

Ohio's State Tests

ITEM RELEASE

SPRING 2016

**GRADE 7
MATHEMATICS**

Table of Contents

Questions 1 – 16: Content Summary and Answer Key.....	ii
Question 1: Question and Scoring Guidelines.....	1
Question 1: Sample Responses.....	5
Question 2: Question and Scoring Guidelines.....	9
Question 2: Sample Response.....	11
Question 3: Question and Scoring Guidelines.....	13
Question 3: Sample Response.....	15
Question 4: Question and Scoring Guidelines.....	17
Question 4: Sample Responses.....	19
Question 5: Question and Scoring Guidelines.....	25
Question 5: Sample Responses.....	29
Question 6: Question and Scoring Guidelines.....	33
Question 6: Sample Responses.....	35
Question 7: Question and Scoring Guidelines.....	39
Question 7: Sample Responses.....	43
Question 8: Question and Scoring Guidelines.....	49
Question 8: Sample Response.....	51
Question 9: Question and Scoring Guidelines.....	53
Question 9: Sample Responses.....	57
Question 10: Question and Scoring Guidelines.....	63
Question 10: Sample Responses.....	67
Question 11: Question and Scoring Guidelines.....	71
Question 11: Sample Responses.....	75
Question 12: Question and Scoring Guidelines.....	79
Question 12: Sample Responses.....	81
Question 13: Question and Scoring Guidelines.....	85
Question 13: Sample Responses.....	87
Question 14: Question and Scoring Guidelines.....	91
Question 14: Sample Responses.....	95
Question 15: Question and Scoring Guidelines.....	99
Question 15: Sample Responses.....	101
Question 16: Question and Scoring Guidelines.....	105
Question 16: Sample Response.....	107

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
1	Equation Item	Apply and extend previous understandings of operations with fractions.	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. b. Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. <i>(7.NS.1b)</i>	---	1 point
2	Multiple Choice	Apply and extend previous understandings of operations with fractions.	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers. d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. <i>(7.NS.2d)</i>	B	1 point
3	Multiple Choice	Draw informal comparative inferences about two populations.	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. <i>(7.SP.4)</i>	D	1 point

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
4	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$. (7.RP.2c)	---	1 point
5	Matching Item	Draw construct, and describe geometrical figures and describe the relationships between them.	Describe the two-dimensional figures (cross sections) that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. (7.G.3)	---	1 point
6	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.2b)	---	1 point

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
7	Equation Item	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.4)	---	1 point
8	Multiple Choice	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (7.EE.4a)	C	1 point
9	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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 $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour. (7.RP.1)	---	1 point

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
10	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	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 $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour. (7.RP.1)	---	1 point
11	Equation Item	Draw, construct, and describe geometrical figures and describe the relationships between them.	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.1)	---	1 point
12	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.2b)	---	1 point

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
13	Equation Item	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (7.EE.4a)	---	1 point
14	Equation Item	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.4)	---	1 point

Grade 7 Math
Spring 2016 Item Release
Content Summary and Answer Key

Question No.	Item Type	Content Cluster	Content Standard	Answer Key	Points
15	Equation Item	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.2b)	---	1 point
16	Multiple Choice	Analyze proportional relationships and use them to solve real-world and mathematical problems.	Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. (7.RP.2a)	D	1 point

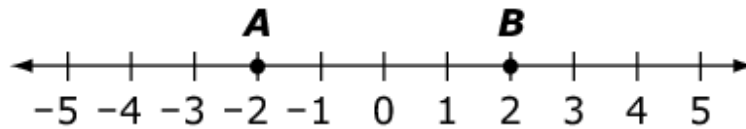
**Grade 7
Math
Spring 2016 Item Release**

Question 1

Question and Scoring Guidelines

Question 1

Two points, A and B , are labeled on the number line.



What is the value of $A + B$?



1	2	3
4	5	6
7	8	9
0	.	-

Points Possible: 1

Content Cluster: Apply and extend previous understandings of operations with fractions.

Content Standard: 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.

b. Understand $p + q$ as the number located a distance $|q|$ from p , in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. (7.NS.1b)

Calculator Designation: Calculator neutral
(can appear on either part of the assessment)

Scoring Guidelines

Exemplar Response

- 0

Other Correct Responses

- N/A

For this item, a full-credit response includes:

- The correct sum (1 point).

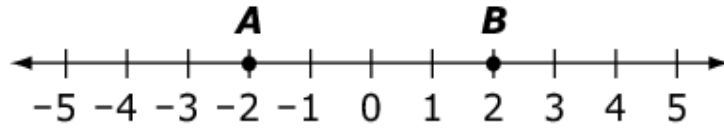
**Grade 7
Math
Spring 2016 Item Release**

Question 1

Sample Responses

Sample Response: 1 point

Two points, A and B , are labeled on the number line.



What is the value of $A + B$?

0



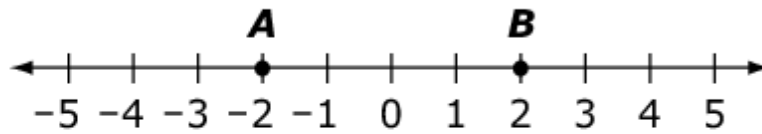
1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student correctly added the number -2 and its opposite to get 0 .

Sample Response: 0 points

Two points, A and B , are labeled on the number line.



What is the value of $A + B$?



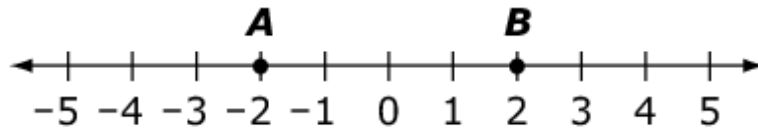
1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student incorrectly added the number -2 and its opposite. The student may have incorrectly added -2 and 2 to get 1 .

Sample Response: 0 points

Two points, A and B , are labeled on the number line.



What is the value of $A + B$?

-1



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student incorrectly added the number -2 and its opposite. The student may have incorrectly divided -2 and 2 to get -1 .

**Grade 7
Math
Spring 2016 Item Release**

Question 2

Question and Scoring Guidelines

Question 2

A fraction is shown.

$$\frac{5}{9}$$

Which number is equivalent to the fraction?

- A 0.5
- B $0.\bar{5}$
- C $0.\overline{59}$
- D 5.9

Points Possible: 1

Content Cluster: Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.

Content Standard: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. (7.NS.2d)

Calculator Designation: No calculator

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may have thought that the 5 does not repeat.

Rationale for Option B: **Key** – The student correctly selected the decimal equivalent.

Rationale for Option C: This is incorrect. The student may have thought that both digits in the fraction repeat.

Rationale for Option D: This is incorrect. The student may have replaced the fraction bar with a decimal point.

Sample Response: 1 point

A fraction is shown.

$$\frac{5}{9}$$

Which number is equivalent to the fraction?

- (A) 0.5
- (B) $0.\bar{5}$
- (C) $0.\overline{59}$
- (D) 5.9

**Grade 7
Math
Spring 2016 Item Release**

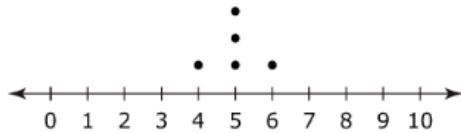
Question 3

Question and Scoring Guidelines

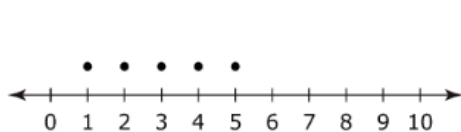
Question 3

Which pair of data sets provides no evidence that the values of Set A are greater than the values of Set B?

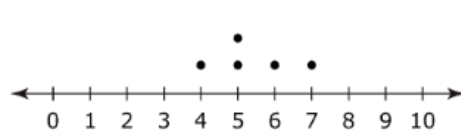
(A) Set A:



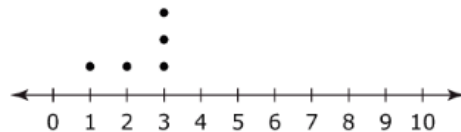
Set B:



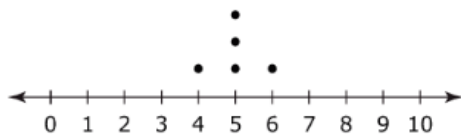
(C) Set A:



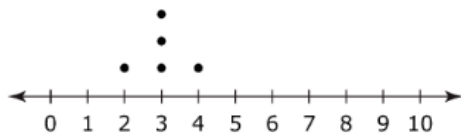
Set B:



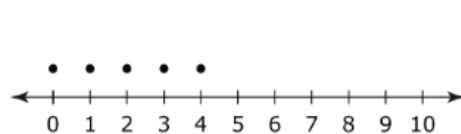
(B) Set A:



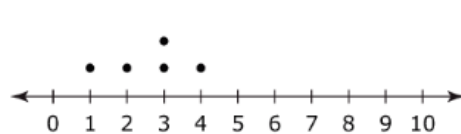
Set B:



(D) Set A:



Set B:



Points Possible: 1

Content Cluster: Draw informal comparative inferences about two populations.

Content Standard: Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book. (7.SP.4)

Calculator Designation: Calculator neutral
(can appear on either part of the assessment)

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may have interpreted the large spread in Set B to mean there is no evidence.

Rationale for Option B: This is incorrect. The student may have selected the plots with low evidence rather than the plots with no evidence.

Rationale for Option C: This is incorrect. The student may have selected the plots with high evidence rather than the plots with no evidence.

Rationale for Option D: **Key** – The student identified a large amount of spread and overlap to yield no evidence.

Sample Response: 1 point

Which pair of data sets provides no evidence that the values of Set A are greater than the values of Set B?

(A) Set A:

Set B:

(C) Set A:

Set B:

(B) Set A:

Set B:

(D) Set A:

Set B:

**Grade 7
Math
Spring 2016 Item Release**

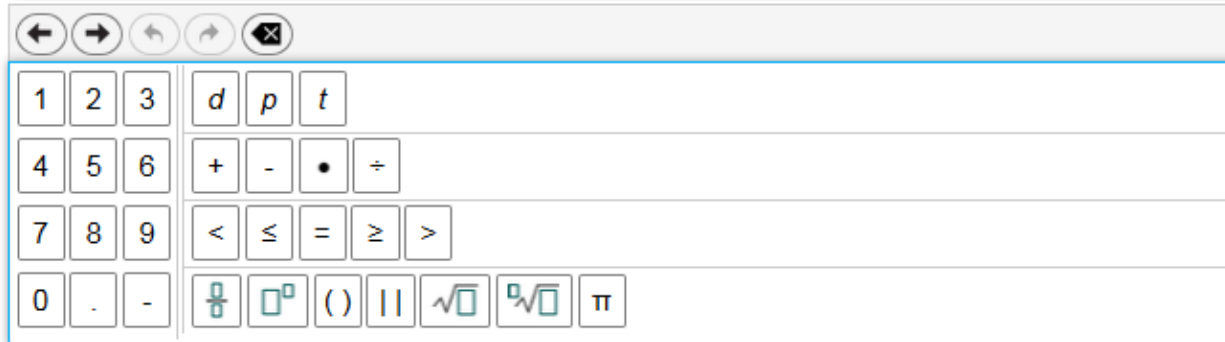
Question 4

Question and Scoring Guidelines

Question 4

Mary buys p peaches at the farmer's market for d dollars each. She spends a total of t dollars on peaches.

Create an equation that represents the relationship between t and p .



The calculator interface includes a grid of buttons for numbers (0-9), variables (d , p , t), operations (+, -, \cdot , \div), comparison operators (<, \leq , =, \geq , >), and mathematical symbols (fraction, power, parentheses, absolute value, square root, percent, pi).

Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: Recognize and represent proportional relationships between quantities.

c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p , the relationship between the total cost and the number of items can be expressed as $t = pn$. (7.RP.2c)

Calculator Designation: Calculator neutral
(can appear on either part of the assessment)

Scoring Guidelines

Exemplar Response

- $t = dp$

Other Correct Responses

- Any equivalent equation.

For this item, a full-credit response includes:

- The correct equation (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 4

Sample Responses

Sample Response: 1 point

Mary buys p peaches at the farmer's market for d dollars each. She spends a total of t dollars on peaches.

Create an equation that represents the relationship between t and p .

$$t=pd$$



1	2	3	d	p	t				
4	5	6	+	-	•	÷			
7	8	9	<	≤	=	≥	>		
0	.	-	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[n]{\square}$	π

Notes on Scoring

This response earns full credit (1 point) because the student represented the proportional relationship with a correct equation.

Sample Response: 1 point

Mary buys p peaches at the farmer's market for d dollars each. She spends a total of t dollars on peaches. Create an equation that represents the relationship between t and p .

$$\frac{t}{d} = p$$

← → ↶ ↷ ✕

1	2	3	d	p	t				
4	5	6	+	-	•	÷			
7	8	9	<	≤	=	≥	>		
0	.	-	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π

Notes on Scoring

This response earns full credit (1 point) because the student represented the proportional relationship with a correct equation.

Sample Response: 0 points

Mary buys p peaches at the farmer's market for d dollars each. She spends a total of t dollars on peaches. Create an equation that represents the relationship between t and p .

$$t = \frac{p}{d}$$

←	→	↶	↷	✖						
1	2	3	d	p	t					
4	5	6	+	-	•	÷				
7	8	9	<	≤	=	≥	>			
0	.	-	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π	

Notes on Scoring

This response earns no credit (0 points) because the student represented the proportional relationship with an incorrect equation. The student may have incorrectly thought that the number of peaches needed to be divided by the cost of each peach to get the total.

Sample Response: 0 points

Mary buys p peaches at the farmer's market for d dollars each. She spends a total of t dollars on peaches. Create an equation that represents the relationship between t and p .

$$t = \frac{d}{p}$$

The interface includes a toolbar with navigation buttons (left, right, undo, redo, clear) and a grid of input buttons. The grid contains:
Row 1: 1, 2, 3, d , p , t
Row 2: 4, 5, 6, +, -, \cdot , \div
Row 3: 7, 8, 9, <, \leq , =, \geq , >
Row 4: 0, ., -, $\frac{\square}{\square}$, \square^\square , (), ||, $\sqrt{\square}$, $\sqrt[n]{\square}$, π

Notes on Scoring

This response earns no credit (0 points) because the student represented the proportional relationship with an incorrect equation. The student may have incorrectly thought that the cost of each peach needed to be divided by the number of peaches bought to get the total.

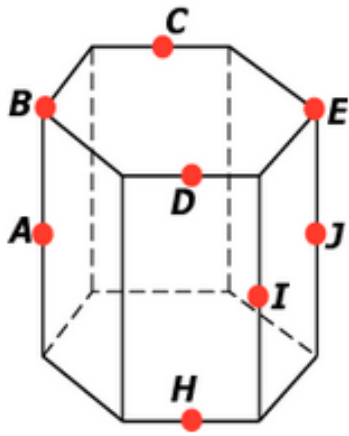
**Grade 7
Math
Spring 2016 Item Release**

Question 5

Question and Scoring Guidelines

Question 5

A hexagonal prism is shown.



Select the shape that is formed by each cross section.

	Hexagon	Rectangle
Cross section through points <i>C</i> , <i>D</i> , and <i>H</i>	<input type="checkbox"/>	<input type="checkbox"/>
Cross section through points <i>A</i> , <i>I</i> , and <i>J</i>	<input type="checkbox"/>	<input type="checkbox"/>
Cross section through points <i>A</i> , <i>B</i> , <i>E</i> , and <i>J</i>	<input type="checkbox"/>	<input type="checkbox"/>

Points Possible: 1

Content Cluster: Draw construct, and describe geometrical figures and describe the relationships between them.

Content Standard: Describe the two-dimensional figures (cross sections) that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. (7.G.3)

Calculator Designation: Calculator neutral
(can appear on either part of the assessment)

Scoring Guidelines

For this item, a full-credit response includes:

- “Rectangle” selected for “Cross section through points *C, D* and *H*”;
AND
- “Hexagon” selected for “Cross section through points *A, I* and *J*”;
AND
- “Rectangle” selected for “Cross section through points *A, B, E* and *J*”
(1 point).

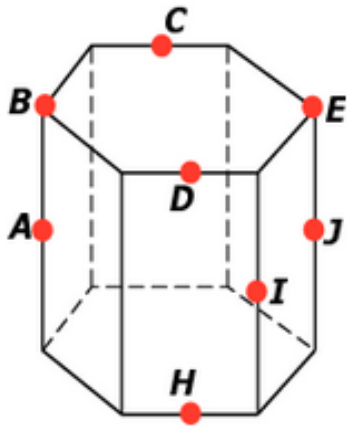
**Grade 7
Math
Spring 2016 Item Release**

Question 5

Sample Responses

Sample Response: 1 point

A hexagonal prism is shown.



Select the shape that is formed by each cross section.

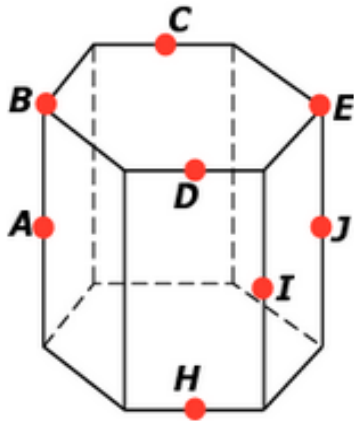
	Hexagon	Rectangle
Cross section through points <i>C</i> , <i>D</i> , and <i>H</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cross section through points <i>A</i> , <i>I</i> , and <i>J</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross section through points <i>A</i> , <i>B</i> , <i>E</i> , and <i>J</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified all three shapes of the cross sections that are the result of slicing the three dimensional figure through the given points.

Sample Response: 0 points

A hexagonal prism is shown.



Select the shape that is formed by each cross section.

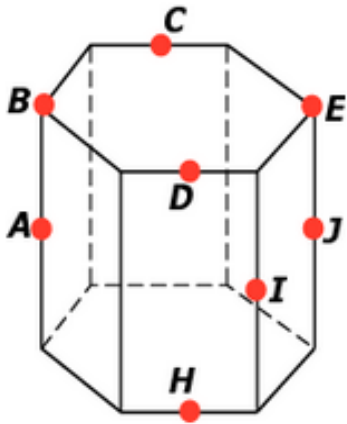
	Hexagon	Rectangle
Cross section through points <i>C</i> , <i>D</i> , and <i>H</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cross section through points <i>A</i> , <i>I</i> , and <i>J</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross section through points <i>A</i> , <i>B</i> , <i>E</i> , and <i>J</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify all three shapes for the cross sections. The student may have thought that the slice through points *A*, *B*, *E* and *J* results in a hexagon, when it actually results in a rectangle. All three shapes need to be identified correctly to earn credit.

Sample Response: 0 points

A hexagonal prism is shown.



Select the shape that is formed by each cross section.

	Hexagon	Rectangle
Cross section through points <i>C</i> , <i>D</i> , and <i>H</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cross section through points <i>A</i> , <i>I</i> , and <i>J</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cross section through points <i>A</i> , <i>B</i> , <i>E</i> , and <i>J</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly identify all three shapes for the cross sections. The student may have thought that the slice through points *A*, *I*, and *J* results in a rectangle, when it actually results in a hexagon. All three shapes need to be identified correctly to earn credit.

**Grade 7
Math
Spring 2016 Item Release**

Question 6

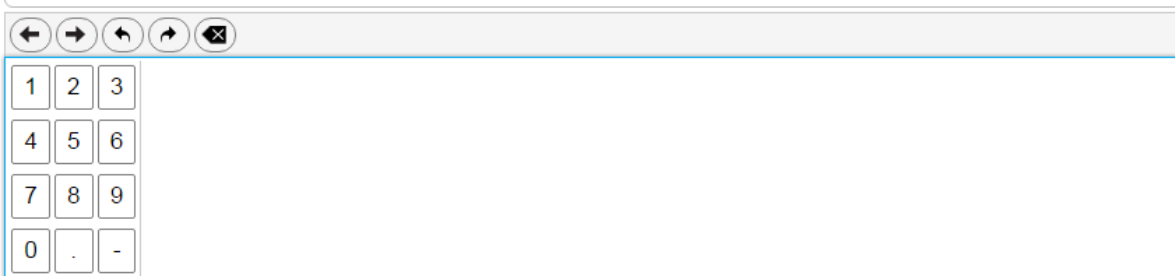
Question and Scoring Guidelines

Question 6

The table shows the number of songs and the length of each music playlist on an MP3 player. Each song is the same length.

Number of Songs	Length of Playlist (minutes)
4	16
9	36
16	64

How long, in minutes, is each song on the playlists?



Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: Recognize and represent proportional relationships between quantities.

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (*7.RP.2b*)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 4

Other Correct Responses

- N/A

For this item, a full-credit response includes:

- The correct value (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 6

Sample Responses

Sample Response: 1 point

The table shows the number of songs and the length of each music playlist on an MP3 player. Each song is the same length.

Number of Songs	Length of Playlist (minutes)
4	16
9	36
16	64

How long, in minutes, is each song on the playlists?

4



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student correctly calculated the unit rate of 4 minutes per song: e.g.,

$$16/4 = 4$$

or

$$64/16 = 4$$

Sample Response: 0 points

The table shows the number of songs and the length of each music playlist on an MP3 player. Each song is the same length.

Number of Songs	Length of Playlist (minutes)
4	16
9	36
16	64

How long, in minutes, is each song on the playlists?

6



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the unit rate of 4 minutes per song. The student may have calculated $36/6$ instead of $36/9$ to get 6 minutes instead of 4 minutes for the length of each song.

Sample Response: 0 points

The table shows the number of songs and the length of each music playlist on an MP3 player. Each song is the same length.

Number of Songs	Length of Playlist (minutes)
4	16
9	36
16	64

How long, in minutes, is each song on the playlists?

3.5



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the unit rate of 4 minutes per song. The student may have added the two last numbers in the right column ($36 + 64 = 100$) and then divided that number incorrectly by the sum of all three numbers in the left column ($4 + 9 + 16 = 29$) to get $100/29 \approx 3.448$, and then rounded that number to 3.5.

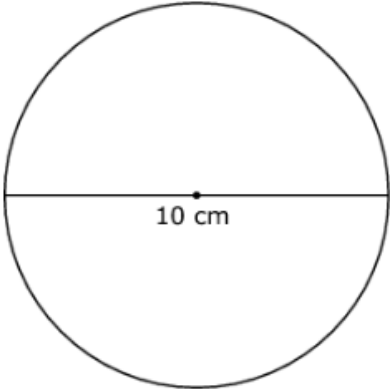
**Grade 7
Math
Spring 2016 Item Release**

Question 7

Question and Scoring Guidelines

Question 7

A circle is shown.



10 cm

What is the circumference of the circle, to the nearest tenth of a centimeter?

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

Points Possible: 1

Content Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Content Standard: Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.4)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 31.4

Other Correct Responses

- Any value between 31.4 and 31.43, inclusive.

For this item, a full-credit response includes:

- A correct circumference (1 point).

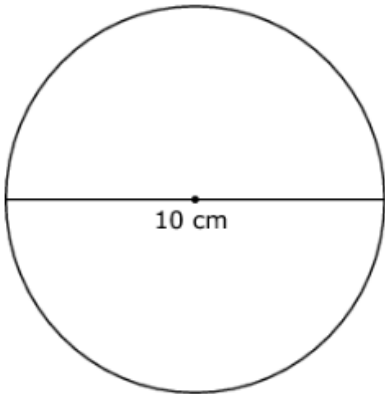
**Grade 7
Math
Spring 2016 Item Release**

Question 7

Sample Responses

Sample Response: 1 point

A circle is shown.



What is the circumference of the circle, to the nearest tenth of a centimeter?

31.4

← → ↶ ↷ ✕

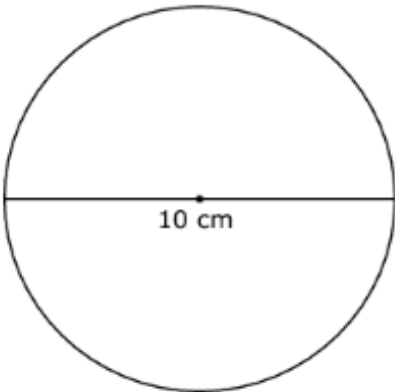
1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student correctly calculated the circumference of the circle. The student probably used the formula for the circumference of a circle ($2 * \pi * r = C$), using 3.14, $22/7$ or the π -button on a calculator for Pi, and multiplied this by 10, the diameter ($2r$).

Sample Response: 1 point

A circle is shown.



What is the circumference of the circle, to the nearest tenth of a centimeter?

31.43

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

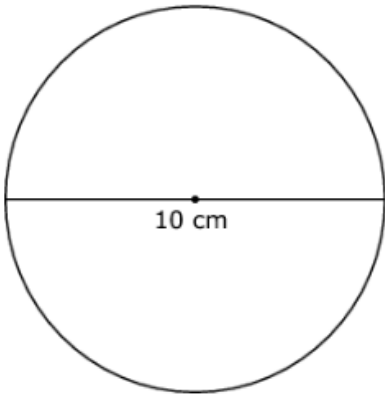
Notes on Scoring

This response earns full credit (1 point) because the student correctly calculated the circumference of the circle. The student probably used the formula for the circumference of a circle ($2 * \pi * r = C$), using 3.14, $\frac{22}{7}$ or the π -button on a calculator for Pi, and multiplied this by 10, the diameter ($2r$).

The student has responded with 31.43, rounding to the nearest hundredth instead of to the nearest tenth. The response will still be scored with full credit (1 point), as "rounding" is not assessed in this grade. Directing the students to end with the tenths digit gives them a place value to stop writing down the decimals.

Sample Response: 0 points

A circle is shown.



What is the circumference of the circle, to the nearest tenth of a centimeter?

30

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

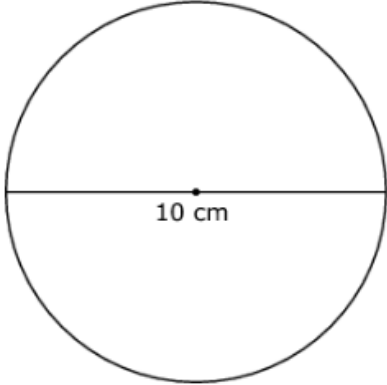
Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the circumference of the circle. The student may have rounded the value of π (Pi) to 3, which is not accepted at the middle and high school levels. Students need to use 3.14, $\frac{22}{7}$ or the π -button on a calculator for the value of π . If the student used the formula correctly ($2 * \pi * r = C$), but used an incorrect value of 3 for π , the circumference may have been calculated:

$$2 * 3 * 5 = 30$$

Sample Response: 0 points

A circle is shown.



What is the circumference of the circle, to the nearest tenth of a centimeter?

33

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the circumference of the circle. The student may have incorrectly used 3.3 for the value of π (Pi). If the student used the formula correctly ($2 * \pi * r = C$), but used an incorrect value of 3.3 for π , the circumference may have been calculated:

$$2 * 3.3 * 5 = 33$$

**Grade 7
Math
Spring 2016 Item Release**

Question 8

Question and Scoring Guidelines

Question 8

A bowling alley charges x dollars per guest and a fixed \$50 rental fee for parties.

Which equation represents the total cost, y , for 9 guests?

(A) $y = 9x$

(B) $y = 9x + 41$

(C) $y = 9x + 50$

(D) $y = 50x + 9$

Points Possible: 1

Content Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Content Standard: Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (7.EE.4a)

Calculator Designation: Calculator

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may not have considered the fixed rental fee.

Rationale for Option B: This is incorrect. The student may have subtracted 9 from 50 to solve for the y -intercept.

Rationale for Option C: **Key** – The student correctly identified the equation that represents total cost.

Rationale for Option D: This is incorrect. The student may have reversed the variable and the fixed costs (9 and 50, respectively).

Sample Response: 1 point

A bowling alley charges x dollars per guest and a fixed \$50 rental fee for parties.

Which equation represents the total cost, y , for 9 guests?

(A) $y = 9x$

(B) $y = 9x + 41$

(C) $y = 9x + 50$

(D) $y = 50x + 9$

**Grade 7
Math
Spring 2016 Item Release**

Question 9

Question and Scoring Guidelines

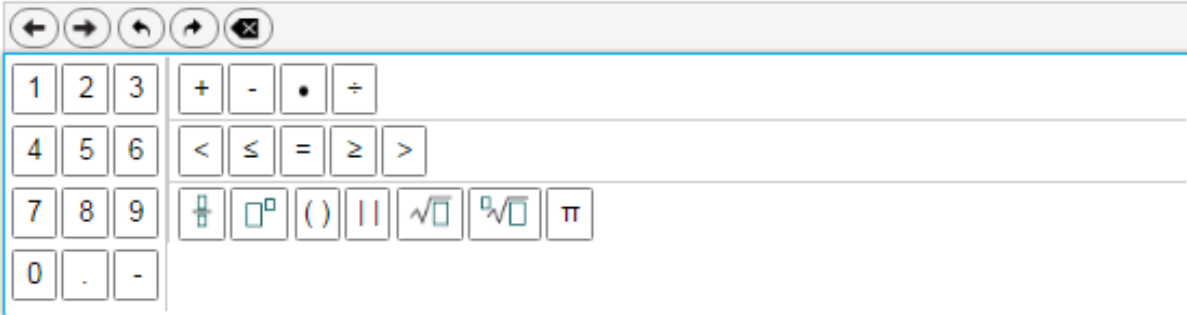
Question 9

Tim is clearing brush from a large piece of land. The table shows how many acres he has cleared over time.

Brush Clearing

Acres Cleared	Days
$\frac{2}{3}$	2
$1\frac{2}{3}$	5
$2\frac{1}{3}$	7

How many days does it take Tim to clear 1 acre?



The calculator interface includes a top row with left, right, undo, redo, and delete buttons. Below this are three rows of buttons: the first row has digits 1, 2, 3 and operations +, -, *, ÷; the second row has digits 4, 5, 6 and comparison operators <, ≤, =, ≥, >; the third row has digits 7, 8, 9, a fraction template button, a square button, a parentheses button, a double vertical bar button, a square root button, a cube root button, and a pi button. A fourth row contains the digits 0, a decimal point, and a negative sign.

Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: 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 $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour. (7.RP.1)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 3

Other Correct Responses

- Any equivalent value.

For this item, a full-credit response includes:

- A correct rate (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 9

Sample Responses

Sample Response: 1 point

Tim is clearing brush from a large piece of land. The table shows how many acres he has cleared over time.

Brush Clearing

Acres Cleared	Days
$\frac{2}{3}$	2
$1\frac{2}{3}$	5
$2\frac{1}{3}$	7

How many days does it take Tim to clear 1 acre?

3

← → ↶ ↷ ✖

1	2	3	+	-	•	÷			
4	5	6	<	≤	=	≥	>		
7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π
0	.	-							

Notes on Scoring

This response earns full credit (1 point) because the student correctly calculated the number of days it takes to clear 1 acre.

Sample Response: 1 point

Tim is clearing brush from a large piece of land. The table shows how many acres he has cleared over time.

Brush Clearing

Acres Cleared	Days
$\frac{2}{3}$	2
$1\frac{2}{3}$	5
$2\frac{1}{3}$	7

How many days does it take Tim to clear 1 acre?



1	2	3	+	-	•	÷			
4	5	6	<	≤	=	≥	>		
7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π
0	.	-							

Notes on Scoring

This response earns full credit (1 point) because the student correctly identified the number of days it takes to clear 1 acre. The student may have seen that it takes 2 days to clear $\frac{2}{3}$ acres (i.e., 1 day to clear $\frac{1}{3}$ acre), calculated $\frac{2}{3} + \frac{1}{3} = 1$ whole acre, and then responded with an answer of 2 days + 1 day.

Sample Response: 0 points

Tim is clearing brush from a large piece of land. The table shows how many acres he has cleared over time.

Brush Clearing

Acres Cleared	Days
$\frac{2}{3}$	2
$1\frac{2}{3}$	5
$2\frac{1}{3}$	7

How many days does it take Tim to clear 1 acre?

$$\frac{1}{3}$$

← → ↶ ↷ ✕

1	2	3	+	-	•	÷			
4	5	6	<	≤	=	≥	>		
7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π
0	.	-							

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the number of days it takes to clear 1 acre. The student may have divided $\frac{2}{3}$ by 2 to get the unit rate of $\frac{1}{3}$ acre per day, instead of the unit rate of 3 days per acre.

Sample Response: 0 points

Tim is clearing brush from a large piece of land. The table shows how many acres he has cleared over time.

Brush Clearing

Acres Cleared	Days
$\frac{2}{3}$	2
$1\frac{2}{3}$	5
$2\frac{1}{3}$	7

How many days does it take Tim to clear 1 acre?

$$\frac{2}{3} \div 2$$

A digital calculator interface with a grid of buttons. The top row contains navigation buttons: left arrow, right arrow, undo, redo, and a clear button. The second row contains numeric buttons 1, 2, 3 and operation buttons +, -, multiplication dot, and division slash. The third row contains numeric buttons 4, 5, 6 and comparison operators <, ≤, =, ≥, >. The fourth row contains numeric buttons 7, 8, 9 and mathematical symbols: fraction, square, parentheses, absolute value, square root, nth root, and pi. The fifth row contains numeric buttons 0, a decimal point, and a negative sign.

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the number of days it takes to clear 1 acre. The student may have started a correct process by dividing $\frac{2}{3}$ acre by 2 days to get how many acres were cleared in 1 day. However, the final answer of days to clear 1 full acre was not given.

**Grade 7
Math
Spring 2016 Item Release**

Question 10

Question and Scoring Guidelines

Question 10

Cary's barbecue sauce recipe calls for $2\frac{2}{3}$ cups of water for every 8 pints of tomato sauce.

How many cups of water does Cary use when she makes barbecue sauce with 1 pint of tomato sauce?

A digital calculator interface with a grid of buttons. The top row contains navigation buttons: left arrow, right arrow, undo, redo, and clear. The second row contains digits 1, 2, 3 and operators +, -, multiplication dot, and division. The third row contains digits 4, 5, 6 and comparison operators <, ≤, =, ≥, >. The fourth row contains digits 7, 8, 9 and mathematical symbols: fraction, square, parentheses, absolute value, square root, nth root, and pi. The fifth row contains digits 0, a decimal point, and a negative sign.

Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: 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 $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{\frac{1}{2}}{\frac{1}{4}}$ miles per hour, equivalently 2 miles per hour. (7.RP.1)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- $\frac{1}{3}$

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- The correct unit rate (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 10

Sample Responses

Sample Response: 1 point

Cary's barbecue sauce recipe calls for $2\frac{2}{3}$ cups of water for every 8 pints of tomato sauce.

How many cups of water does Cary use when she makes barbecue sauce with 1 pint of tomato sauce?

$$\frac{1}{3}$$

← → ↶ ↷ ✕

1	2	3	+	-	•	÷				
4	5	6	<	≤	=	≥	>			
7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π	
0	.	-								

Notes on Scoring

This response earns full credit (1 point) because the student correctly calculated the unit rate. The student may have divided 2 and $\frac{2}{3}$ by 8, using division of fraction by a whole number. The student may have also identified that there are 8 "one-thirds" in 2 and $\frac{2}{3}$, by identifying that there are 3 "one-thirds" in each whole number and 2 "one-thirds" in $\frac{2}{3}$.

Sample Response: 0 points

Cary's barbecue sauce recipe calls for $2\frac{2}{3}$ cups of water for every 8 pints of tomato sauce.

How many cups of water does Cary use when she makes barbecue sauce with 1 pint of tomato sauce?

.333

←	→	↶	↷	✕							
1	2	3	+	-	•	÷					
4	5	6	<	≤	=	≥	>				
7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π		
0	.	-									

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly answer with a precise unit rate. The student may have converted the fractions into decimals when calculating the unit rate. The answer would be 0.333, with the 3 repeating.

In these cases, students are expected to convert the repeating decimal to a precise answer of $\frac{1}{3}$ (fractional form). This also applies when an answer comes out as 0.6 with the 6 repeating. Students are expected to give a precise answer of $\frac{2}{3}$ (fractional form).

Sample Response: 0 points

Cary's barbecue sauce recipe calls for $2\frac{2}{3}$ cups of water for every 8 pints of tomato sauce.

How many cups of water does Cary use when she makes barbecue sauce with 1 pint of tomato sauce?

$$\frac{2}{3}$$



1	2	3	+	-	•	÷
---	---	---	---	---	---	---

4	5	6	<	≤	=	≥	>
---	---	---	---	---	---	---	---

7	8	9	$\frac{\square}{\square}$	\square^\square	()		$\sqrt{\square}$	$\sqrt[\square]{\square}$	π
---	---	---	---------------------------	-------------------	-----	--	------------------	---------------------------	-------

0	.	-
---	---	---

Notes on Scoring

This response earns no credit (0 points) because the student did not correctly calculate the unit rate. The student may have multiplied the whole number 2 by 8 to get 16 thirds, forgotten about the $\frac{2}{3}$ in the initial amount of cups of water and then divided by 8.

$$2/3 * 8 = 16/3$$

$$16/3 / 8 = 2/3$$

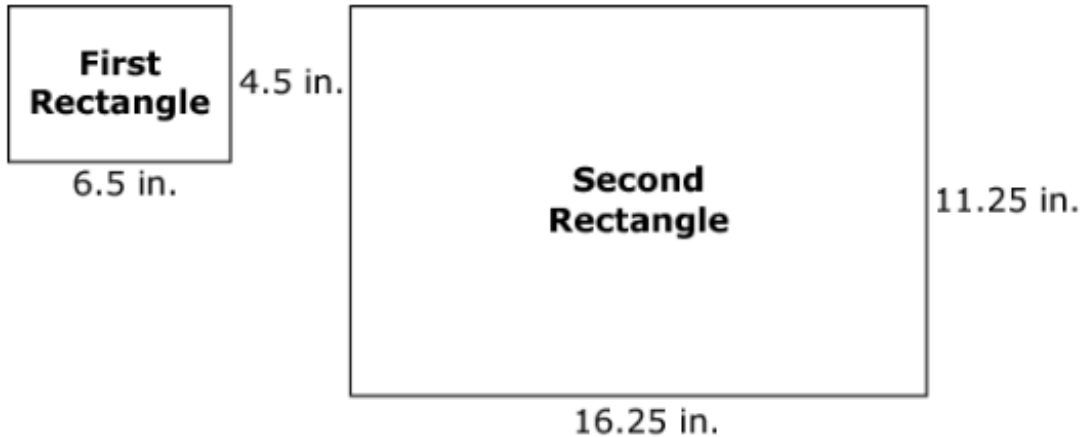
**Grade 7
Math
Spring 2016 Item Release**

Question 11

Question and Scoring Guidelines

Question 11

Angelo drew the two rectangles shown. The second is a scale drawing of the first.



What scale factor did Angelo use to draw the second rectangle?

1	2	3
4	5	6
7	8	9
0	.	-

Points Possible: 1

Content Cluster: Draw, construct, and describe geometrical figures and describe the relationships between them.

Content Standard: Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.1)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 2.5

For this item, a full-credit response includes:

- The correct scale (1 point).

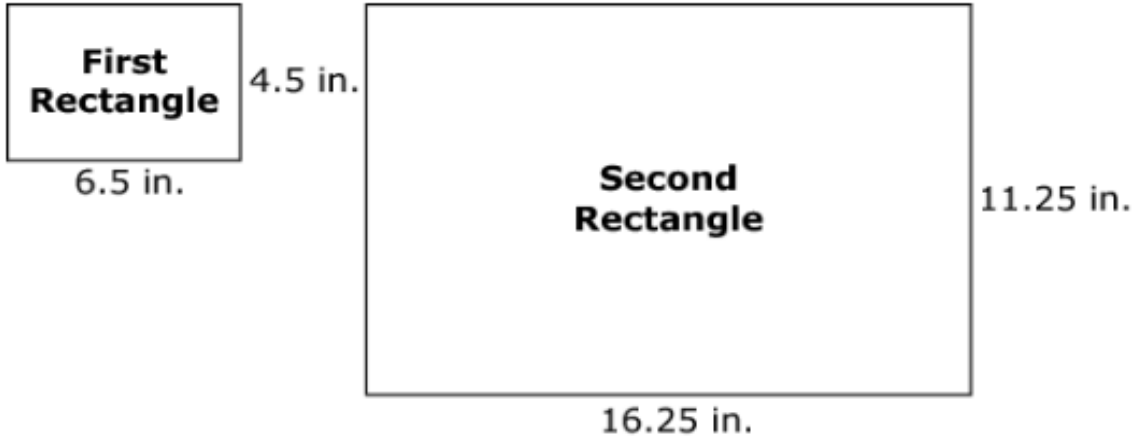
**Grade 7
Math
Spring 2016 Item Release**

Question 11

Sample Responses

Sample Response: 1 point

Angelo drew the two rectangles shown. The second is a scale drawing of the first.



What scale factor did Angelo use to draw the second rectangle?

2.5

← → ↶ ↷ ✕

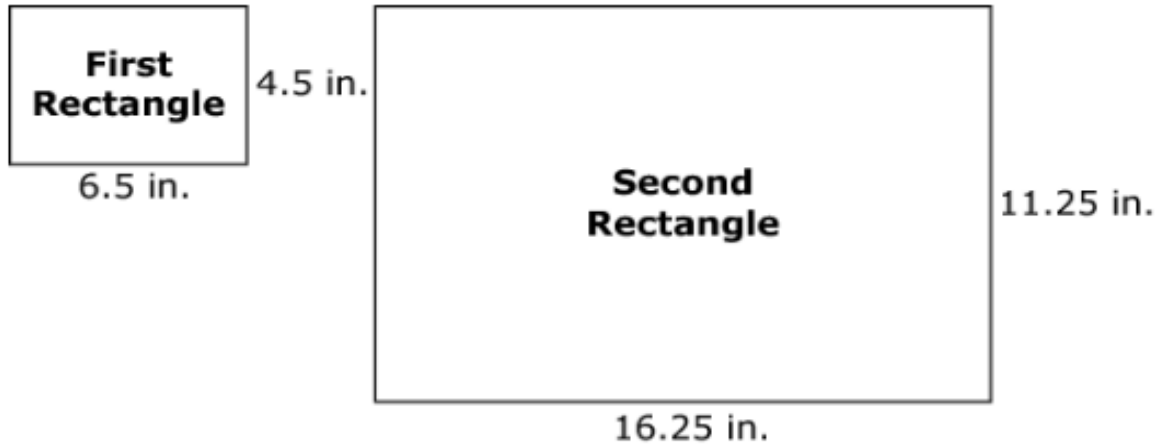
1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student calculated a correct scale factor. The student may have divided 11.25 by 4.5 and then, to check, divided 16.25 by 6.5, both times getting the scale factor of 2.5.

Sample Response: 0 points

Angelo drew the two rectangles shown. The second is a scale drawing of the first.



What scale factor did Angelo use to draw the second rectangle?

2.25

Calculator interface showing navigation buttons (left, right, undo, redo, clear) and a numeric keypad with digits 1-9, 0, a decimal point, and a negative sign.

Notes on Scoring

This response earns no credit (0 points) because the student did not calculate a correct scale factor. The student may have incorrectly put 10.125 into the calculator, instead of 11.25, with the 0 being a typo (the “0” is right beside the “1” on the calculator), and not realized this mistake. Then, the student may have divided correctly by 4.5 to get an incorrect response of 2.25. The student may have also calculated the problem correctly but made a typo in the answer, inserting an extra “2”.

It is important for students to check carefully that what they put into both their calculator and the answer spaces on the assessment is correct.

Sample Response: 0 points

Angelo drew the two rectangles shown. The second is a scale drawing of the first.

The diagram shows two rectangles. The first rectangle is smaller, with a width of 6.5 in. and a height of 4.5 in. The second rectangle is larger, with a width of 16.25 in. and a height of 11.25 in. The second rectangle is a scale drawing of the first.

What scale factor did Angelo use to draw the second rectangle?

4

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not calculate a correct scale factor. The student may have incorrectly divided 4.5 by 11.25 to get 0.4, and then checked that answer by dividing 6.5 by 16.25, to still get 0.4. The student may have then reasoned and thought the answer must be “4” since the second rectangle is an enlargement.

**Grade 7
Math
Spring 2016 Item Release**

Question 12

Question and Scoring Guidelines

Question 12

A dance studio offers ballet and hip-hop classes. The studio has 8 ballet classes for every 12 hip-hop classes. How many hip-hop classes are there for each ballet class?



1	2	3
4	5	6
7	8	9
0	.	-

Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: Recognize and represent proportional relationships between quantities.

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. (7.RP.2b)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 1.5

Other Correct Responses

- Any equivalent value

For this item, a full-credit response includes:

- A correct value (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 12

Sample Responses

Sample Response: 1 point

A dance studio offers ballet and hip-hop classes. The studio has 8 ballet classes for every 12 hip-hop classes.

How many hip-hop classes are there for each ballet class?

1.5



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student determined the correct proportional relationship. The student may have divided 12 by 8 to get the proportional relationship correct.

$$12/8 = 1.5$$

Sample Response: 0 points

A dance studio offers ballet and hip-hop classes. The studio has 8 ballet classes for every 12 hip-hop classes. How many hip-hop classes are there for each ballet class?

4



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct proportional relationship. The student may have subtracted 8 from 12 to get 4, not realizing that this item is asking for the proportional relationship between quantities.

Sample Response: 0 points

A dance studio offers ballet and hip-hop classes. The studio has 8 ballet classes for every 12 hip-hop classes. How many hip-hop classes are there for each ballet class?

0.6



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct proportional relationship. The student may have calculated the proportional relationship between the number of hip-hop classes to the total number of classes, calculating $12/20$ to get 0.6.

**Grade 7
Math
Spring 2016 Item Release**

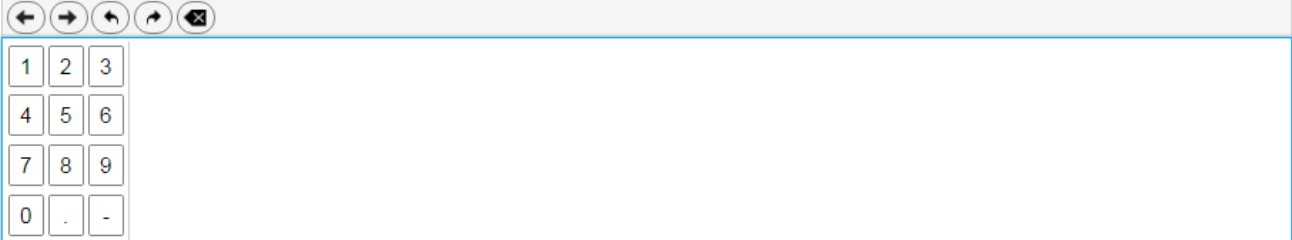
Question 13

Question and Scoring Guidelines

Question 13

One apple costs \$0.55 at the grocery store. Customers receive one free apple for every 8 apples that they buy. Anna paid a total of \$8.80 for her apples.

How many free apples did Anna receive?



Points Possible: 1

Content Cluster: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Content Standard: Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? (7.EE.4a)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 2

Other Correct Responses

- N/A

For this item, a full-credit response includes:

- The correct value (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 13

Sample Responses

Sample Response: 1 point

One apple costs \$0.55 at the grocery store. Customers receive one free apple for every 8 apples that they buy. Anna paid a total of \$8.80 for her apples.

How many free apples did Anna receive?

2



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student determined the correct value. The student may have divided the total cost of \$8.80 by the cost per apple, \$0.55, to find that Anna buys 16 apples. The student may have then realized that there are 2 groups of 8 apples and that Anna gets 1 apple per 8 apples, which gives her 2 free apples.

Sample Response: 0 points

One apple costs \$0.55 at the grocery store. Customers receive one free apple for every 8 apples that they buy. Anna paid a total of \$8.80 for her apples.

How many free apples did Anna receive?

16



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct value. The student may have correctly calculated how many apples Anna bought and then answered with 16, not remembering that the question was about how many free apples she received.

Sample Response: 0 points

One apple costs \$0.55 at the grocery store. Customers receive one free apple for every 8 apples that they buy. Anna paid a total of \$8.80 for her apples.

How many free apples did Anna receive?

3.85



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct value. The student may have thought that for every 8 apples, 1 is free, which means that you only pay for 7 apples. Then, the student may have calculated the cost of 7 apples: $0.55 * 7 = 3.85$.

**Grade 7
Math
Spring 2016 Item Release**


Question 14

Question and Scoring Guidelines

Question 14

The circumference of a circle is 18.84 inches.

What is the diameter of the circle, to the nearest inch?



1	2	3
4	5	6
7	8	9
0	.	-

Points Possible: 1

Content Cluster: Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Content Standard: Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.4)

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 6

Other Correct Responses

- Any value between 5.99 and 6

For this item, a full-credit response includes:

- A correct diameter (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 14

Sample Responses

Sample Response: 1 point

The circumference of a circle is 18.84 inches.

What is the diameter of the circle, to the nearest inch?

← → ↶ ↷ ✕

1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student determined the correct diameter of the circle. The student may have applied the formula for the circumference of a circle ($2 * \pi * r = C$) to find the diameter of the circle, understanding that $2 * r$ is equal to the diameter. Then, the student would have only needed to divide 18.84 by π , using 3.14, 22/7 or the π -button on a calculator for the value of Pi. Finally, the student correctly rounded the answer to the nearest inch.

Sample Response: 0 points

The circumference of a circle is 18.84 inches.

What is the diameter of the circle, to the nearest inch?

9



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct diameter of the circle. The student may have misunderstood the formula for the circumference of a circle ($2 * \pi * r = C$) by thinking that $\pi * r$ is the diameter, and therefore divided 18.84 by 2 to get 9.42. The student may have then rounded to the nearest inch to get 9.

Sample Response: 0 points

The circumference of a circle is 18.84 inches.

What is the diameter of the circle, to the nearest inch?

4.89

← → ↶ ↷ ✖

1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct diameter of the circle. The student may have used the formula for the area of the circle, $\pi r^2 = A$, instead of the formula for the circumference of the circle, $2\pi r = C$, to calculate the length of the radius, and then multiplied by 2 to get the diameter.

**Grade 7
Math
Spring 2016 Item Release**

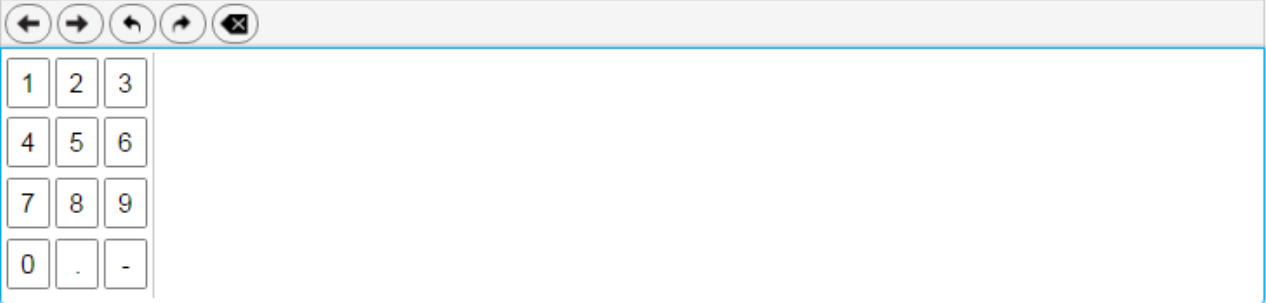
Question 15

Question and Scoring Guidelines

Question 15

A bread company makes wheat dough and rye dough each day. The company makes 15.2 pounds of wheat dough for every 9.5 pounds of rye dough.

How many pounds of wheat dough does the company make for each pound of rye dough?



Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: Recognize and represent proportional relationships between quantities.

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. *(7.RP.2b)*

Calculator Designation: Calculator

Scoring Guidelines

Exemplar Response

- 1.6

Other Correct Responses

- N/A

For this item, a full-credit response includes:

- The correct value (1 point).

**Grade 7
Math
Spring 2016 Item Release**

Question 15

Sample Responses

Sample Response: 1 point

A bread company makes wheat dough and rye dough each day. The company makes 15.2 pounds of wheat dough for every 9.5 pounds of rye dough.

How many pounds of wheat dough does the company make for each pound of rye dough?

1.6



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns full credit (1 point) because the student determined the correct value. The student may have recognized the proportional relationship and divided 15.2 by 9.5 to get 1.6 pounds of wheat dough per 1 pound of rye dough.

Sample Response: 0 points

A bread company makes wheat dough and rye dough each day. The company makes 15.2 pounds of wheat dough for every 9.5 pounds of rye dough.

How many pounds of wheat dough does the company make for each pound of rye dough?

5.7



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct value. The student may not have recognized the proportional relationship and instead subtracted 9.5 from 15.2 to get 5.7.

Sample Response: 0 points

A bread company makes wheat dough and rye dough each day. The company makes 15.2 pounds of wheat dough for every 9.5 pounds of rye dough.

How many pounds of wheat dough does the company make for each pound of rye dough?

0.625



1	2	3
4	5	6
7	8	9
0	.	-

Notes on Scoring

This response earns no credit (0 points) because the student did not determine the correct value. The student may have reversed the proportional relationship and instead answered how many pounds of rye dough the company makes per 1 pound of wheat dough.

**Grade 7
Math
Spring 2016 Item Release**

Question 16

Question and Scoring Guidelines

Question 16

The tables show the cost for different numbers of song downloads.

Which table shows a proportional relationship?

Ⓐ

Number of Songs	Cost
2	\$ 3.50
4	\$ 7.00
5	\$ 8.75
7	\$13.25

Ⓒ

Number of Songs	Cost
2	\$ 3.50
4	\$ 8.00
5	\$ 8.75
7	\$13.25

Ⓑ

Number of Songs	Cost
2	\$ 3.50
4	\$ 8.00
5	\$ 8.75
7	\$12.25

Ⓓ

Number of Songs	Cost
2	\$ 3.50
4	\$ 7.00
5	\$ 8.75
7	\$12.25

Points Possible: 1

Content Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Content Standard: Recognize and represent proportional relationships between quantities.

a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
(7.RP.2a)

Calculator Designation: Calculator

Scoring Guidelines

Rationale for Option A: This is incorrect. The student may have thought that since $3.5/2 = 7/4 = 8.75/5$, then there is a proportional relationship for the table, but the student did not include $13.25/7$, which is not the same ratio as the others.

Rationale for Option B: This is incorrect. The student may have found that some values in the table have the same ratio of cost per number of songs, but the student did not check all of the values in the table.

Rationale for Option C: This is incorrect. The student may have found that some values in the table have the same ratio of cost per number of songs, but the student did not check all of the values in the table.

Rationale for Option D: Key – The student correctly identified the table with numbers showing a proportional relationship ($12.25/7 = 1.75$), ($8.75/5 = 1.75$), ($7/4 = 1.75$) and ($3.5/2 = 1.75$).

Sample Response: 1 point

The tables show the cost for different numbers of song downloads.

Which table shows a proportional relationship?

(A)

Number of Songs	Cost
2	\$ 3.50
4	\$ 7.00
5	\$ 8.75
7	\$13.25

(C)

Number of Songs	Cost
2	\$ 3.50
4	\$ 8.00
5	\$ 8.75
7	\$13.25

(B)

Number of Songs	Cost
2	\$ 3.50
4	\$ 8.00
5	\$ 8.75
7	\$12.25

(D)

Number of Songs	Cost
2	\$ 3.50
4	\$ 7.00
5	\$ 8.75
7	\$12.25

The Ohio Department of Education does not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in employment or the provision of services.

Copyright © 2016 by the Ohio Department of Education. All rights reserved.