



Our Students. Their Moment.

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

**Released Questions**

**June 2018**

New York State administered the Mathematics Tests in May 2018 and is now making approximately 75% of the questions from these tests available for review and use.



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

## **New York State Testing Program Grades 3-8 Mathematics**

### **Released Questions from 2018 Exams**

#### ***Background***

In 2013, New York State began administering tests designed to assess student performance in accordance with the instructional shifts and rigor demanded by the new New York State P-12 Learning Standards in Mathematics. To help in this transition to new assessments, the New York State Education Department (SED) has been releasing an increasing number of test questions from the tests that were administered to students across the State in the spring. This year, SED is again releasing large portions of the 2018 NYS Grades 3-8 English Language Arts and Mathematics test materials for review, discussion, and use.

For 2018, included in these released materials are at least 75 percent of the test questions that appeared on the 2018 tests (including all constructed-response questions) that counted toward students' scores. Additionally, SED is also providing a map that details what each released question measures and the correct response to each question. These released materials will help students, families, educators, and the public better understand the tests and the New York State Education Department's expectations for students.

#### ***Understanding Math Questions***

##### **Multiple-Choice Questions**

Multiple-choice questions are designed to assess the New York State P-12 Learning Standards for Mathematics. Mathematics multiple-choice questions will be used mainly to assess standard algorithms and conceptual standards. Multiple-choice questions incorporate both the grade-level standards and the "Standards for Mathematical Practices." Many questions are framed within the context of real-world applications or 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.

##### **Short-Response Questions**

Short-response questions require students to complete tasks 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 of the standards.

##### **Extended-Response Questions**

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.

The scoring rubric for short and extended constructed-response questions can be found in the grade-level Educator Guides at <https://www.engageny.org/resource/test-guides-english-language-arts-and-mathematics>.

### **New York State P-12 Learning Standards Alignment**

The alignment(s) to the New York State P-12 Learning Standards for Mathematics is/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.

### ***These Released Questions Do Not Comprise a "Mini Test"***

To ensure future valid and reliable tests, some content must remain secure for possible use on future exams. As such, this document is *not* intended to be representative of the entire test, to show how operational tests look, or to provide information about how teachers should administer the test; rather, its purpose is to provide an overview of how the test reflects the demands of the New York State P-12 Learning Standards.

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

Name: \_\_\_\_\_



# *New York State Testing Program*

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## **2018 Mathematics Test Session 1**

# **Grade 6**

**May 1–3, 2018**

**Released Questions**

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**Session 1**

# Grade 6 Mathematics Reference Sheet

## CONVERSIONS

1 inch = 2.54 centimeters

1 meter = 39.37 inches

1 mile = 5,280 feet

1 mile = 1,760 yards

1 mile = 1.609 kilometers

1 kilometer = 0.62 mile

1 pound = 16 ounces

1 pound = 0.454 kilogram

1 kilogram = 2.2 pounds

1 ton = 2,000 pounds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 gallon = 3.785 liters

1 liter = 0.264 gallon

1 liter = 1,000 cubic centimeters

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## FORMULAS

Triangle

$$A = \frac{1}{2}bh$$

Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

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# Session 1



## TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before making your choice.
- You have been provided with mathematics tools (a ruler and a protractor) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

**1**

An equation is shown below.

$$12 - 9 + c = 12$$

What value of  $c$  makes the equation true?

- A 0
- B 3
- C 9
- D 12

**2**

Kate has a coin collection. She keeps 7 of the coins in a box, which is only 5% of her entire collection. What is the total number of coins in Kate's coin collection?

- A 12
- B 14
- C 120
- D 140

**3**

What is the greatest common factor of 36 and 90?

- A 6
- B 18
- C 36
- D 180

**GO ON**



4

The relationship between Robert's age,  $r$ , and Julia's age,  $j$ , can be represented by the equation shown below.

$$r = j + 3$$

Which table of values represents the relationship between Robert's age and Julia's age?

**POSSIBLE AGES**

A

Robert's Age, $r$ (years)	Julia's Age, $j$ (years)
9	12
15	18
21	24

**POSSIBLE AGES**

C

Robert's Age, $r$ (years)	Julia's Age, $j$ (years)
9	6
15	12
21	18

**POSSIBLE AGES**

B

Robert's Age, $r$ (years)	Julia's Age, $j$ (years)
9	3
15	5
21	7

**POSSIBLE AGES**

D

Robert's Age, $r$ (years)	Julia's Age, $j$ (years)
9	27
15	45
21	63

**GO ON**

**15**

All the students in the sixth grade either purchased their lunch or brought their lunch from home on Monday.

- 24% of the students purchased their lunch.
- 190 students brought their lunch from home.

How many students are in the sixth grade?

- A** 76
- B** 166
- C** 214
- D** 250

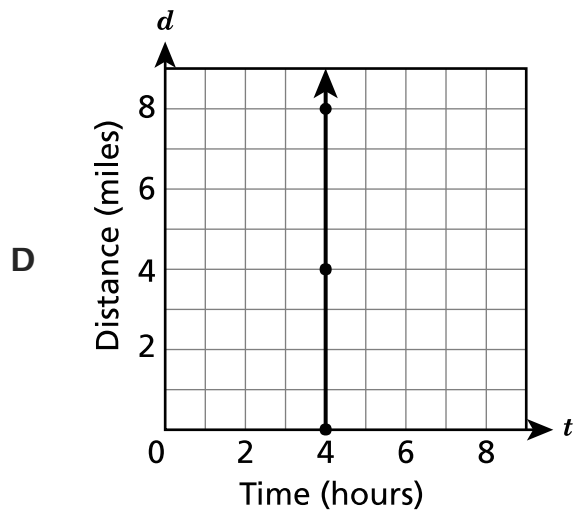
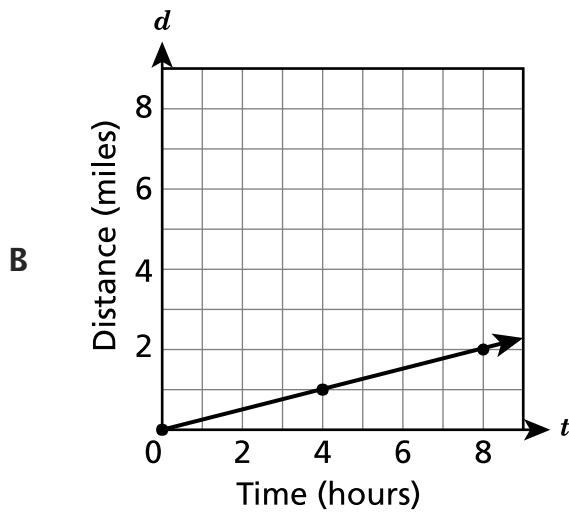
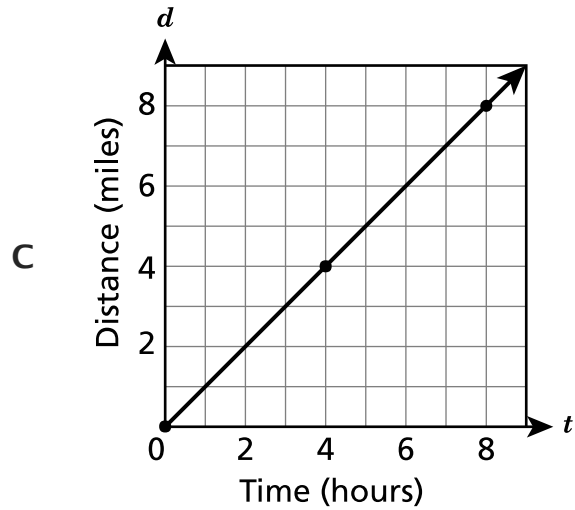
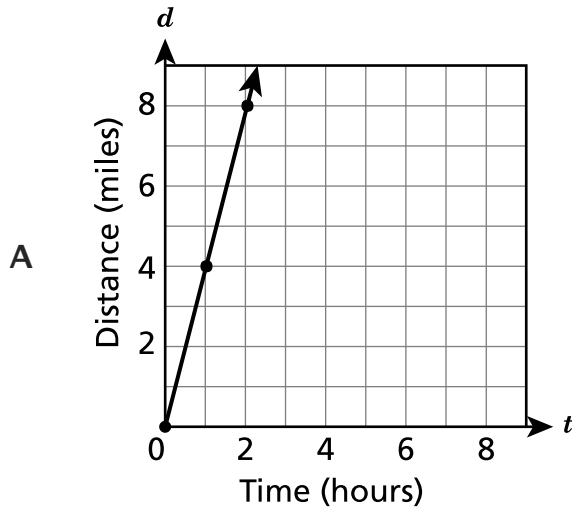
**GO ON**

16

Joe walks on a treadmill at a constant rate. The equation below describes the relationship between  $t$ , the time he walks in hours, and  $d$ , the distance he walks in miles.

$$d = 4t$$

Which graph represents the relationship between the amount of time Joe walks and the distance he walks?



**GO ON**

**19** There are 230 calories in 4 ounces of a type of ice cream. How many calories are in 6 ounces of that ice cream?

- A 232
- B 236
- C 345
- D 460

**GO ON**

22

A shape is made of 12 right triangles of equal size. Each right triangle has a base of 4 cm and a height of 5 cm. What is the total area, in square centimeters, of the shape?

- A 10
- B 60
- C 120
- D 240

**25** Pat bounces a basketball 25 times in 30 seconds. At that rate, approximately how many times will Pat bounce the ball in 150 seconds?

A 120

B 125

C 144

D 145

**26** Which expression is equivalent to  $5(4x + 3) - 2x$ ?

A  $18x + 15$

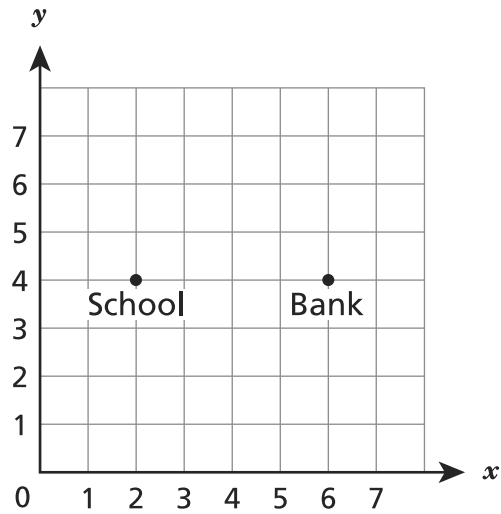
B  $18x + 3$

C  $7x + 8$

D  $2x + 8$

27

Mark graphed points on the coordinate plane below to represent the locations of his school and a bank.



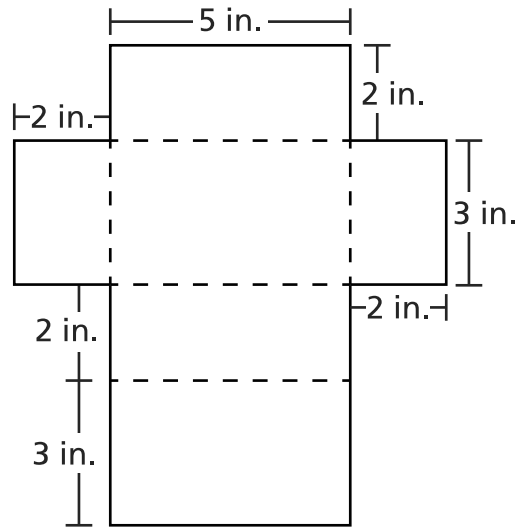
Mark wants to add the location of the library on the coordinate plane. The distance from the library to the school is the same as the distance from the bank to the school. Which ordered pair could be the coordinates of the library?

- A (2, 4)
- B (2, 8)
- C (4, 4)
- D (6, 8)

**GO ON**

28

A student draws the net below to show the dimensions of a container that is shaped like a right rectangular prism.



What is the surface area, in square inches, of the container?

- A 19
- B 30
- C 38
- D 62

29

Which two expressions are equivalent?

- A  $x + x + x$  and  $x^3$
- B  $14x + 10 - 2x$  and  $16x + 10$
- C  $12x + 16x$  and  $4(3x + 4x)$
- D  $12x^2 + 5x + 10$  and  $17x^2 + 10$



A machine fills boxes at a constant rate. At the end of 35 minutes, it has filled 5 boxes. Which table represents the relationship between the number of minutes the machine fills boxes and the number of boxes it has filled?

FILLING BOXES

A

Time (minutes)	Boxes Filled
7	1
14	2
21	3
28	4

FILLING BOXES

C

Time (minutes)	Boxes Filled
1	7
2	14
3	21
4	28

FILLING BOXES

B

Time (minutes)	Boxes Filled
5	1
10	2
15	3
20	4

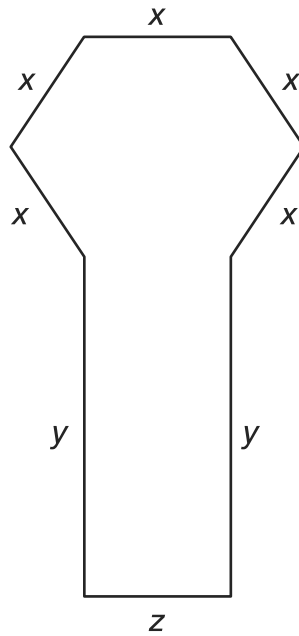
FILLING BOXES

D

Time (minutes)	Boxes Filled
1	5
2	10
3	15
4	20

31

Which expression represents the perimeter of the figure below?



- A  $5x + 2y$
- B  $x + y + z$
- C  $5x + 2y + z$
- D  $(5 + 2 + 1)(x + y + z)$

**STOP**

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**Grade 6**  
**2018**  
**Mathematics Test**  
**Session 1**  
May 1–3, 2018

Name: \_\_\_\_\_



# *New York State Testing Program*

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## **2018 Mathematics Test Session 2**

# **Grade 6**

**May 1–3, 2018**

**Released Questions**

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**GO ON**

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## FORMULAS

Triangle

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Right Rectangular Prism

$$V = Bh \text{ or } V = lwh$$

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# Session 2



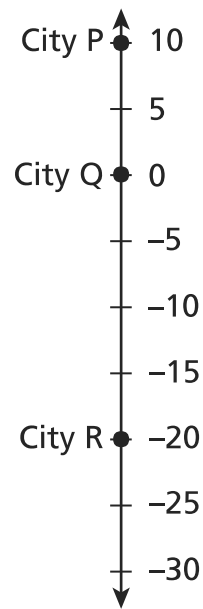
## TIPS FOR TAKING THE TEST

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- You have been provided with mathematics tools (a ruler, a protractor, and a calculator) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.
- Be sure to show your work when asked.

**32**

The elevations, in feet, of three cities are marked on the number line shown below.



The point 0 on the number line represents sea level. Which statement must be true?

- A City P and City Q are above sea level.
- B City Q and City R are below sea level.
- C City P is above sea level and City Q is below sea level.
- D City P is above sea level and City R is below sea level.

**33**

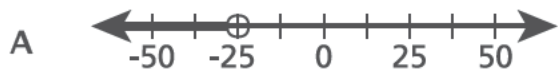
A basketball player attempts 15 baskets in a game. He makes 9 of the attempted baskets. Which ratio describes the number of baskets the player made to the number of baskets the player attempted?

- A  $\frac{3}{5}$
- B  $\frac{5}{3}$
- C  $\frac{2}{5}$
- D  $\frac{5}{2}$

**GO ON**



34 Which number line shows a graph of the inequality  $x > -25$ ?



35 The coordinates of the points below represent the vertices of a rectangle.

P : (2,2)

Q : (6,2)

R : (6,5)

S : (2,5)

What is the perimeter, in units, of rectangle PQRS?

A 8

B 12

C 14

D 16

- 36** Carol has  $1\frac{5}{8}$  cups of yogurt to make smoothies. Each smoothie uses  $\frac{1}{3}$  cup of yogurt.

What is the maximum number of smoothies that Carol can make with the yogurt?

- A 1
- B 4
- C 5
- D 7

- 37** Which expression is equivalent to  $60 - 3y - 9$ ?

- A  $3(17 - y)$
- B  $3(20 - y) - 3$
- C  $17(3 - y)$
- D  $20(3 - 3y) - 9$

- 38** A grocery store sells a bag of 5 lemons for \$2.00. What is the unit cost of each lemon in the bag?

- A \$2.50
- B \$0.60
- C \$0.40
- D \$0.10

**GO ON**

- 39** An art teacher has a total of  $\frac{7}{8}$  pound of clay. The teacher puts  $\frac{1}{16}$  pound of clay at each work station. The teacher sets up an equal number of work stations in each of 2 classrooms. How many work stations does the teacher set up in each of the classrooms?

*Show your work.*

*Answer* \_\_\_\_\_ work stations

**GO ON**

40

Tom wants to order tickets online so that he and three of his friends can go together to a water park. The cost of the tickets is \$16.00 per person. There is also a \$2.50 one-time service fee for ordering tickets online. Write an expression in terms of  $n$  that represents the cost for ordering  $n$  tickets online.

*Expression* \_\_\_\_\_

Use your expression to find the total cost for ordering 4 tickets online.

*Show your work.*

*Answer* Total cost \$ \_\_\_\_\_

**GO ON**

41

A factory adds three red drops and two blue drops of coloring to white paint to make each pint of purple paint. The factory will make 50 gallons of this purple paint. How many drops of red and blue coloring will the factory need in the 50-gallon batch of purple paint?

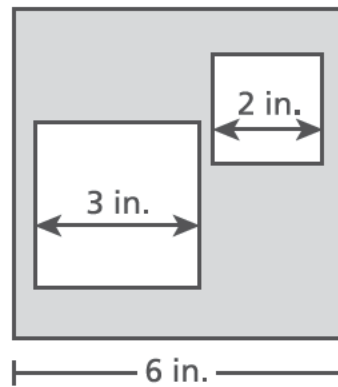
*Show your work.*

*Answer* \_\_\_\_\_ red drops; \_\_\_\_\_ blue drops

**GO ON**

42

The diagram below shows a large square with two smaller squares within it.



Write an expression, involving exponents, to represent the shaded area, in square inches, of the diagram. Then use that expression to calculate the shaded area, in square inches, of the diagram.

*Show your work.*

*Answer* \_\_\_\_\_ square inches

**GO ON**

**43**

Point  $W$  is located at  $(-2, 3)$  on a coordinate plane. Point  $W$  is reflected over the  $x$ -axis to create point  $W'$ . Point  $W'$  is then reflected over the  $y$ -axis to create point  $W''$ . What ordered pair describes the location of point  $W''$ ?

**Answer** Point  $W''$  ( \_\_\_\_\_ , \_\_\_\_\_ )

*Explain how you determined your answer.*

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44

Jaden made a pot of chili with 48 ounces of ground beef and 2 tablespoons of chili powder. He made another pot of chili with the same amount of ground beef, but he used 3 times as much chili powder. How many pounds of ground beef per tablespoon of chili powder did he use in the second pot of chili?

*Show your work.*

*Answer* \_\_\_\_\_ pound(s) per tablespoon

**GO ON**



45

Cube-shaped blocks are packed into a cube-shaped storage container.

- The edge length of the storage container is  $2\frac{1}{2}$  feet.
- The edge length of each block is  $\frac{1}{5}$  the edge length of the storage container.

What is the volume, in cubic feet, of one cube-shaped block?

*Show your work.*

*Answer* \_\_\_\_\_ cubic feet

**GO ON**

46

A rectangular exercise mat has a perimeter of 36 feet. The length of the mat is twice the width. Write and solve an equation to determine the length, in feet, of the mat. Then find the area, in square feet, of the mat.

*Show your work.*

*Answer* length \_\_\_\_\_ feet

area \_\_\_\_\_ square feet

**STOP**

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**Grade 6**  
**2018**  
**Mathematics Test**  
**Session 2**  
May 1–3, 2018

**THE STATE EDUCATION DEPARTMENT**  
**THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234**  
**2018 Mathematics Tests Map to the Standards**  
**Grade 6 Released Questions on EngageNY**

Question	Type	Key	Points	Standard	Cluster	Subscore
<b>Book 1</b>						
1	Multiple Choice	C	1	CCSS.Math.Content.6.EE.B.5	Expressions and Equations	Expressions and Equations
2	Multiple Choice	D	1	CCSS.Math.Content.6.RP.A.3c	Ratios and Proportional Relationships	Ratios and Proportional Relationships
3	Multiple Choice	B	1	CCSS.Math.Content.6.NS.B.4	The Number System	The Number System
4	Multiple Choice	C	1	CCSS.Math.Content.6.EE.C.9	Expressions and Equations	Expressions and Equations
15	Multiple Choice	D	1	CCSS.Math.Content.6.RP.A.3c	Ratios and Proportional Relationships	Ratios and Proportional Relationships
16	Multiple Choice	A	1	CCSS.Math.Content.6.EE.C.9	Expressions and Equations	Expressions and Equations
19	Multiple Choice	C	1	CCSS.Math.Content.6.RP.A.3b	Ratios and Proportional Relationships	Ratios and Proportional Relationships
22	Multiple Choice	C	1	CCSS.Math.Content.6.G.A.1	Geometry	
25	Multiple Choice	B	1	CCSS.Math.Content.6.RP.A.3b	Ratios and Proportional Relationships	Ratios and Proportional Relationships
26	Multiple Choice	A	1	CCSS.Math.Content.6.EE.A.3	Expressions and Equations	Expressions and Equations
27	Multiple Choice	B	1	CCSS.Math.Content.5.G.A.2	The Number System	The Number System
28	Multiple Choice	D	1	CCSS.Math.Content.6.G.A.4	Geometry	
29	Multiple Choice	C	1	CCSS.Math.Content.6.EE.A.4	Expressions and Equations	Expressions and Equations
30	Multiple Choice	A	1	CCSS.Math.Content.6.RP.A.3a	Ratios and Proportional Relationships	Ratios and Proportional Relationships
31	Multiple Choice	C	1	CCSS.Math.Content.6.EE.B.6	Expressions and Equations	Expressions and Equations
<b>Book 2</b>						
32	Multiple Choice	D	1	CCSS.Math.Content.6.NS.C.5	The Number System	The Number System
33	Multiple Choice	A	1	CCSS.Math.Content.6.RP.A.1	Ratios and Proportional Relationships	Ratios and Proportional Relationships
34	Multiple Choice	B	1	CCSS.Math.Content.6.EE.B.8	Expressions and Equations	Expressions and Equations
35	Multiple Choice	C	1	CCSS.Math.Content.6.G.A.3	Geometry	
36	Multiple Choice	B	1	CCSS.Math.Content.6.NS.A.1	The Number System	The Number System
37	Multiple Choice	A	1	CCSS.Math.Content.6.EE.A.3	Expressions and Equations	Expressions and Equations
38	Multiple Choice	C	1	CCSS.Math.Content.6.RP.A.2	Ratios and Proportional Relationships	Ratios and Proportional Relationships
39	Constructed Response		2	CCSS.Math.Content.6.NS.A.1	The Number System	The Number System
40	Constructed Response		2	CCSS.Math.Content.6.EE.A.2a	Expressions and Equations	Expressions and Equations
41	Constructed Response		2	CCSS.Math.Content.6.RP.A.3d	Ratios and Proportional Relationships	Ratios and Proportional Relationships
42	Constructed Response		2	CCSS.Math.Content.6.EE.A.1	Expressions and Equations	Expressions and Equations
43	Constructed Response		2	CCSS.Math.Content.6.NS.C.6b	The Number System	The Number System
44	Constructed Response		2	CCSS.Math.Content.6.RP.A.2	Ratios and Proportional Relationships	Ratios and Proportional Relationships
45	Constructed Response		2	CCSS.Math.Content.6.G.A.2	Geometry	
46	Constructed Response		3	CCSS.Math.Content.6.EE.B.7	Expressions and Equations	Expressions and Equations

\*This item map is 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 procedural and conceptual understanding.