Smarter Balanced Assessment Consortium:

Mathematics Practice Test Scoring Guide
Grade 7

08/01/2016

About the Practice Test Scoring Guides

The Smarter Balanced Mathematics Practice Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for the Smarter Balanced Practice Test items. The items selected for the Practice Test are designed to reflect

- a broad coverage of claims and targets that closely mirror the summative blueprint.
- a range of student response types.
- a breadth of difficulty levels across the items, ranging from easier to more difficult items.

It is important to note that all student response types are not fully represented on every practice test, but a distribution can be observed across all the practice tests. The items presented are reflective of refinements and adjustments to language based on pilot test results and expert recommendations from both content and accessibility perspectives.

Within this guide, each item is presented with the following information[1]:

- Claim: statement derived from evidence about college and career readiness
- Domain: a broad content area that contains related targets and standards (i.e., Geometry)
- Target: statement that bridges the content standards and the assessment evidence that supports the claim
- Depth of Knowledge (DOK): measure of complexity considering the student's cognitive process in response to an item. There are four DOK levels, a 4 being the highest level.
- Common Core State Standards for Mathematical Content (CCSS-MC)
- Common Core State Standards for Mathematical Practice (CCSS-MP)
- Static presentation of the item: static presentation of item from test administration system
- Static presentation of student response field(s): static presentation of response field from test administration system
- Answer key or exemplar: expected student response or example response from score point value
- Rubric and applicable score points for each item: score point representations for student responses

The following items are representative of the kinds of items that students can expect to experience when taking the Computer Adaptive Test (CAT) portion of the summative assessment for grade 7. A separate document is available that provides a grade 7 sample performance task and scoring guide.

[1] Most of these terms (Claim, Domain, Target, DOK, etc.) are defined in various other Smarter Balanced documents, as well as the Common Core State Standards for Mathematics. Refer to the *Content Specifications for the Summative Assessment of the Common Core State Standards for Mathematics* for more information.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#1	1	SP	G	1	7.SP.A.1	N/A

A principal wants to know if students at a particular high school are in favor of a new dress code at their school. The principal is not able to ask the opinion of every student at the school, so she needs to select an appropriate sample of the students to represent the high school.

Select which sample of students the principal should choose.

A. Students randomly selected from a list of all students at the school.

B. Students sitting at randomly selected tables in the library.

C. Students she selects from the hallway between classes.

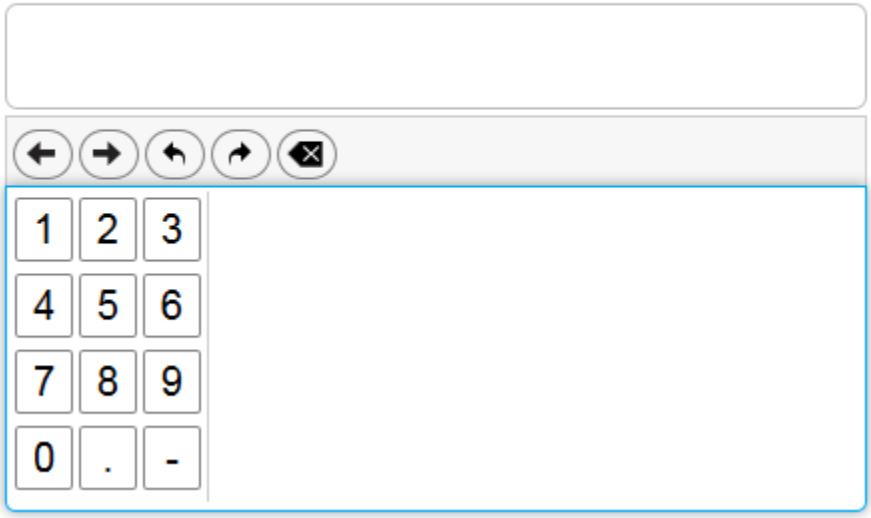
D. Students selected by the teachers.

Key: A

Rubric: (1 point) The student selects an appropriate sample.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#2	1	EE	D	1	7.EE.B.3	N/A

Enter the value of $5 \cdot (13.5 - 4.5)$.

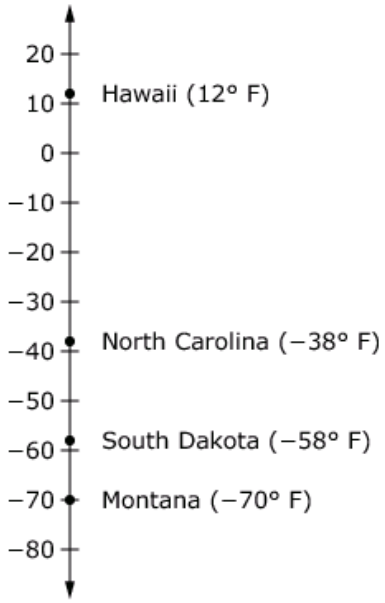


Key: 45

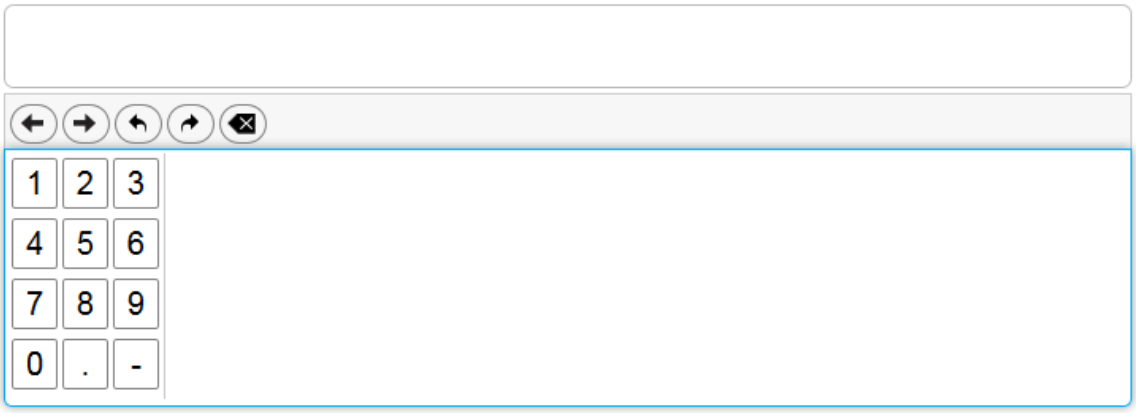
Rubric: (1 point) The student enters the correct value.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#3	1	NS	B	1	7.NS.A.1d	N/A

The number line shows record low temperatures for four states.



Enter the difference, in degrees, between the record low temperatures in Hawaii and South Dakota.



Key: 70

Rubric: (1 point) The student enters the difference between the temperatures.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#4	1	EE	C	1	7.EE.A.1	7

Select the expression equivalent to $(4x + 3) + (-2x + 4)$.

(A) $-2x + 12$

(B) $-8x + 12$

(C) $6x + 7$

(D) $2x + 7$

Key: D

Rubric: (1 point) The student selects the equivalent expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#5	1	EE	C	2	7.EE.A.1	7

Select **all** expressions that are equivalent to $-3.75 + 2(-4x + 6.1) - 3.25x$.

- ☐ $7x - 2x + 8.1$
- ☐ $8.45 - 8x - 3.25x$
- ☐ $-1.75 - 7.25x + 6.1$
- ☐ $-11.25x + 12.2 - 3.75$

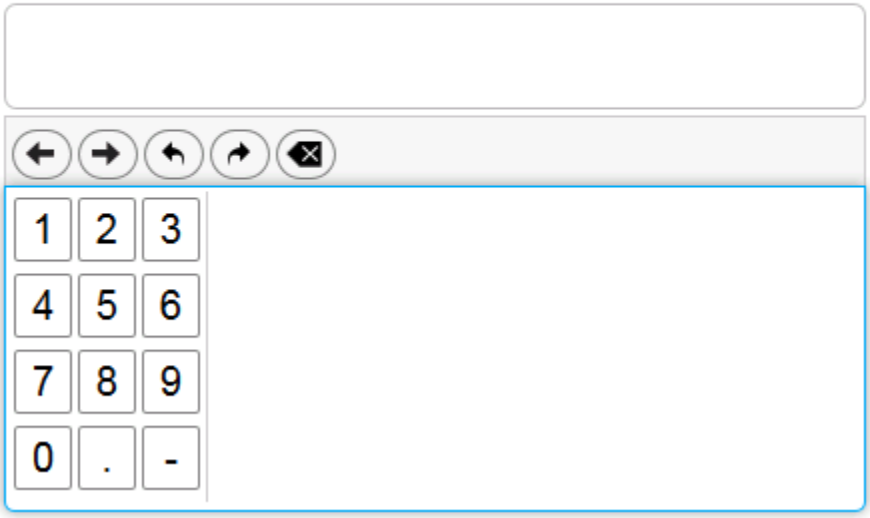
Exemplar: (shown at right)

Rubric: (1 point) The student selects both equivalent expressions.

- ☐ $7x - 2x + 8.1$
- ☑ $8.45 - 8x - 3.25x$
- ☐ $-1.75 - 7.25x + 6.1$
- ☑ $-11.25x + 12.2 - 3.75$

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#6	1	NS	B	1	7.NS.A.2d	N/A

Enter the decimal equivalent of $\frac{11}{8}$.

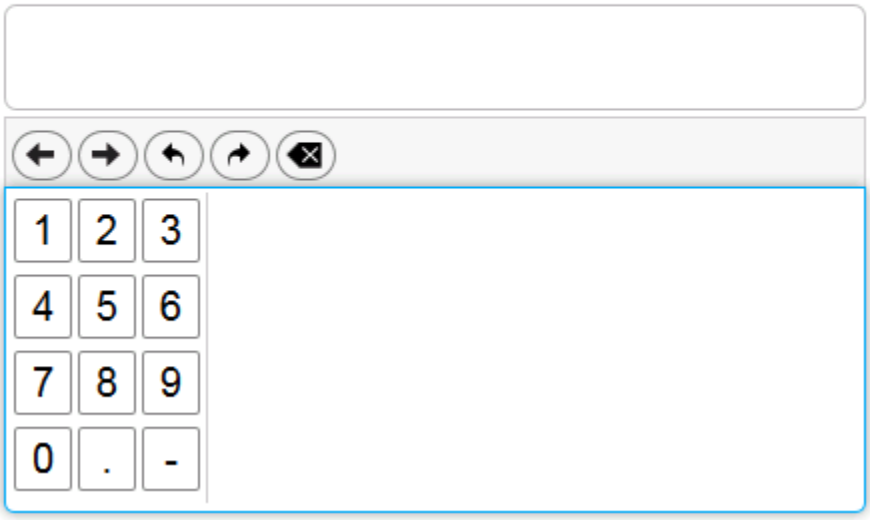


Key: 1.375

Rubric: (1 point) The student enters the decimal equivalent.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#7	1	EE	C	1	7.EE.A.1	N/A

Enter the value of c when the expression $21.2x + c$ is equivalent to $5.3(4x - 2.6)$.



Key: –13.78

Rubric: (1 point) The student enters the correct value.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#8	1	NS	B	1	7.NS.A.2	N/A

Select **all** values equivalent to $-\frac{10}{7}$.

- ☐ $\frac{-10}{-7}$
- ☐ $-3\frac{1}{7}$
- ☐ $1\frac{3}{7}$
- ☐ $-\frac{-10}{-7}$
- ☐ $-1\frac{3}{7}$

Exemplar: (shown at right)

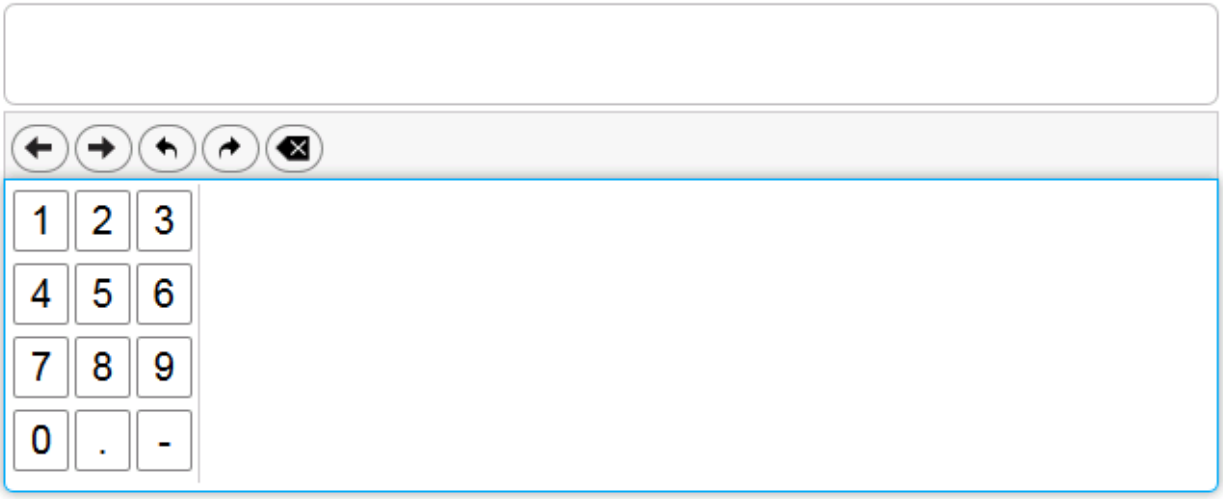
Rubric: (1 point) The student selects the equivalent values.

- ☐ $\frac{-10}{-7}$
- ☐ $-3\frac{1}{7}$
- ☐ $1\frac{3}{7}$
- ☑ $-\frac{-10}{-7}$
- ☑ $-1\frac{3}{7}$

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#9	1	EE	D	2	7.EE.B.4	N/A

Jenny has $25 and she earns $10 for each lawn that she mows. Jenny wants to buy a concert ticket that costs $65.

Enter the minimum number of lawns Jenny needs to mow to be able to buy the concert ticket.



Key: 4

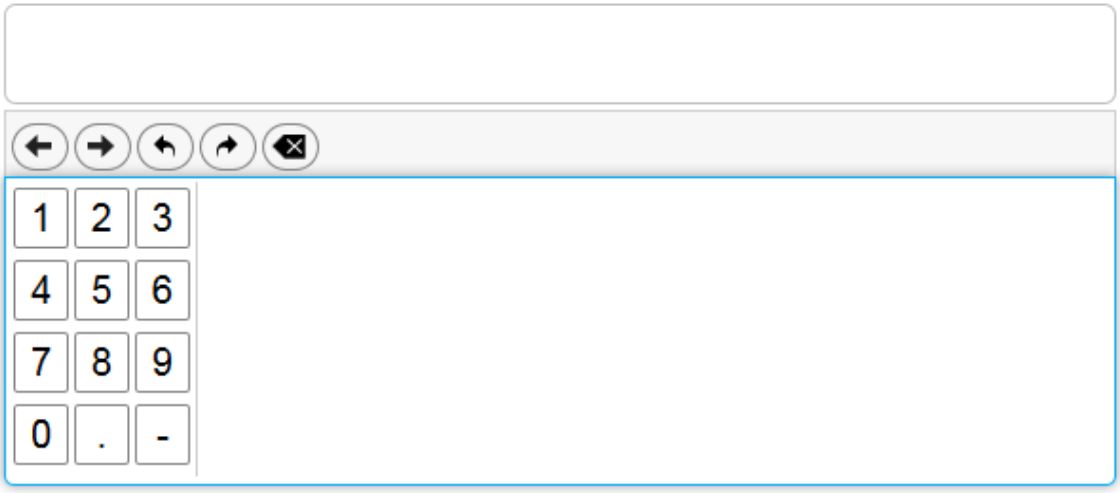
Rubric: (1 point) The student enters the minimum number of lawns.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#10	1	RP	A	2	7.RP.A.1	N/A

This table shows a proportional relationship between the grams of peanuts and raisins in a bag of trail mix.

Grams of Peanuts	Grams of Raisins
14	4
21	6
35	10

Enter the number of grams of peanuts in a bag for every 1 gram of raisins.



Key: 3.5 or equivalent

Rubric: (1 point) The student enters the number of grams of peanuts.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#11	1	SP	I	1	7.SP.C.5	N/A

A bag contains 16 marbles. There are 5 blue, 9 yellow, and 2 red marbles. One marble is selected at random.

Determine whether each statement correctly describes the likelihood of an event based on the given bag of marbles. Select True or False for each statement.

	True	False
It is impossible that a green marble will be selected.	☐	☐
It is unlikely that a yellow marble will be selected.	☐	☐
It is certain that a blue marble will be selected.	☐	☐
It is unlikely that a red marble will be selected.	☐	☐

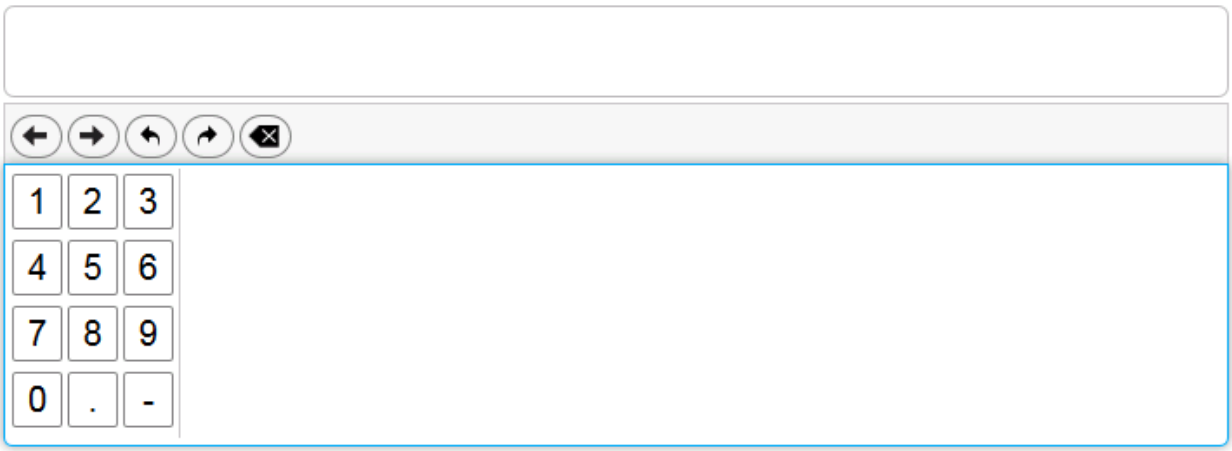
Key: T, F, F, T

Rubric: (1 point) The student correctly identifies the statements as true or false.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#12	2	EE	C	2	7.EE.B.4	2

David goes into a candy store with $5.00. He buys 9 peppermints for $0.15 each, and some sour candies. Each sour candy costs $0.25.

Enter the maximum number of sour candies David can buy.



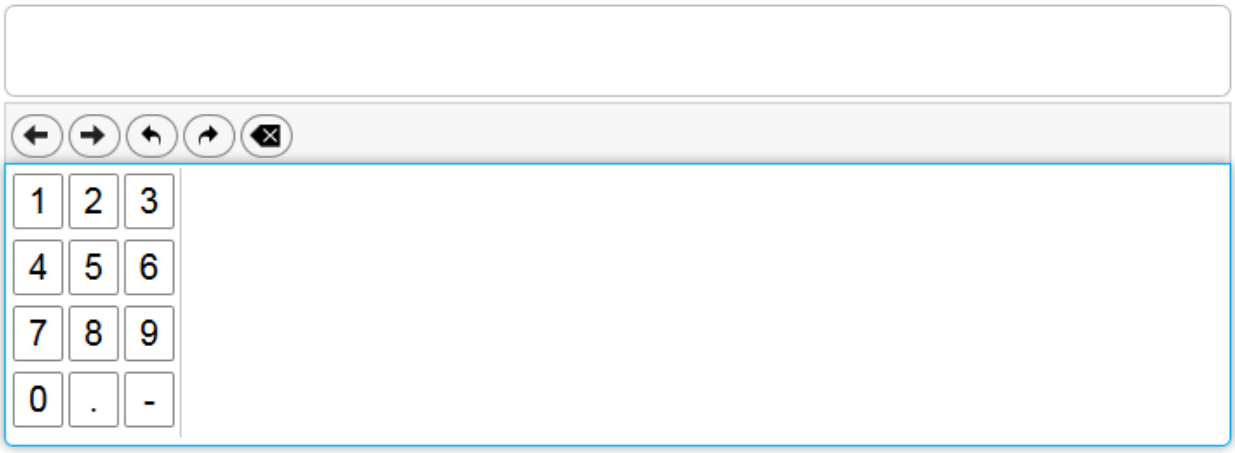
Key: 14

Rubric: (1 point) The student enters the maximum number of candies David can buy.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#13	1	RP	A	2	7.RP.A.3	N/A

Sara buys a sweater at a department store. The sweater costs $30. The store is having a 25% off sale on everything in the store.

Enter the amount of money, in dollars, Sara saves from the sale. Do not consider the sales tax.



Key: 7.50 or equivalent

Rubric: (1 point) The student enters the correct number of dollars.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#14	3	RP	A	2	7.RP.A.2	3

An electrician is hired to install outdoor lighting. The electrician claims that the relationship between the number of hours worked and the total work fee is proportional. The fee for 5 hours of work is $225.

Select **all** combinations of values for the electrician's work hours and total work fee that support the claim that the relationship between the two values is proportional.

- ☐ 6 hours and $270
- ☐ 6.5 hours and $315
- ☐ 8 hours and $360
- ☐ 8.75 hours and $380
- ☐ 9.5 hours and $427.50

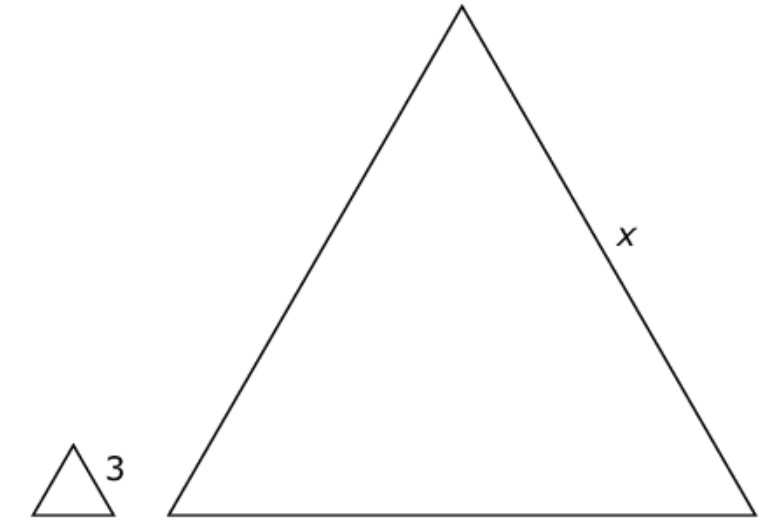
Exemplar: (shown at right)

Rubric: (1 point) The student selects all three correct combinations.

- ☑ 6 hours and $270
- ☐ 6.5 hours and $315
- ☑ 8 hours and $360
- ☐ 8.75 hours and $380
- ☑ 9.5 hours and $427.50

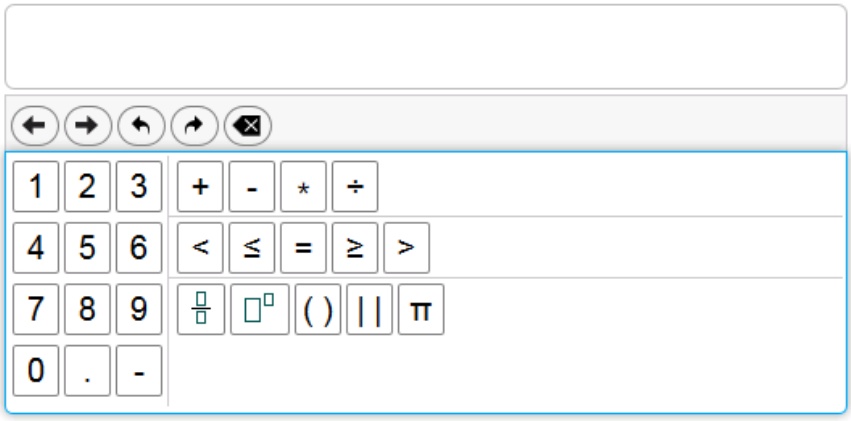
Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#15	1	G	E	2	7.G.A.1	N/A

Figure A is a scale image of Figure B, as shown.



The scale that maps Figure A onto Figure B is $1:7\frac{1}{4}$.

Enter the value of x.



Key: 21.75 or 21¾

Rubric: (1 point) The student enters the value of x.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#16	3	EE	E	2	7.EE.A.1	3, 7

Lisa wrote the expression $(3 + 6x) - 2(x + 1) + 5$. She simplified the expression using the following steps:

Step 1: $3(1 + x) - 2(x + 1) + 5$

Step 2: $3(x + 1) - 2(x + 1) + 5$

Step 3: $(x + 1) + 5$

Step 4: $x + 6$

Lisa says that $(3 + 6x) - 2(x + 1) + 5 = x + 6$. Lisa's statement is incorrect.

In which step did Lisa first make a mistake, and what is a correct expression for that step?

Ⓐ Step 1; $3(1 + 3x) - 2(x + 1) + 5$

Ⓑ Step 1; $3(1 + 2x) - 2(x + 1) + 5$

Ⓒ Step 3; $5(x + 1) + 5$

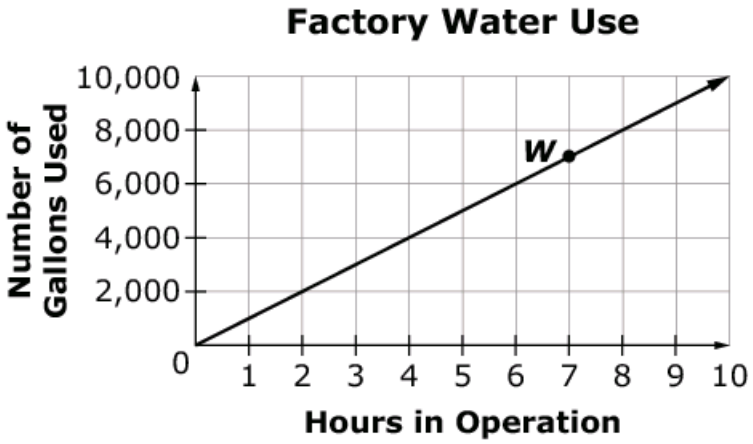
Ⓓ Step 3; $6(x + 1) + 5$

Key: B

Rubric: (1 point) The student selects the correct step and expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#17	1	RP	A	2	7.RP.A.2	N/A

This graph shows a proportional relationship between the number of hours a factory is in operation and the number of gallons of water used.



Select True or False for each statement about the graph.

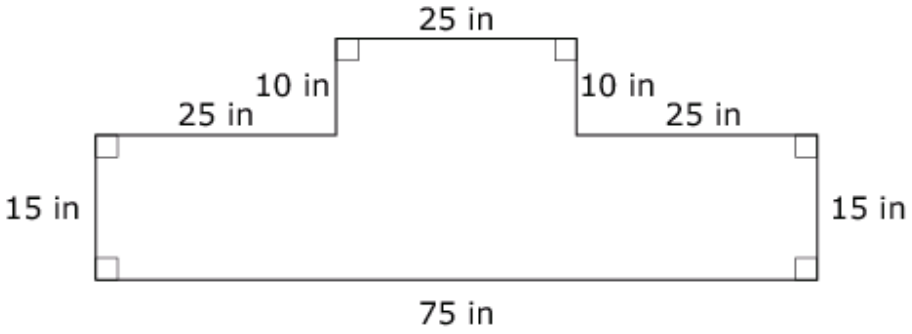
	True	False
The factory uses 4 gallons of water when it is in operation for 4000 hours.	☐	☐
Point *W* represents the number of gallons of water used when the factory is in operation for 7 hours.	☐	☐
The factory uses 9000 gallons of water when it is in operation for 9 hours.	☐	☐

Key: F, T, T

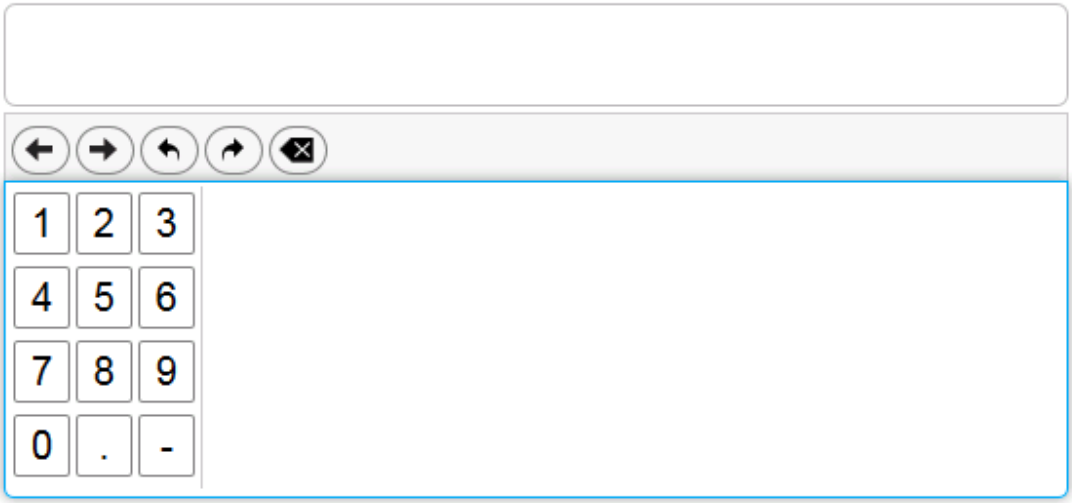
Rubric: (1 point) The student correctly identifies the statements as true and false.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#18	1	G	F	2	7.G.B.6	N/A

The figure shown is created by joining two rectangles.



Enter the area, in square inches, of the figure.



Key: 1375

Rubric: (1 point) The student enters the area of the figure.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#19	3	RP	C	2	7.RP.A.3, 6.RP.A.3	1, 2

Alfonso went to Famous Sam's Appliance Store and purchased a refrigerator and a stove. The sale price of the refrigerator was 40% off the original price and the sale price of the stove was 20% off the original price.

Which statement must be true to conclude that Alfonso received a 30% overall discount on the refrigerator and the stove together?

A. The sale prices of the refrigerator and the stove were the same.

B. The original prices of the refrigerator and the stove were the same.

C. The sale price of the refrigerator was twice the sale price of the stove.

D. The original price of the refrigerator was twice the original price of the stove.

Key: B

Rubric: (1 point) The student selects the correct statement.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#20	1	RP	A	2	7.RP.A.2	N/A

Select **all** tables that represent a proportional relationship between x and y.

☐

x	0	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$
y	0	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$

☐

x	0	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$
y	0	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$

☐

x	0	1	3	5
y	0	1	9	25

☐

x	0	1	3	4
y	0	5	15	20

Exemplar: (shown at right)

Rubric: (1 point) The student selects the tables that represent the given relationship.

☑

x	0	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$
y	0	$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$

☐

x	0	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$
y	0	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{5}$

☐

x	0	1	3	5
y	0	1	9	25

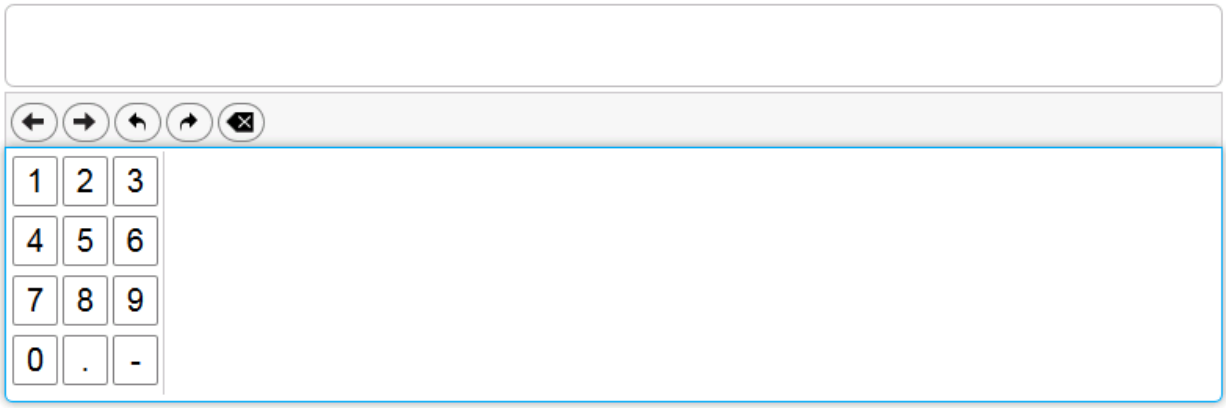
☑

x	0	1	3	4
y	0	5	15	20

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#21	1	G	F	2	7.G.B.4	N/A

The circumference of a circle is approximately 37.7 centimeters.

Enter the radius of the circle, in centimeters. Round your answer to the nearest whole number.

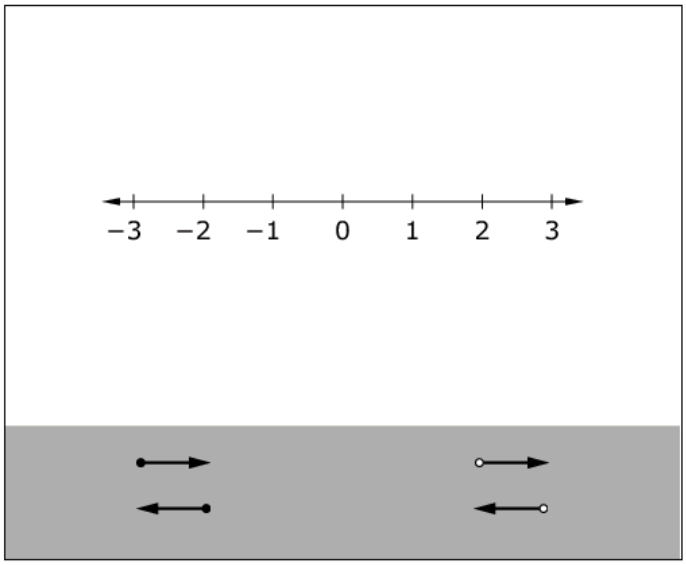


Key: 6

Rubric: (1 point) The student enters the radius of the circle.

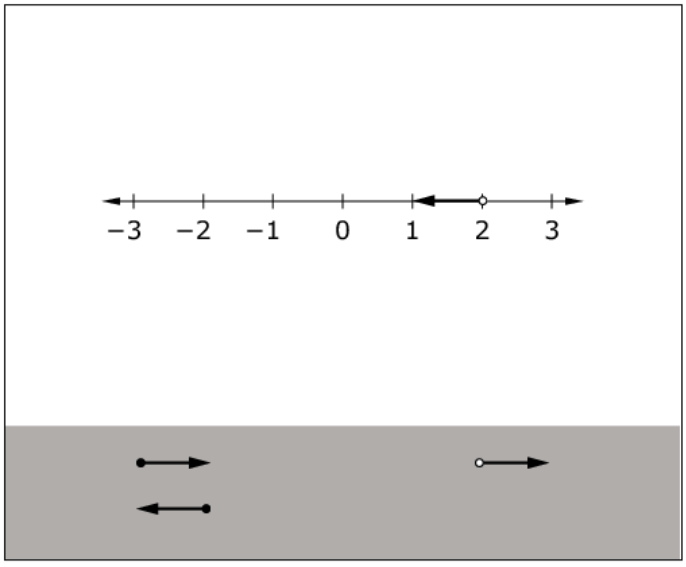
Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#22	1	EE	D	2	7.EE.B.4b	N/A

Drag the correct arrow onto the number line to represent the solution of the inequality $6x - 4 < 8$.



Exemplar: (shown at right)

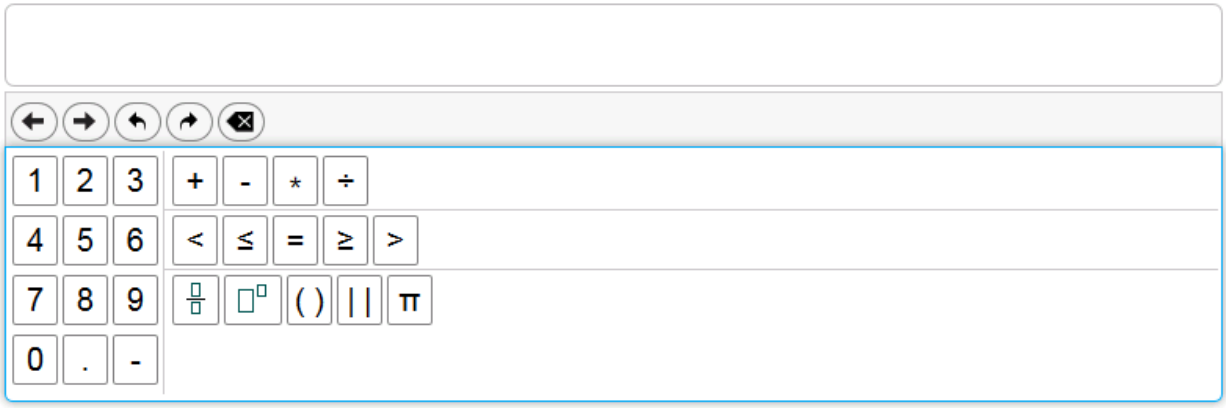
Rubric: (1 point) The student adds the correct arrow to the number line.



Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#23	3	NS	A	2	6.NS.C.7	2, 3

Maria claims that any fraction located between $\frac{1}{5}$ and $\frac{1}{7}$ on a number line must have a denominator of 6.

Enter a fraction that shows Maria's claim is incorrect.

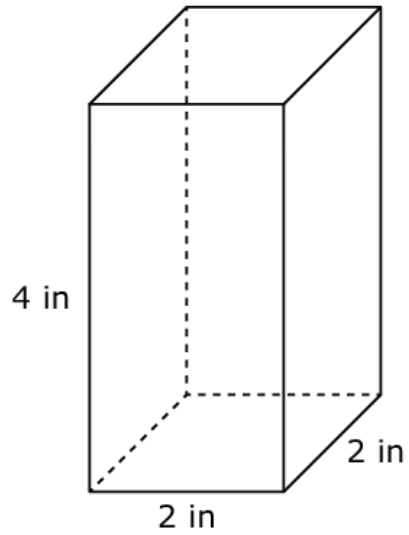


Key: 6/35, 13/70, or any fraction between 1/7 and 1/5

Rubric: (1 point) The student enters a fraction between 1/5 and 1/7 that does not have a denominator of 6.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#24	4	G	D	2	7.G.B.6	1, 4, 7

A company makes two sizes of boxes shaped like rectangular prisms. The large box is 16 inches tall, 10 inches wide, and 10 inches long. The drawing shows the dimensions of the small box.

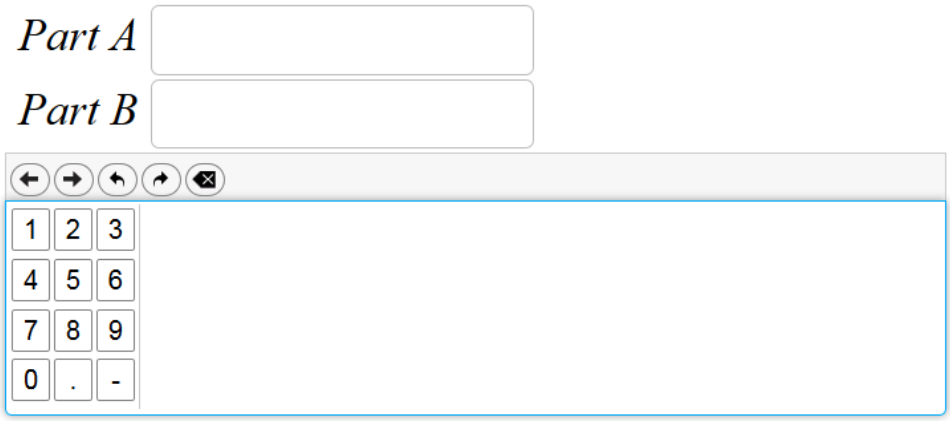


Part A

What is the maximum number of small boxes that can fit inside the large box?

Part B

The company plans to increase the width and length of the large box by 4 inches each to create a new larger box. How many more of the small boxes will be able to fit inside this new larger box compared to the original large box?



Key: Part A: 100

Part B: 96

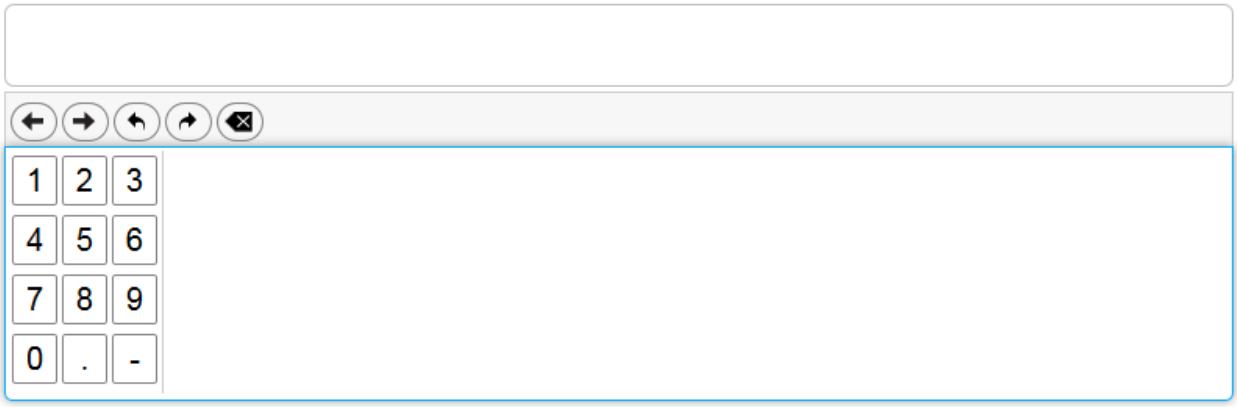
Rubric: (2 points) The student enters the correct value for Part A AND Part B.

(1 point) The student enters the correct value for Part A OR Part B.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#25	2	RP	A	2	7.RP.A.3	1, 7

Lenny bought a motorcycle. He paid 12.5% in tax. The tax added $1437.50 to the price of the motorcycle.

What was the price of the motorcycle, not including the tax?



Key: 11,500

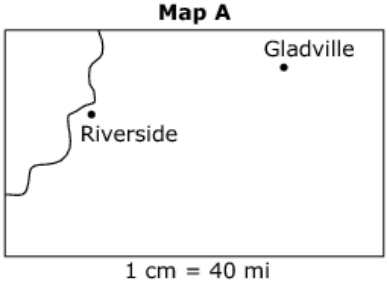
Rubric: (1 point) The student enters the correct price.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#26	4	RP	F	3	7.RP.A.3	2, 5, 7

These two maps show the same area at two different scales.

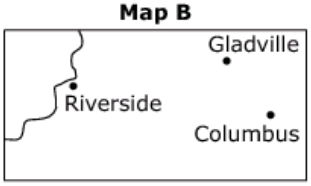
- Columbus is not on Map A.
- Map B does not have a scale written on it.
- Riverside and Gladville are 6.8 cm apart on Map A.
- Riverside and Gladville are 3.4 cm apart on Map B.
- Gladville and Columbus are 1.8 cm apart on Map B.

Map A

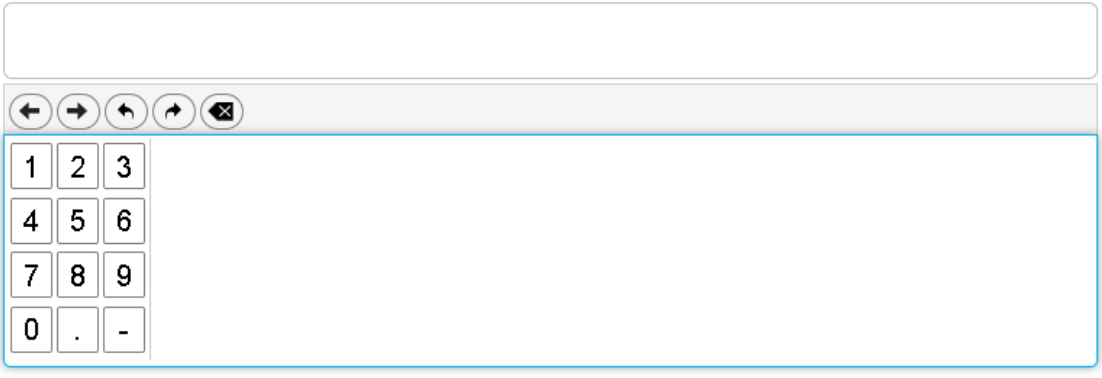


1 cm = 40 mi

Map B



Determine the straight line distance, in miles, from Gladville to Columbus.



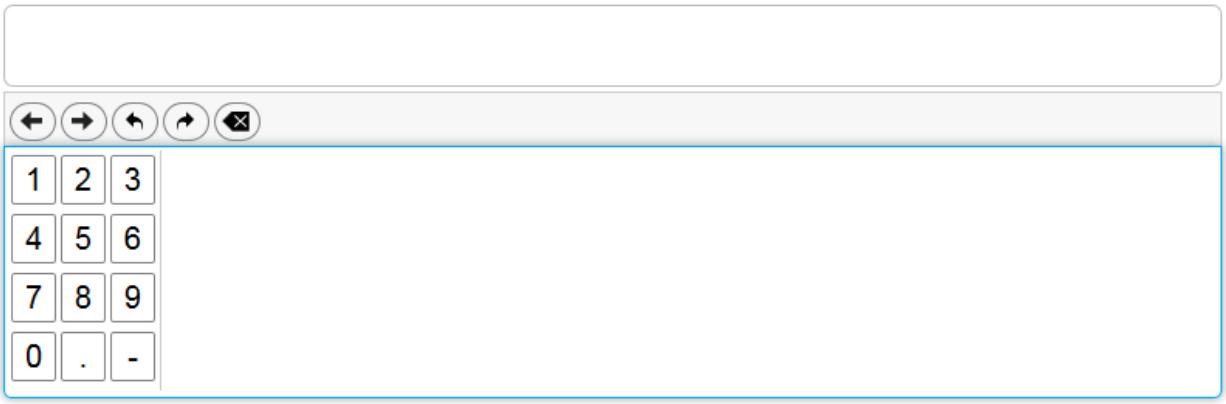
Key: 144

Rubric: (1 point) The student enters the correct distance.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#27	2	G	A	2	7.G.B.6	1, 7

Johnny uses a wheelbarrow to move planting soil to a delivery truck. The volume of planting soil that fits in the wheelbarrow measures 2 feet by 3 feet by 1.5 feet. The delivery truck measures 11 feet by 8 feet and is 6 feet tall. Johnny puts planting soil in the delivery truck until the truck is 70% full.

What is the minimum number of times Johnny needs to use the wheelbarrow until the delivery truck is 70% full?

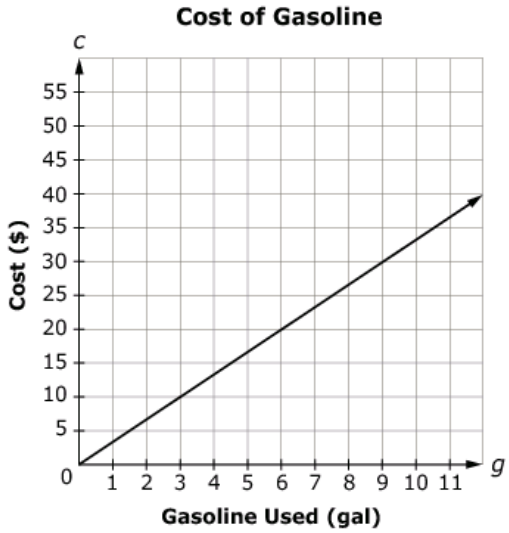


Key: 42

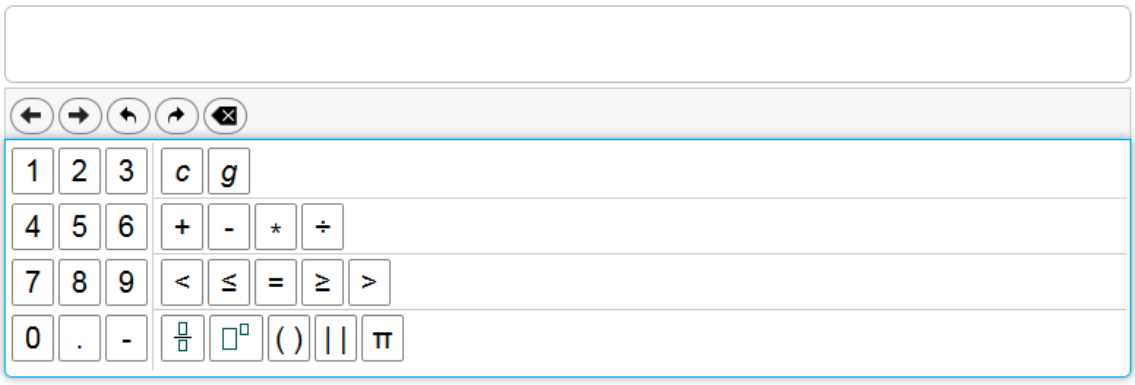
Rubric: (1 point) The student enters the minimum number of times Johnny needs to use the wheelbarrow.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#28	1	RP	A	2	7.RP.A.2	N/A

This graph shows a proportional relationship between the number of gallons of gasoline used (g) and the total cost of gasoline (c).



Find the constant of proportionality (r). Using the value for r, enter an equation in the form of $c = rg$ that represents the relationship between the number of gallons of gasoline used (g) and the total cost (c).



Key: $c = (10/3)g$ or equivalent

Rubric: (1 point) The student enters a correct equation.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#29	3	RP	D	3	6.RP.A.3	7

When playing basketball, Jan makes 4 out of every 10 shots she takes.

Select **all** the statements that describe Jan's situation.

- ☐ The ratio of the number of shots Jan makes to the number of shots she takes is 2:5.
- ☐ The ratio of the number of shots Jan makes to the number of shots she does not make is 2:3.
- ☐ The equation $4x = 10y$ shows the relationship between x, the number of shots Jan makes, and y, the number of shots she takes.
- ☐ The equation $6x = 4z$ shows the relationship between x, the number of shots Jan makes, and z, the number of shots she does not make.

Exemplar: (shown below)

- ☑ The ratio of the number of shots Jan makes to the number of shots she takes is 2:5.
- ☑ The ratio of the number of shots Jan makes to the number of shots she does not make is 2:3.
- ☐ The equation $4x = 10y$ shows the relationship between x, the number of shots Jan makes, and y, the number of shots she takes.
- ☑ The equation $6x = 4z$ shows the relationship between x, the number of shots Jan makes, and z, the number of shots she does not make.

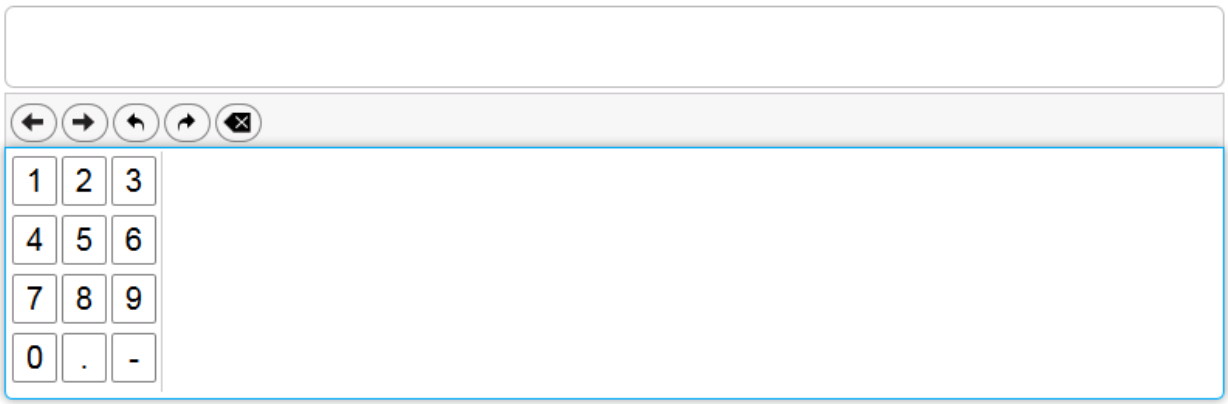
Rubric: (1 point) The student selects all three statements that describe the situation.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#30	4	EE	E	3	7.EE.B.4	1, 4

Mary and Jerry are exercising on a track.

- Mary is walking at a rate of 3 miles per hour.
- Jerry starts jogging at a rate of 4 miles per hour after Mary has been walking for 15 minutes.
- Jerry jogs 2 miles as Mary continues walking, and they both stop at the same time.

Enter the **total** distance, in miles, that Mary walks around the track.



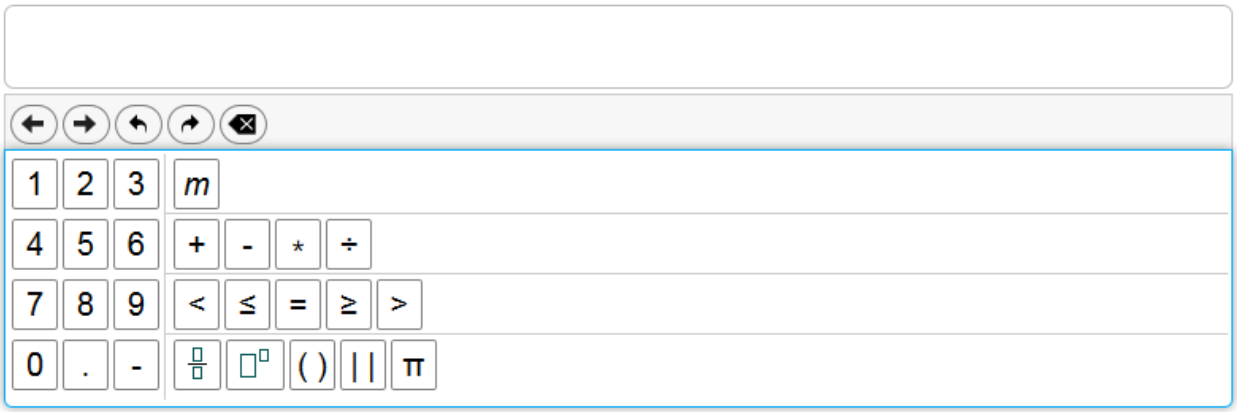
Key: 2.25 or equivalent

Rubric: (1 point) The student enters the total distance.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#31	1	EE	D	2	7.EE.B.4	4

Marcus has a pool that can hold a maximum of 4500 gallons of water. The pool already contains 1500 gallons of water. Marcus begins to add more water at a rate of 30 gallons per minute.

Enter an inequality that shows the number of minutes, *m*, Marcus can continue to add water to the pool without exceeding the maximum number of gallons.

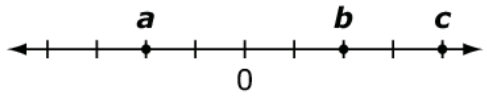


Key: 4500 ≥ 1500 + 30*m* or equivalent

Rubric: (1 point) The student enters a correct inequality.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#32	3	NS	F	2	7.NS.A.1	7, 8

Values for variables *a*, *b*, and *c* are graphed on the number line shown.



Use the graph to evaluate the expressions in the table. Select one column for each row in the table to indicate whether the expression is less than 0, equal to 0, or greater than 0.

Expression	< 0	= 0	> 0
$a - b$			
$a + b$			
$b - c$			
$c - a$			
$a + c$			

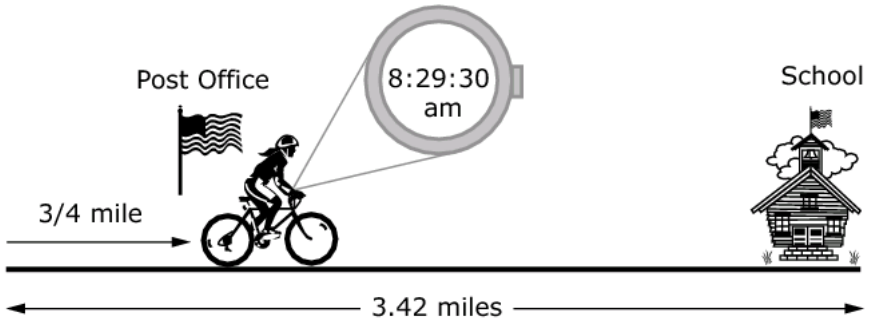
Exemplar: (shown at right)

Rubric: (1 point) The student correctly evaluates each expression.

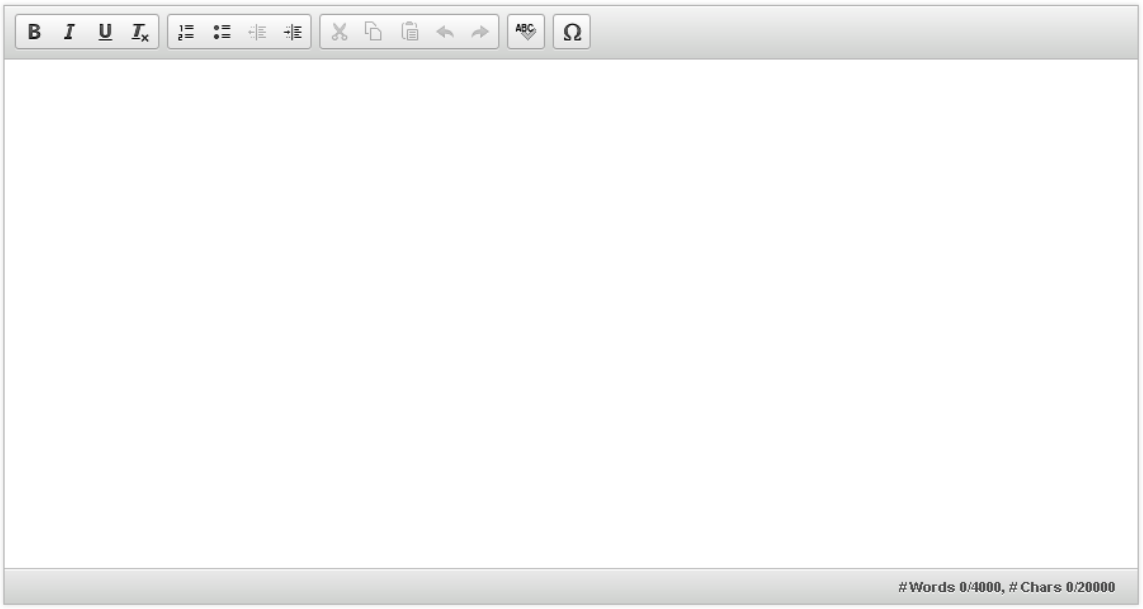
Expression	< 0	= 0	> 0
$a - b$	■		
$a + b$		■	
$b - c$	■		
$c - a$			■
$a + c$			■

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#33	3	RP	B	3	7.RP.A.1	2, 3

Emily leaves her house at exactly 8:25 a.m. to bike to her school, which is 3.42 miles away. When she passes the post office, which is $\frac{3}{4}$ mile away from her home, she looks at her watch and sees that it is 30 seconds past 8:29 a.m.



If Emily's school starts at 8:50 a.m., can Emily make it to school on time without increasing her rate of speed? Show and/or explain the work necessary to support your answer.



Sample Exemplar Responses: (3 points)

Exemplar 1: Emily can travel 3/4 mile in under 5 minutes, so she can travel 3 miles (4x as far) in under 20 minutes (4x as long.) This means that Emily will have traveled 3 miles before 8:45 (20 minutes after she left). Then there is only .42 miles left to go, and since .42 miles is less than 3/4 mile, we know she can cover that distance in less than 5 minutes. That means she will get to school before 8:50, so she will be on time.

Exemplar 2: Emily travels 3/4 mile in 4.5 minutes, so to find her rate of travel we would divide time by distance and get (4.5) / (.75) = 6 minutes per mile. Multiply 6 minutes per mile times the distance she has to travel (3.42 miles) to find the time it would take for her to get to school (20.52). Since 20.52 is less than 21 minutes, we know it will take her less than 21 minutes to get to school. 8:25 + 21 minutes is 8:46, which is before 8:50, so she will make it to school on time.

Rubric: (3 points) The student determines that Emily can make it to school on time at her current rate of speed and includes a valid explanation containing a full chain of reasoning that supports this conclusion. The student may make minor computation errors that do not affect the reasonableness of the explanation.

(2 points) The student determines that Emily can make it to school on time at her current rate of speed and includes a valid explanation containing an incomplete chain of reasoning that supports this conclusion. (An incomplete chain of reasoning can be defined by missing process steps or unsupported calculations in an otherwise complete chain of reasoning.)

OR

The student determines that Emily can make it to school on time at her current rate of speed and includes a valid explanation containing a full chain of reasoning that supports this conclusion, but makes computation errors that affect the reasonableness of the explanation.

(1 point) The student completes the task and reaches a conclusion. The student's explanation attempts to relate distance to time, but contains errors in fundamental mathematical procedures.

(0 points) The student demonstrates a lack of comprehension in regard to the mathematical content and practices essential to the task.