmon on different days.

On day 5, the biologist counted 16 Chinook. If the ratio of Chinook to Steelhead remained the same as on the previous four days, how many Steelhead should the biologist expect to count on day 5? Record your answer in the table below.

NUMBER OF SALMON TYPES COUNTED

Day	Chinook	Steelhead
1	4	10
2	12	30
3	8	20
4	6	15
5	16	

Plot the salmon count data from the table on the coordinate grid below. Label each point with the day number.



The biologist is expecting the number of salmon to rise during salmon season. If the ratio stays the same and he expects 120 Steelhead, how many Chinook should he expect to count at the dam?

Show your work.

Answer _____ Chinook

calculators allowed

Primary CCLS: 6.RP.3.a

Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

Secondary CCLS: None

Statewide Average Points Earned: 1.28 out of 3

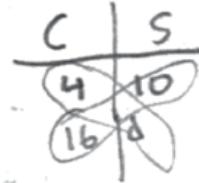
65

A biologist counted the number of two types of salmon (Chinook and Steelhead) at a dam. He used the table below to record the number of salmon on different days.

On day 5, the biologist counted 16 Chinook. If the ratio of Chinook to Steelhead remained the same as on the previous four days, how many Steelhead should the biologist expect to count on day 5? Record your answer in the table below.

NUMBER OF SALMON TYPES COUNTED

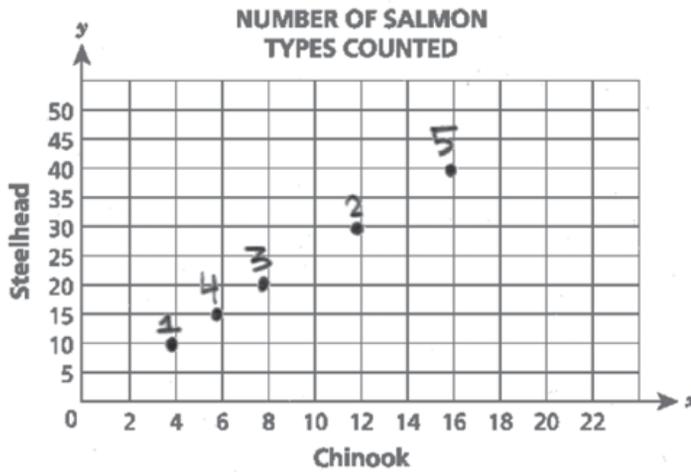
Day	Chinook	Steelhead
1	4	10
2	12	30
3	8	20
4	6	15
5	16	40



$$\frac{40}{16} = \frac{160}{4}$$

$$160 \div 4 = 40$$

Plot the salmon count data from the table on the coordinate grid below. Label each point with the day number.



The biologist is expecting the number of salmon to rise during salmon season. If the ratio stays the same and he expects 120 Steelhead, how many Chinook should he expect to count at the dam?

Show your work.

Chinook	Steelhead
4	10
d	120

$4 \times 120 = 480$
 $10 \times d = 480$

$\frac{10d}{10} = \frac{480}{10} = 48$

Answer 48 Chinook

Score Point 3 (out of 3 points)

This response includes the correct solutions for the table and the expected number of Chinook and demonstrates a thorough understanding of the mathematical concepts in the task. The data from the table is plotted and labeled correctly and the work provided to find the number of Chinook is correct ($4 \times 120 = 480 \dots 480/10 = 48$).

2-Point Holistic Rubric

Score Points:

2 Points	<p>A two-point response includes the correct solution to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none">• indicates that the student has completed the task correctly, using mathematically sound procedures• contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures• may contain inconsequential errors that do not detract from the correct solution and the demonstration of a thorough understanding
1 Point	<p>A one-point response demonstrates only a partial understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none">• correctly addresses only some elements of the task• may contain an incorrect solution but applies a mathematically appropriate process• may contain the correct solution but required work is incomplete
0 Points*	<p>A zero-point response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.</p>

* Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

3-Point Holistic Rubric

Score Points:

3 Points	<p>A three-point response includes the correct solution(s) to the question and demonstrates a thorough understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none">• indicates that the student has completed the task correctly, using mathematically sound procedures• contains sufficient work to demonstrate a thorough understanding of the mathematical concepts and/or procedures• may contain inconsequential errors that do not detract from the correct solution(s) and the demonstration of a thorough understanding
2 Points	<p>A two-point response demonstrates a partial understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none">• appropriately addresses most, but not all, aspects of the task using mathematically sound procedures• may contain an incorrect solution but provides sound procedures, reasoning, and/or explanations• may reflect some minor misunderstanding of the underlying mathematical concepts and/or procedures
1 Point	<p>A one-point response demonstrates only a limited understanding of the mathematical concepts and/or procedures in the task.</p> <p>This response</p> <ul style="list-style-type: none">• may address some elements of the task correctly but reaches an inadequate solution and/or provides reasoning that is faulty or incomplete• exhibits multiple flaws related to misunderstanding of important aspects of the task, misuse of mathematical procedures, or faulty mathematical reasoning• reflects a lack of essential understanding of the underlying mathematical concepts• may contain the correct solution(s) but required work is limited
0 Points*	<p>A zero-point response is incorrect, irrelevant, incoherent, or contains a correct solution obtained using an obviously incorrect procedure. Although some elements may contain correct mathematical procedures, holistically they are not sufficient to demonstrate even a limited understanding of the mathematical concepts embodied in the task.</p>

* Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted).

2015 2- and 3-Point Mathematics Scoring Policies

Below are the policies to be followed while scoring the mathematics tests for all grades:

1. If a student does the work in other than a designated “Show your work” area, that work should still be scored. (Additional paper is an allowable accommodation for a student with disabilities if indicated on the student’s Individual Education Program or Section 504 Accommodation Plan.)
2. If the question requires students to show their work, and the student shows appropriate work and clearly identifies a correct answer but fails to write that answer in the answer blank, the student should still receive full credit.
3. In questions that provide ruled lines for students to write an explanation of their work, mathematical work shown elsewhere on the page should be considered and scored.
4. If the student provides one legible response (and one response only), teachers should score the response, even if it has been crossed out.
5. If the student has written more than one response but has crossed some out, teachers should score only the response that has **not** been crossed out.
6. Trial-and-error responses are **not** subject to Scoring Policy #5 above, since crossing out is part of the trial-and-error process.
7. If a response shows repeated occurrences of the same conceptual error within a question, the student should **not** be penalized more than once.
8. In questions that require students to provide bar graphs,
 - in Grades 3 and 4 only, touching bars are acceptable
 - in Grades 3 and 4 only, space between bars does **not** need to be uniform
 - in all grades, widths of the bars must be consistent
 - in all grades, bars must be aligned with their labels
 - in all grades, scales must begin at 0, but the 0 does **not** need to be written
9. In questions requiring number sentences, the number sentences must be written horizontally.
10. In pictographs, the student is permitted to use a symbol other than the one in the key, provided that the symbol is used consistently in the pictograph; the student does not need to change the symbol in the key. The student may **not**, however, use multiple symbols within the chart, nor may the student change the value of the symbol in the key.
11. If students are not directed to show work, any work shown will not be scored. This applies to items that do not ask for any work and items that ask for work for one part and do not ask for work in another part.
12. Condition Code A is applied whenever a student who is present for a test session leaves an entire constructed-response question in that session completely blank (no response attempted). This is not to be confused with a score of zero wherein the student does respond to part or all of the question but that work results in a score of zero.