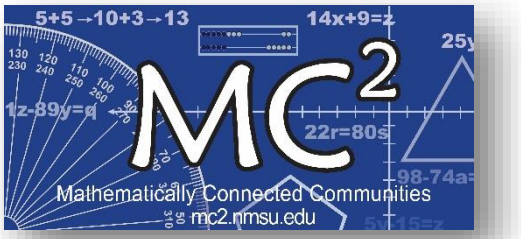
Mathematically Connected Communities



PARCC Practice Test Items
Grade 7 Mathematics

Calculator Allowed

Excerpted from:

- *MC² PARCC Practice Test Item Packets-Preparing for Spring 2017* https://mc2.nmsu.edu/teachers/preparing-for-parcc/
- *MC² PARCC Practice Test Item Packets-Preparing for Spring 2015* https://mc2.nmsu.edu/teachers/preparing-for-parcc/
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- *PARCC Released Items-Spring 2017* https://parcc-assessment.org/released-items/?fwp_subject_facet=mathematics

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MC^2 Thinking Protocol: PARCC Test Prep Using Mathematical Practice Prompts

Use the MC^2 Thinking Protocol and follow the process below in working with the PARCC practice test items found in this packet:

1. Choose items from this packet that relate to math concepts studied in the current or previous curriculum units during your math instruction. Each item may be used as a practice item worksheet.
2. Choose a set of **Thinking/Writing Prompts** below based on the math practice the class is working to develop.
3. Add the prompts to the practice item worksheet or display the prompts for the students to respond to.
4. Continue using the same set of prompts for an extended period of time so children develop competence and confidence in describing their mathematical thinking related to the math practice.

The questions below were intentionally not included on each MC^2 PARCC practice test item worksheet in this packet. These are intended to help students move beyond "answer getting" to fully making sense of test item questions and their own mathematical thinking.

Thinking/Writing Prompts to Promote Mathematical Practices

Math Practice 1: **Make sense of problems and persevere in solving them.**

1. What do you know about the problem?
2. What questions do you have?
3. Explain your reasoning or thinking in solving the problem.

Math Practice 3: **Construct viable arguments and critique the reasoning of others.**

1. What are the assumptions, definitions, and previous knowledge to help in thinking about this problem?
2. What are some possible conjectures that you have about the problem?
3. Explain your mathematical argument so that somebody else can make sense of your thinking.

Math Practice 4: **Model with mathematics.**

1. What are the important quantities in the problem that are needed to solve it?
2. What mathematical operation(s) or representation(s) will you use to solve the problem?
3. Explain how you know your answer makes sense in the context of the situation.

Math Practice 6: **Attend to precision.**

1. What are the important units in the problem? (What are we measuring or counting?)
2. What relationship between the units/quantities do you need to know in order to solve the problem?
3. Use appropriate and precise mathematical language, units, labels and computations to clearly describe your mathematical reasoning.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
1	7.G.4-1	7.G.B.4	Geometry	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 34.

A circular mirror has a diameter of 12 inches.

34. Part A

What is the area, in square inches, of the mirror?

A. 6π

B. 12π

C. 36π

D. 72π

Part B

A circular frame that is 3 inches wide surrounds the mirror.

What is the combined area, in square inches, of the circular mirror and the frame?

A. 9π

B. 18π

C. 54π

D. 81π

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
2	7.C.1-2	OGL	Reasoning	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
3	7.NS.2c	7.NS.A.2.C	The Number System	PARCC Released Items Spring 2017

12.

Which of the following expressions represent a number greater than 1?

Select **each** correct answer.

- ☐ A. $\frac{1}{3} \times 2$
- ☐ B. $2 \div \frac{1}{3}$
- ☐ C. $\frac{1}{4} \times \frac{2}{3}$
- ☐ D. $\frac{3}{4} \div \frac{2}{3}$
- ☐ E. $\frac{2}{3} \times \frac{3}{4}$
- ☐ F. $\frac{2}{3} \div \frac{3}{4}$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
4	7.D.4	OGL	Modeling	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
5	7.C.7-2	OGL	Reasoning	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standards	Domains	Source
6	7.C.6-1	OGL	Reasoning	PARCC Released Items Spring 2017

20.

Devon graphed a line that contains the points shown in this table.

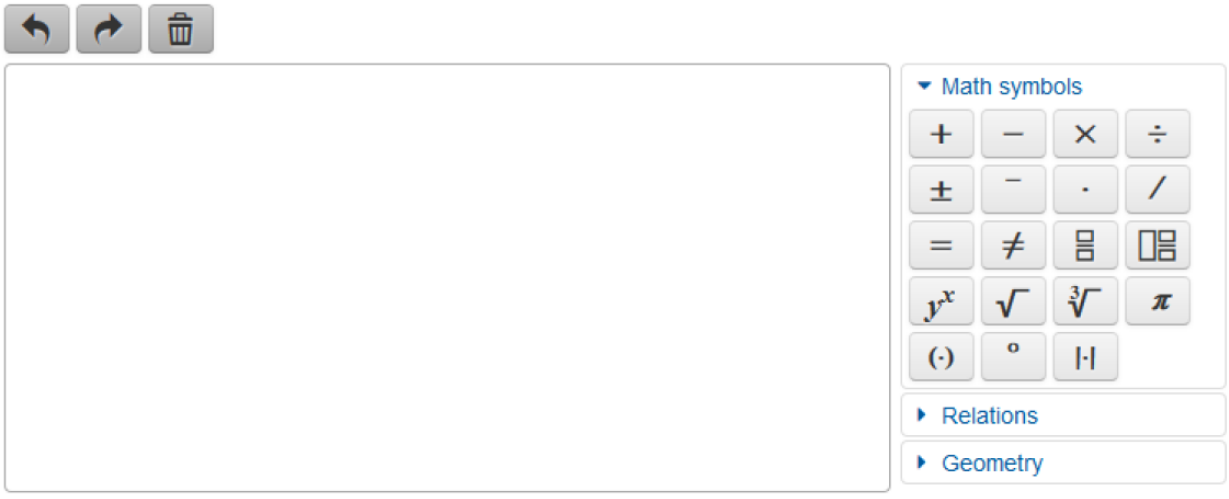
x	*y*
1	1
2	3
3	5
4	7
5	9

Devon concluded that the points in the table represent a proportional relationship for these reasons:

- Reason 1: The table contains the point (1, 1).
- Reason 2: The table contains only positive values.
- Reason 3: The line that contains these points is straight.

For each of Devon's reasons, explain whether or not it **must** indicate that the points in the table are in a proportional relationship. Justify your response for each reason.

Enter your answer and your justification in the space provided.



Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
7	7.EE.4b	7.EE.B.4.B	Expressions & Equations	Illustrative Mathematics

7.EE Sports Equipment Set

Illustrative Mathematics

Task

Jonathan wants to save up enough money so that he can buy a new sports equipment set that includes a football, baseball, soccer ball, and basketball. This complete boxed set costs $50. Jonathan has $15 he saved from his birthday. In order to make more money, he plans to wash neighbors' windows. He plans to charge $3 for each window he washes, and any extra money he makes beyond $50 he can use to buy the additional accessories that go with the sports box set.

Write and solve an inequality that represents the number of windows Jonathan can wash in order to save at least the minimum amount he needs to buy the boxed set. Graph the solutions on the number line. What is a realistic number of windows for Jonathan to wash? How would that be reflected in the graph?

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
7	7.EE.4b	7.EE.B.4.B	Expressions & Equations	PARCC Released Items Spring 2017

13.

A factory sells backpacks for $40.00 each. The cost to make 1 backpack is $10.00. In addition to the costs of making backpacks, the factory has operating expenses of $12,000 per week. The factory's goal is to make a profit of at least $980 each week. Which inequality represents the number of backpacks, x, that need to be sold each week for the factory to meet this goal? How many backpacks must the factory sell to meet its weekly goal?

Select the inequality that represents this situation **and** select the correct statement.

$30x + 12{,}000 \leq 980$

$30x + 12{,}000 \geq 980$

$30x - 12{,}000 \leq 980$

$30x - 12{,}000 \geq 980$

The factory must sell a minimum of 367 backpacks to meet the weekly goal.

The factory must sell a minimum of 368 backpacks to meet the weekly goal.

The factory must sell a minimum of 432 backpacks to meet the weekly goal.

The factory must sell a minimum of 433 backpacks to meet the weekly goal.

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
8	7.EE.1	7.EE.A.1	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

4. Which expression is equivalent to $\frac{1}{4}(8 - 6x + 12)$?

A. $\frac{7}{2}x$

B. $-\frac{13}{2}x$

C. $-6x + 14$

D. $-\frac{3}{2}x + 5$

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
8	7.EE.1	7.EE.A.1	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

16. Which expressions are a factor of $-48xyz - 24xy + 40xyz$?

Select **all** that apply.

A. 4

B. 24

C. $3x$

D. $8y$

E. $2xy$

F. $6xy$

G. xyz

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
8	7.EE.1	7.EE.A.1	Expressions & Equations	PARCC Released Items Spring 2017

4.

An expression is given.

$$(3x - 1) - 2.75(x + 2)$$

Which expression is equivalent to the given expression?

A. $0.25x - 6.50$

B. $0.25x + 1.00$

C. $0.25x + 4.50$

D. $0.25x - 3.00$

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
8	7.EE.1	7.EE.A.1	Expressions & Equations	PARCC Released Items Spring 2017

15.

Julian will factor the expression $36xyz + 24xy - 16x$ by dividing each term by a common factor.

Which possible common factor could Julian use?

Select **each** correct answer.

2 6 8 x $4x$ $8x$ y $6y$ $2xy$

Difficulty Order	Evidence Statement	Common Core State Standards	Domain	Source
9	7.EE.2	7.EE.A.2	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

6. A garden is 15 feet long by 5 feet wide. The length and width of the garden will each be increased by the same number of feet. This expression represents the perimeter of the larger garden:

$$(x + 15) + (x + 5) + (x + 15) + (x + 5)$$

Which expression is equivalent to the expression for the perimeter of the larger garden?

Select **all** that apply.

A. $4x + 40$

B. $2(2x + 20)$

C. $2(x + 15)(x + 5)$

D. $4(x + 15)(x + 5)$

E. $2(x + 15) + 2(x + 5)$

Difficulty Order	Evidence Statement	Common Core State Standards	Domains	Source
9	7.EE.2	7.EE.A.2	Expressions & Equations	PARCC Released Items Spring 2017

6.

The price of a certain item is P dollars. The sales tax on the item is 7%. Which expressions represent the total cost of the item, in dollars, after the tax has been applied?

Select **each** correct answer.

- A. $0.07P$
- B. $1.07P$
- C. $P + 0.07P$
- D. $1 + 0.07P$
- E. $(1 + 0.07)\,P$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
10	7.D.1	OGL	Modeling	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

19. Sal exercised by stretching and jogging 5 days last week.

- He stretched for a total of 25 minutes during the **week**.
- He jogged for an equal number of minutes each of the 5 days.
- He exercised for a total of 240 minutes.

Elena also exercised by stretching and jogging 5 days last week.

- She stretched for 15 minutes each **day**.
- She jogged for an equal number of minutes each of the 5 days.
- She exercised for a total of 300 minutes.

Determine the number of minutes Sal jogged each day last week and the number of minutes Elena jogged each day last week. Show your work or explain all the steps you used to determine your answers.

Enter your answers and your work or explanation in the space provided.

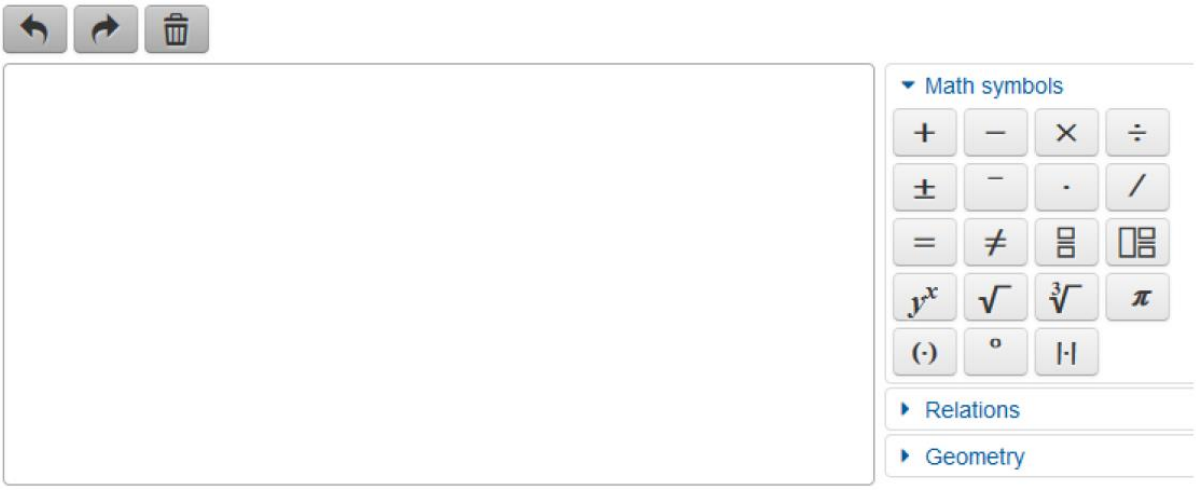
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
10	7.D.1	OGL	Modeling & Reasoning	PARCC Released Items Spring 2017

17.

A scientist removed a sample of 39.1 grams of a chemical from a container. The sample was $5\frac{3}{4}$ grams less than $\frac{3}{10}$ of the total mass of the chemical in the container.

What was the total mass, in grams, of the chemical in the container before the scientist removed the sample of 39.1 grams? Show your work or explain how you know.

Enter your answer and your work or explanation in the space provided.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
11	7.SP.3	7.SP.B.3	Statistics & Probability	Illustrative Mathematics

College Athletes

Illustrative Mathematics

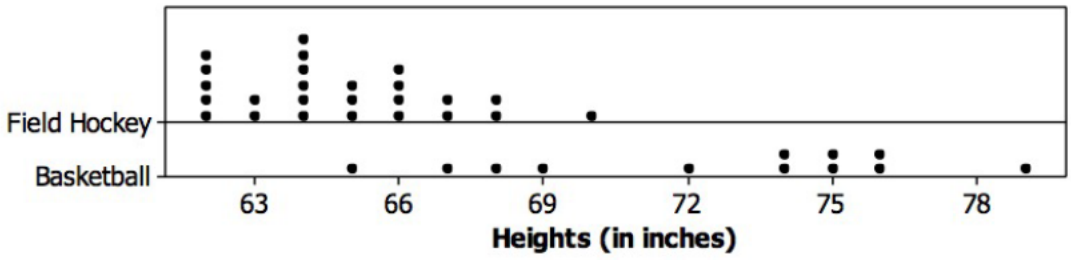
Below are the heights of the players on the University of Maryland women's basketball team for the 2012-2013 season and the heights of the players on the women's field hockey team for the 2012 season. (Accessed at http://www.umterps.com/sports/w-fieldh/mtt/md-w-fieldh-mtt.html, http://www.umterps.com/sports/w-baskbl/mtt/md-w-baskbl-mtt.html on 1/13/13) Note: it is typical for a women's field hockey team to have more players than a women's basketball team would.

Field Hockey Player Heights (inches)	Basketball Player Heights (inches)
66	75
64	65
66	76
63	75
67	76
62	72
62	67
64	69
64	74
64	68

Continued on next page.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
11	7.SP.3	7.SP.B.3	Statistics & Probability	Illustrative Mathematics

65	74
66	79
65	
64	
63	
62	
62	
68	
68	
66	
70	
67	
65	
62	
64	



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Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
11	7.SP.3	7.SP.B.3	Statistics & Probability	Illustrative Mathematics

a. Based on visual inspection of the dotplots, which group appears to have the larger average height? Which group appears to have the greater variability in the heights?

b. Compute the mean and mean absolute deviation (MAD) for each group. Do these values support your answers in part (a)?

c. How many of the 12 basketball players are shorter than the tallest field hockey player?

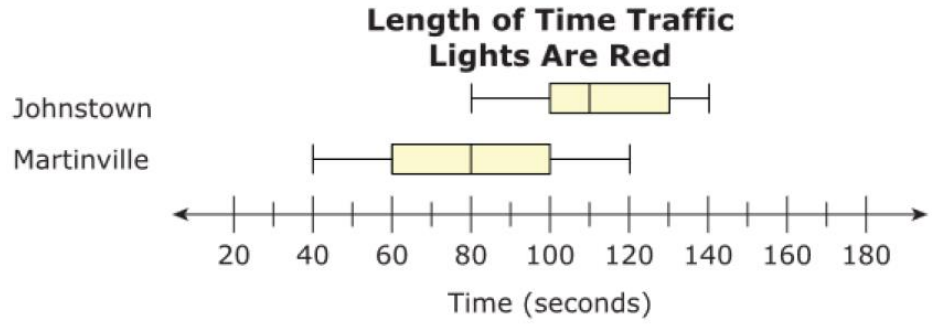
d. Imagine that an athlete from one of the two teams told you she needs to go to practice. You estimate that she is about 65 inches tall. If you had to pick, would you think that she was a field hockey player or that she was a basketball player? Explain your reasoning.

e. The women on the Maryland field hockey team are not a random sample of all female college field hockey players. Similarly, the women on the Maryland basketball team are not a random sample of all female college basketball players. However, for purposes of this task, suppose that these two groups can be regarded as random samples of all female college field hockey players and all female college basketball players, respectiviely. If these were random samples, would you think that female college basketball players are typically taller than female college field hockey players? Explain your decision using answers to the previous questions and/or additional analysis.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
11	7.SP.3	7.SP.B.3	Statistics & Probability	PARCC Released Items Spring 2017

16.

These box plots represent the number of seconds that a random sample of 100 traffic lights are red in each of two cities: Johnstown and Martinville.



Based on the data in the two box plots, which statement about the **difference** in the medians of the two data sets is true?

A. The difference is about $2\frac{2}{3}$ times the range of the data for Johnstown, and about 2 times the range of data for Martinville.

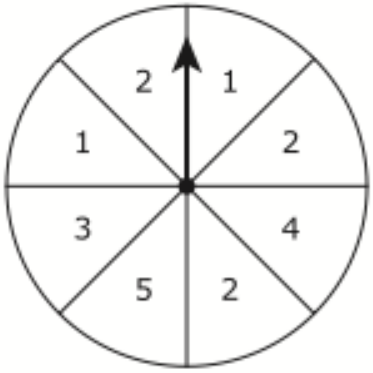
B. The difference is about 2 times the range of the data for Johnstown, and about $2\frac{2}{3}$ times the range of data for Martinville.

C. The difference is about $\frac{3}{8}$ times the range of the data for Johnstown, and about $\frac{1}{2}$ times the range of data for Martinville.

D. The difference is about $\frac{1}{2}$ times the range of the data for Johnstown, and about $\frac{3}{8}$ times the range of data for Martinville.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
12	7.SP.7a	7.SP.C.7.A	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

21. The spinner shown is divided into 8 equal sections.



The arrow on this spinner is spun once.

What is the probability that the arrow will land on a section labeled with a number **greater** than 3?

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

B. $\frac{1}{4}$

C. $\frac{1}{3}$

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

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
13	7.EE.4a-2	7.EE.B.4.A	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

13. Two equations are shown.

- Equation 1: $-0.5x - 4 = 1.5$
- Equation 2: $-0.5(x - 4) = 1.5$

Select **each** statement that **must** be true.

A. x represents a negative value in both equations.

B. x represents a positive value in both equations.

C. x represents a positive value in one equation and a negative value in the other equation.

D. The value x represents in Equation 1 is less than the value x represents in Equation 2.

E. The value x represents in Equation 1 is greater than the value x represents in Equation 2.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
13	7.EE.4a-2	7.EE.B.4.A	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Two equations are shown.

Equation 1: $\frac{2}{3}\left(x-6\right)=6$

Equation 2: $\frac{2}{3}y-6=6$

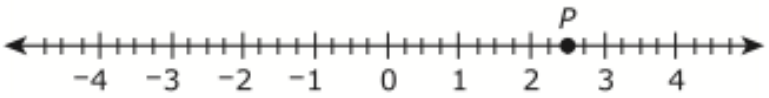
Solve each equation. Then, enter a number in each box to make this statement true.

The value of x is [ ], and the value of y is [ ].

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
14	7.C.8	SHK	Modeling & Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 28.

Point *P* is plotted on the number line.



28. Part A

Point *Q* is the opposite of point *P*. Determine the location of point *Q* on the number line. Explain how you determined the location of point *Q* on the number line.

Enter your answer and your explanation in the space provided.

Part B

Point *S* is located at $\frac{5}{4}$ on the number line. A student claims that the location of point *S* is to the right of the location of point *P* on the number line.

- Explain whether the student's claim is correct or incorrect.
- Write an inequality that describes the relationship between the value of point *P* and the value of point *S*.

Enter your explanation and your inequality in the space provided.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
14	7.C.8	SHK	Modeling & Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

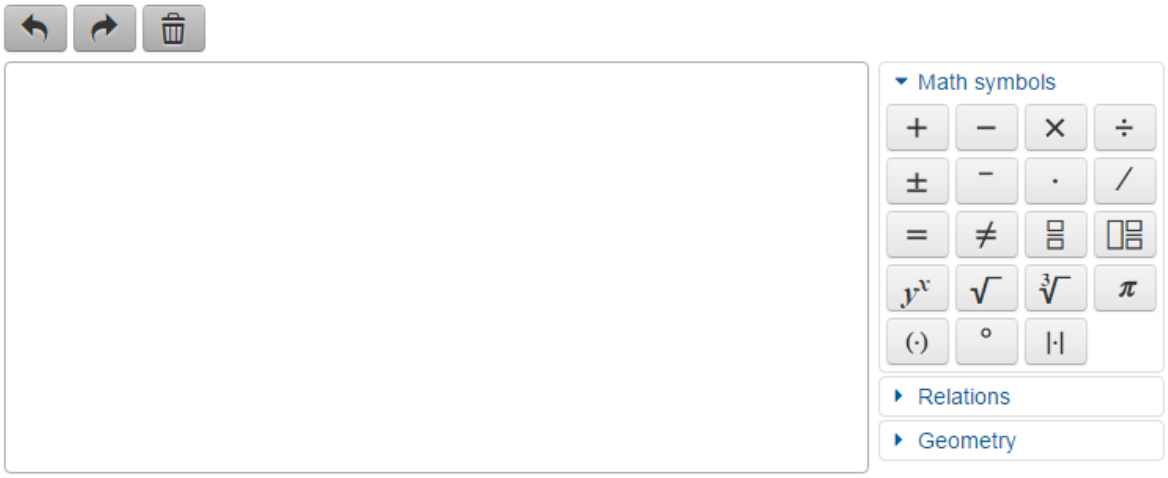
Consider the inequality $5x < 30$.

Part A

Natalia says that any value of *x* less than 25 makes the inequality true.

- Use a specific example to disprove Natalia's statement.
- Explain why your example disproves her statement.

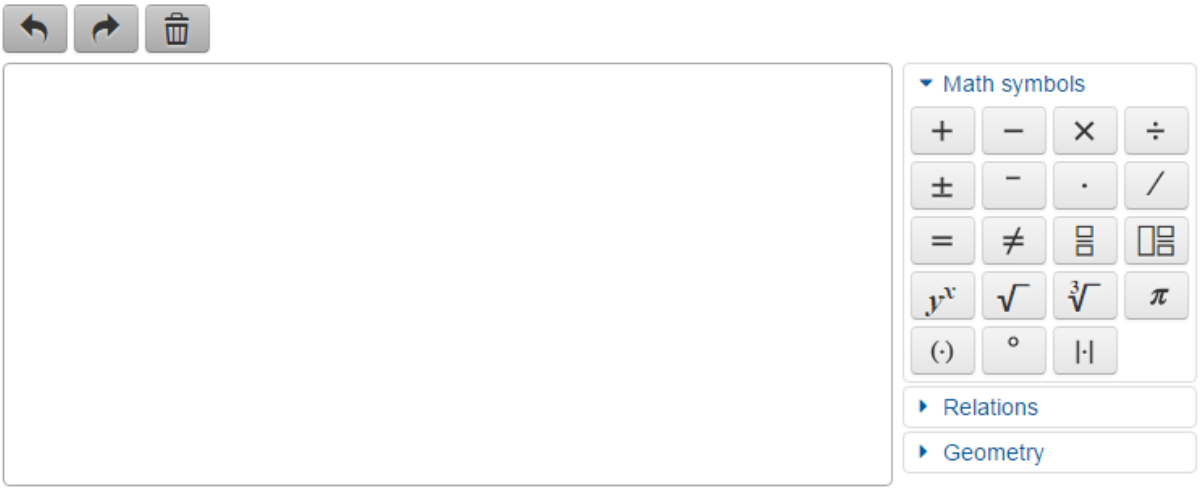
Enter your example and your explanation in the space provided.



Part B

Describe in words all values of *x* that make the inequality true. Explain your answer.

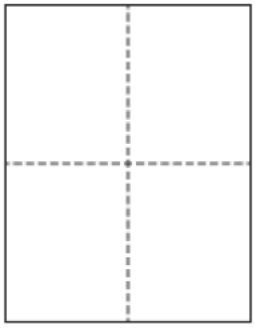
Enter your description and your explanation in the space provided.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
14	7.C.8	SHK	Reasoning	PARCC Released Items Spring 2017

22.

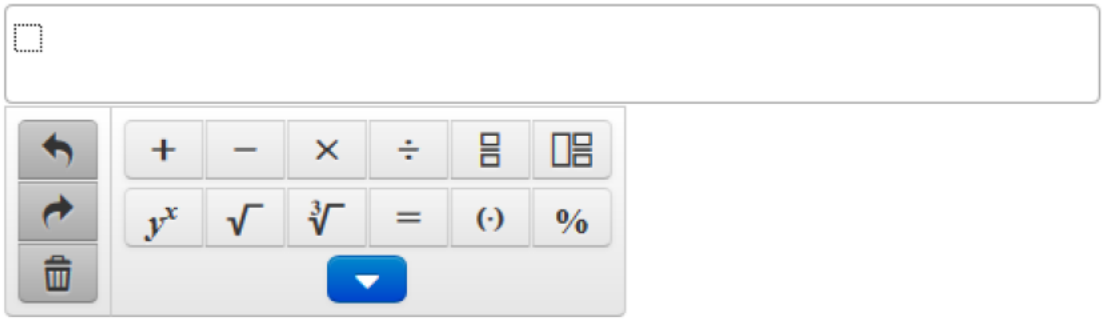
A rectangular sheet of paper has a length of x inches and a width of $\frac{3}{4}x$ inches. Rico folds the paper in half once vertically and once horizontally, forming four smaller equal-sized rectangles, as shown in this diagram.



Part A

Write an expression that represents the perimeter, in inches, of **one** of the four smaller rectangles.

Enter your expression in the space provided. Enter **only** your expression.



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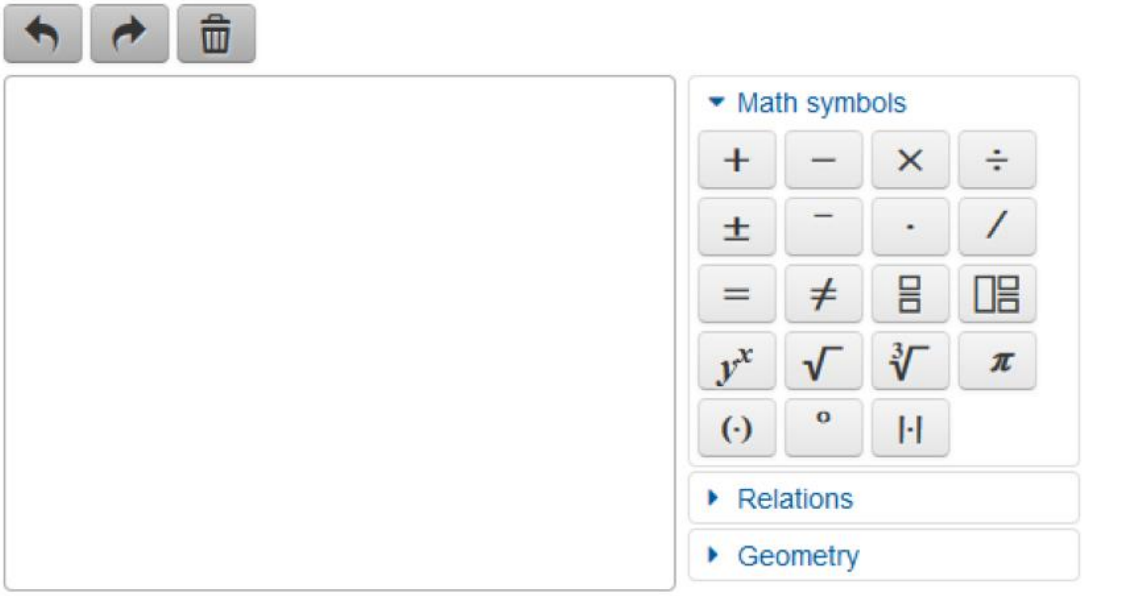
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
14	7.C.8	SHK	Reasoning	PARCC Released Items Spring 2017

Part B

Rico concludes that the sum of the perimeters of all four smaller rectangles is equal to twice the perimeter of the larger rectangle.

Show or explain all of the steps of your reasoning to verify whether or not Rico's conclusion is correct.

Enter your answer and your work or explanation in the space provided.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
15	7.NS.2a-1	7.NS.A.2.A	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

12. Which expressions have products that are positive?

Select **all** that apply.

A. $(-5)(0.2)(-9)$

B. $\left(\frac{2}{3}\right)\left(\frac{3}{2}\right)\left(-\frac{1}{2}\right)$

C. $(6)(-3)(8)(-7)$

D. $\left(-4\frac{1}{3}\right)\left(-\frac{1}{4}\right)\left(-5\frac{1}{2}\right)\left(-\frac{7}{9}\right)$

E. $\left(\frac{5}{6}\right)(-10)\left(3\frac{4}{5}\right)(2)$

F. $(-1.2)(-3.5)(2.7)(-0.8)$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
16	7.C.7-1	OGL	Reasoning	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
17	7.RP.3-2	7.RP.A.3	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 18.

A store owner paid $15 for a book. She marked up the price of the book by 40% to determine its selling price.

18. Part A

What is the selling price, in dollars, of the book?

Enter your answer in the box.

Part B

A customer buys a different book that has an original selling price of $38. The book is discounted 25%. The customer must pay a 6% sales tax on the discounted price of the book.

What is the total amount, in dollars, the customer pays for the discounted book?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
17	7.RP.3-2	7.RP.A.3	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A through Part D for question 24.

The directions on a bottle of vinegar say, "mix 1 cup of vinegar with 1 gallon of water to make a cleaning solution." The ratio of vinegar to water is 1 to 16.

24. Part A

How many **cups** of water should be mixed with $\frac{1}{4}$ cup of vinegar to make the cleaning solution?

Enter your answer in the box.

Part B

How many **fluid ounces** of vinegar should be mixed with 80 fluid ounces of water to make the cleaning solution?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
18	7.G.1	7.G.A.1	Geometry	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 29.

The scale on a map shows that 5 centimeters = 2 kilometers.

29. Part A

What number of centimeters on the map represents an actual distance of 5 kilometers?

Enter your answer in the box.

Part B

What is the actual number of kilometers that is represented by 2 centimeters on the map?

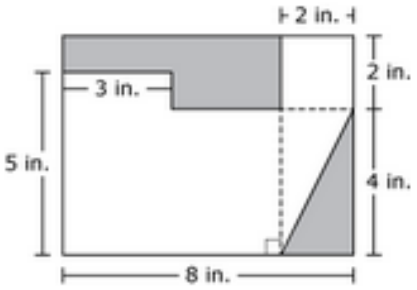
Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
19	7.C.5	OGL	Reasoning	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
20	7.G.6	7.G.B.6	Geometry	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2015

This figure shows two shaded regions and a non-shaded region. Angles in the figure that appear to be right angles are right angles.



Part A

What is the area, in square inches, of the triangular-shaped region that is shaded in this figure?

Enter your answer in the box.

square inches

Part B

What is the area, in square inches, of the non-shaded region in this figure?

Enter your answer in the box.

square inches

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
21	7.G.3	7.G.A,3	Geometry	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

20. Misha has a cube and a right-square pyramid that are made of clay. She placed both clay figures on a flat surface.

Misha will make slices through each figure that are parallel and perpendicular to the flat surface. Which statements are true about the two-dimensional plane sections that **could** result from one of these slices?

Select **all** that apply.

A. A plane section that is triangular could result from one of these slices through the cube.

B. A plane section that is square could result from one of these slices through the cube.

C. A plane section that is rectangular but not square could result from one of these slices through the cube.

D. A plane section that is triangular could result from one of these slices through the pyramid.

E. A plane section that is square could result from one of these slices through the pyramid.

F. A plane section that is rectangular but not square could result from one of these slices through the pyramid.

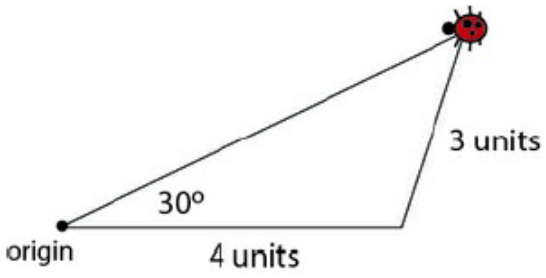
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
22	7.G.2	7.G.A.2	Geometry	Illustrative Mathematics

A task related to standard

Illustrative Mathematics

Starting at the origin, a ladybug walked 4 units east. Then she walked a distance of 3 units in an unknown direction. At that time she was 30 degrees to the north of her original walking direction.

The diagram shows one possibility for the ladybug's final location. Find a different final location that is also consistent with the given information, and draw the ladybug there.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
22	7.G.2	7.G.A.2	Geometry	PARCC Released Items Spring 2017

25.

Liz and Sara each ride their bikes every day.

The table shows the number of miles Liz and Sara rode their bikes during five randomly selected days.

Number of Miles Ridden

	Day 1	Day 2	Day 3	Day 4	Day 5
Liz's distance (miles)	13	9	8	9	11
Sara's distance (miles)	5	5	15	9	6

Based on the data in the table, which is the best comparative statement about the number of miles each girl rides on a typical day?

A. On a typical day, Liz rides farther than Sara because the mean of Liz's data is greater than the mean of Sara's data.

B. On a typical day, Sara rides farther than Liz because the mean of Sara's data is greater than the mean of Liz's data.

C. On a typical day, Liz rides farther than Sara because the range of Liz's data is greater than the range of Sara's data.

D. On a typical day, Sara rides farther than Liz because the range of Sara's data is greater than the range of Liz's data.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
23	7.NS.1d	7.NS.A.1.D	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

15. Which expressions are equivalent to $-3 - (7.5 + 4)$?

Select **all** that apply.

A. $(7.5 + 4) - 3$

B. $-(7.5 + 4) - 3$

C. $-(7.5 + 4) + 3$

D. $-3 - (4 + 7.5)$

E. $-(3 - 7.5) + 4$

F. $-3 + (-7.5 - 4)$

G. $-3 + (-7.5 + 4)$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
23	7.NS.1d	7.NS.A.1.D	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Select the correct number from each drop-down menu to complete the equation.

$\frac{7}{8} - \left(-2 + \frac{3}{4}\right) = ($ Choose... $+$ Choose... $) + \frac{7}{8}$

2	**2**
-2	**-2**
3/4	**4/3**
-4/3	**-3/4**

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
24	7.G.5	7.G.B.5	Geometry	

23.

Angle *JKL* and angle *MKQ* are complementary angles.

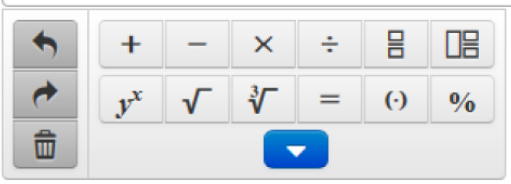
The measure of angle *JKL* is twice the measure of angle *MKQ*.

Write one equation to find *x*, the measure of angle *MKQ*, and then solve for *x*.

Enter your equation and your solution in the space provided.

Equation: ☐

Measure of angle MKQ: ☐ °



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
25	7.RP.2a	7.RP.A.2.A	Ratios & Proportional Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

36. A right triangle has legs measuring 4.5 meters and 1.5 meters.

The lengths of the legs of a second triangle are proportional to the lengths of the legs of the first triangle.

Which could be the lengths of the legs of the second triangle?

Select **each** correct pair of lengths.

A. 6 m and 2 m

B. 8 m and 5 m

C. 7 m and 3.5 m

D. 10 m and 2.5 m

E. 11.25 m and 3.75 m

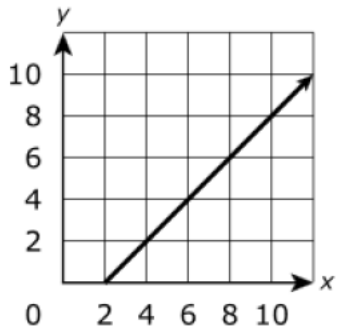
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
25	7.RP.2a	7.RP.A.2.A	Ratios & Proportional Reasoning	PARCC Released Items Spring 2017

28.

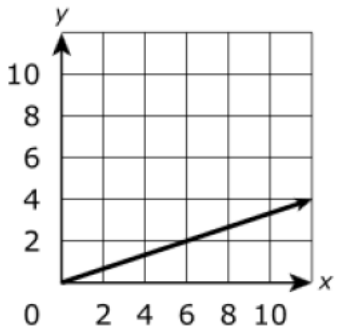
Which graphs represent a proportional relationship between x and y?

Select **each** correct answer.

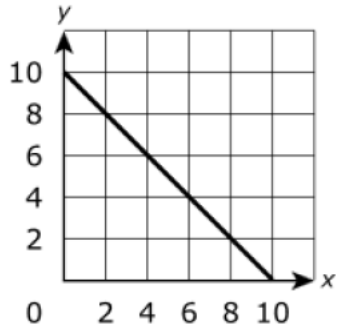
☐ A.



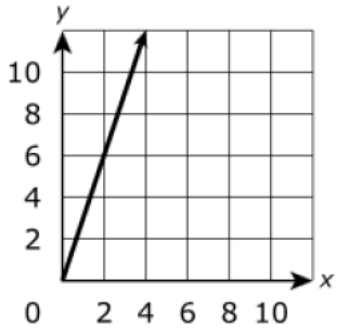
☐ B.



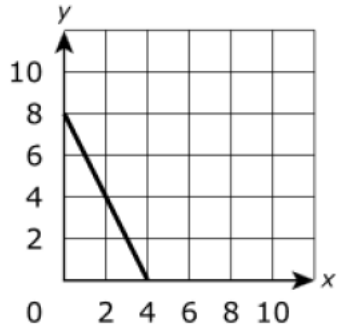
☐ C.



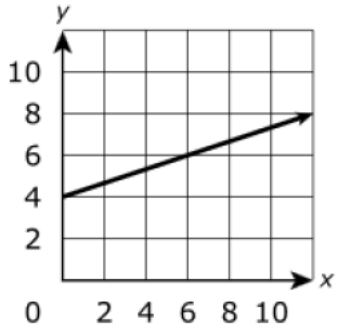
☐ D.



☐ E.



☐ F.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
26	**7.SP,7b**	**7.SP.C.7.B**	**Statistics & Probability**	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
27	7.EE.3	7.EE.B.3	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 38.

A teacher surveyed students in four classes to determine the location for a field trip. Each student chose only one location. The table shows the number of students from each class who chose each location.

Field Trip Choices

Class	Number of Students Who Chose the Zoo	Number of Students Who Chose the Museum	Number of Students Who Chose the Planetarium
Class E	10	9	8
Class F	8	11	11
Class G	12	8	5
Class H	6	10	8

38. Part A

Determine the percent of students in each class who chose the museum. What is the order, from **least** to **greatest**, of the percents for each class?

A. Class E, Class F, Class G, Class H

B. Class G, Class E, Class F, Class H

C. Class G, Class E, Class H, Class F

D. Class H, Class F, Class E, Class G

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
27	7.EE.3	7.EE.B.3	Expressions & Equations	PARCC Released Items Spring 2017

18.

Howard has a garden in the shape of a rectangle.

- The length is 5.4 meters.
- The width is 1.5 meters.

Howard will increase both the length and the width by 20% each.

Part A

What will be the perimeter, in meters, of the enlarged garden?

Enter your answer in the box.

Part B

By how many square meters will the area of the garden **increase**?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
28	7.NS.1c-1	7.NS.A.1.c	The Number System	MC² PARCC Practice Test Item Packets-Preparing for Spring 2017

1. Which expressions are equivalent to $3\frac{1}{4} - \left(-\frac{5}{8}\right)$?

Select **all** that apply.

A. $3\frac{1}{4} - \left(\frac{5}{8}\right)$

B. $3\frac{1}{4} + \left(\frac{5}{8}\right)$

C. $3\frac{1}{4} + \left(-\frac{5}{8}\right)$

D. $3\frac{1}{4} + \left(+\frac{5}{8}\right)$

E. $-3\frac{1}{4} + \left(-\frac{5}{8}\right)$

F. $-3\frac{1}{4} + \left(+\frac{5}{8}\right)$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
28	7.NS.1c-1	7.NS.A.1.c	The Number System	PARCC Released Items Spring 2017

1.

Determine which expressions are equivalent to $\frac{1}{4} - \frac{2}{3} - \left(\frac{1}{2} + \frac{5}{6}\right)$.

Select **each** correct answer.

- ☐ A. $\frac{1}{4} - \frac{2}{3} + \left(\frac{1}{2} - \frac{5}{6}\right)$
- ☐ B. $\frac{1}{4} + \frac{2}{3} + \left(\frac{1}{2} - \frac{5}{6}\right)$
- ☐ C. $\frac{1}{4} + \left(-\frac{2}{3}\right) - \frac{1}{2} - \frac{5}{6}$
- ☐ D. $\frac{1}{4} - \frac{2}{3} + \left(-\frac{1}{2}\right) + \left(-\frac{5}{6}\right)$
- ☐ E. $\frac{1}{4} - \frac{2}{3} - \left(-\frac{1}{2}\right) + \left(-\frac{5}{6}\right)$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
29	7.SP.1	7.SP.A.1	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

17. Josephine owns a diner that is open every day for breakfast, lunch, and dinner. She offers a regular menu and a menu with daily specials. She wanted to estimate the percentage of her customers who order specials. She selected a random sample of 50 customers who had lunch at her diner during a three-month period. She determined that 28% of these customers ordered from the menu with specials.

Which statement about Josephine's sample is true?

A. The sample is the percentage of customers who order daily specials.

B. The sample might not be representative of the population because it only included lunch customers.

C. The sample shows that exactly 28% of Josephine's customers ordered daily specials.

D. No generalizations can be made from this sample, because the sample size of 50 is too small.

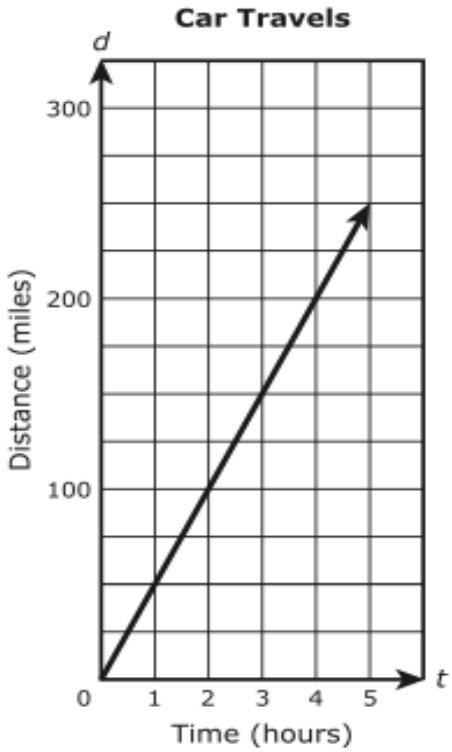
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
30	**7.C.3**	**OGL**	**Reasoning**	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
31	7.C.4	OGL	Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

37. Part A

The graph shows the distance in miles, *d*, a car travels in *t* hours.



Explain why the graph does or does not represent a proportional relationship between the variables *d* and *t*.

Enter your explanation in the space provided.

Part B

Two cars leave from the same city at the same time and drive in the same direction. The table shows the distances traveled by each car.

Two Cars Travel

Hours of Travel	Miles Traveled by Red Car	Miles Traveled by White Car
1	77	55
2	122	110
3	167	165
4	212	220
5	257	275

- Determine whether the relationship between the number of hours traveled and the number of miles traveled is proportional for each car.
- Use the table to explain how you determined your answers.
- Describe how the graph of the distance traveled by each car would support your answers.

Enter your answers and your explanations in the space provided.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
32	7.RP.3-1	7.RP.A.3	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2015

The directions on a bottle of vinegar say, "mix 1 cup of vinegar with 1 gallon of water to make a cleaning solution." The ratio of vinegar to water is 1 to 16.

Part A

How many **cups** of water should be mixed with $\frac{1}{4}$ cup of vinegar to make the cleaning solution?

Enter your answer in the box.

_____ cups

Part B

How many **fluid ounces** of vinegar should be mixed with 80-fluid ounces of water to make the cleaning solution?

Enter your answer in the box.

_____ ounces

Part C

The bottle contains 1 quart of vinegar.

What is the **total number of quarts of cleaning solution** that can be made using the entire bottle of vinegar?

Enter your answer in the box.

_____ quarts of cleaning solution

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
32	7.RP.3-1	7.RP.A.3	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

19.

A factory has two types of machines.

- The factory has 6 cutting machines and 4 stamping machines.
- Each cutting machine cuts 105 parts every 3 minutes.
- Each stamping machine stamps 24 parts every 20 seconds.

Part A

How many parts can all 6 cutting machines cut in 1 minute?

A. 105 parts

B. 140 parts

C. 210 parts

D. 315 parts

Part B

The factory needs to stamp 4,320 parts. How many minutes will it take for all 4 stamping machines to stamp 4,320 parts?

A. 10 minutes

B. 15 minutes

C. 45 minutes

D. 60 minutes

Continued on next page.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
32	7.RP.3-1	7.RP.A.3	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

Part C

One of the cutting machines is shut down for repairs. How many parts can the remaining machines cut in $4\frac{1}{2}$ hours?

- A. 788 parts
- B. 2,363 parts
- C. 28,350 parts
- D. 47,250 parts

Part D

All of the machines are kept cool by circulating cold water through them. The water makes 1 complete cycle through a 30 foot long tube every 12 seconds. Correctly complete the statement about the distance traveled by the water in 3 minutes and number of complete cycles the water makes in 3 minutes.

Select from the drop-down menus to correctly complete the sentence.

The water travels [150 / 216 / 360 / 450] feet and completes [8 / 15 / 30 / 36] cycles in 3 minutes.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
33	7.RP.1	7.RP.A.1	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

26. A train traveled $\frac{1}{5}$ of the distance between two cities in $\frac{3}{4}$ hour.

At this rate, how many hours will it take the train to travel the entire distance between these two cities?

A. $\frac{3}{20}$

B. $\frac{4}{15}$

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

D. $6\frac{2}{3}$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
33	7.RP.1	7.RP.A.1	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

A $4\frac{1}{2}$ -ounce hamburger patty has $25\frac{1}{2}$ grams of protein, and 6 ounces of fish has 32 grams of protein. Determine the grams of protein per ounce for each type of food.

Select from the drop-down menus to correctly complete each statement.

A hamburger patty has approximately [Choose...] grams of protein per ounce.

.2
4.5
5.7
21.0
25.5

The fish has approximately [Choose...] grams of protein per ounce.

.2
5.3
6.0
26.0
32.0

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
33	7.RP.1	7.RP.A.1	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

30. Rosy waxes $\frac{2}{3}$ of her car with $\frac{1}{4}$ bottle of car wax.

At this rate, what fraction of the bottle of car wax will Rosy use to wax her entire car?

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

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

C. $\frac{3}{8}$

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

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
33	7.RP.1	7.RP.A.1	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

21.

A person operating a machine can mow 0.75 acres in $\frac{1}{2}$ hour. What is the rate, in acres per hour, that the person can mow? Write your answer as a decimal.

Enter your answer in the box.

[ ] acres per hour

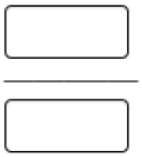
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
33	7.RP.1	7.RP.A.1	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

24.

Katie completes $\frac{2}{3}$ of a craft project in $\frac{3}{4}$ of an hour.

At this rate, what fraction of the craft project does Katie complete in one hour? Give your answer in fraction form.

Enter your answer in the boxes.

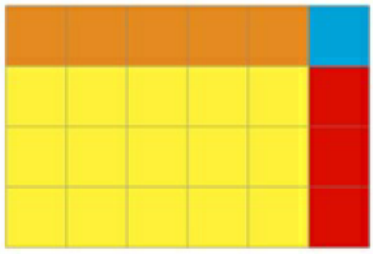


Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
34	7.NS.2a-2	7.NS.A.2.A	The Number System	Illustrative Mathematics

7.NS Distributive Property of Multiplication

Illustrative Mathematics

Lucia uses the picture below to explain the distributive property for the expression $(3+1) \times (5+1)$:



a. Find $(3+1) \times (5+1)$ using the distributive property.

b. Explain how Lucia's picture relates to your calculation in (a).

c. How can Lucia use a picture to find $(3-1) \times (5-1)$ using the distributive property? Explain.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
35	7.D.3	OGL	Modeling	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

27. A scientist planted seeds in 4 sections of soil for an experiment. Not all of the seeds grew into plants. After 20 days, the scientist counted the number of plants in each of the 4 sections. The results are shown in the table.

Plant Experiment

Section	Size of Section (square feet)	Number of Plants
1	25	13
2	100	38
3	125	47
4	150	62

- Use the data in the table to determine approximately how many plants grew per square foot.
- Explain or show how you determined your approximation.
- Let y be the number of plants expected to grow in x square feet. Write an equation the scientist could use to model the relationship between y and x.

Enter your approximation, explanation, and equation in the space provided.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
36	7.NS.2b-2	7.NS.A.2.B	The Number System	PARCC Released Items Spring 2017

5.

Here is an expression.

$\frac{3}{5} \div \frac{1}{4}$

Which situation matches this expression?

A. An athlete runs $\frac{3}{5}$ kilometer in 4 minutes. At that rate, how many kilometers does the athlete run in 1 minute?

B. A teacher fills an empty white pitcher with $\frac{3}{5}$ gallon of water and an empty blue pitcher with $\frac{1}{4}$ gallon of water. How many more gallons of water are now in the white pitcher than in the blue pitcher?

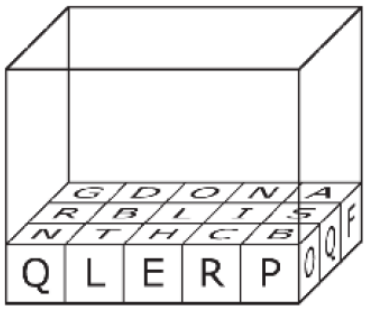
C. Mr. Smith has $\frac{3}{5}$ pound of beans. He uses $\frac{1}{4}$ pound of beans each week. At that rate, for how many weeks will his beans last?

D. A worker cuts pieces of string that are each $\frac{3}{5}$ yard in length. How many pieces of string can the worker cut from a piece of string that is $\frac{1}{4}$ yard in length?

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
37	7.D.2	SHK	Modeling	PARCC Released Items Spring 2017

27.

The bottom of the inside of a rectangular prism is completely covered with a layer of letter cubes, as shown.



Not drawn to scale.

The edges of each letter cube are $1\frac{1}{2}$ inches long.

Part A

What are the length and the width, in inches, of the bottom of the inside of the prism?

Enter your answers in the space provided. Enter **only** your answers.

☐ inches long

☐ inches wide

Continued on next page.

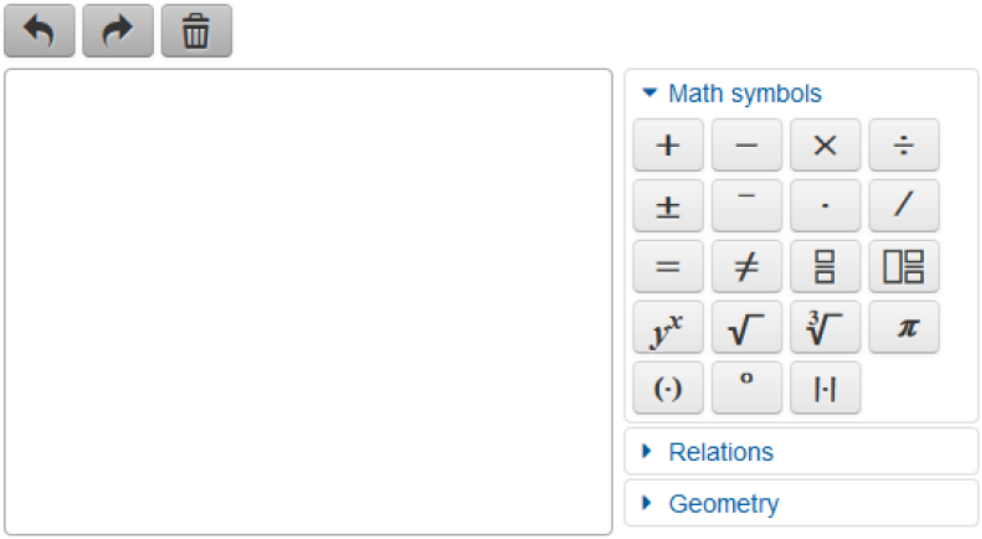
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
37	7.D.2	SHK	Modeling	PARCC Released Items Spring 2017

Part B

The height inside the rectangular prism is $\frac{3}{4}$ foot.

How many layers of letter cubes can fit inside the prism? Show or explain how you determined your answer.

Enter your answer and your work or explanation in the space provided.



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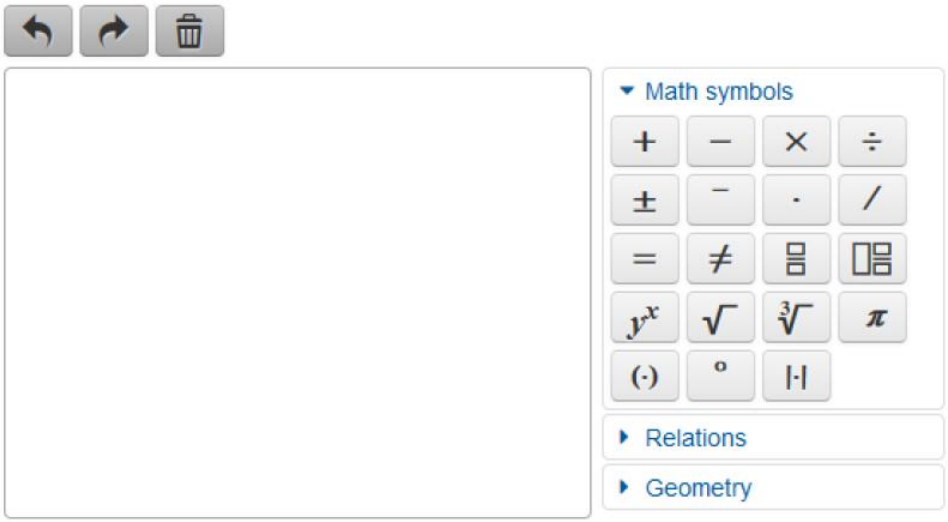
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
37	7.D.2	SHK	Modeling	PARCC Released Items Spring 2017

Part C

The weight of the prism when empty is $\frac{1}{4}$ pound. The weight of the prism when it is completely filled with letter cubes is 4 pounds.

What is the weight, **in ounces**, of one letter cube? Show or explain how you determined your answer.

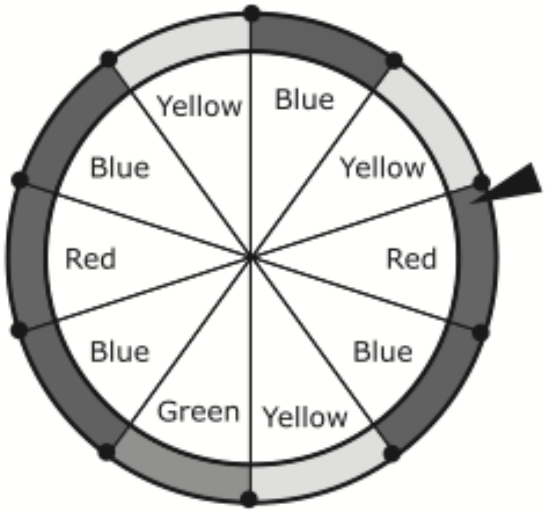
Enter your answer and your work or explanation in the space provided.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
38	7.SP.8c	7.SP.C.8.C	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

31. Part A

A game at a carnival has 4 colors on a wheel, as seen in the diagram. Each section of the wheel is the same size.



Lori wants to design a computer simulation to study how many spins it takes to land on each color once. Using the digits 0 through 9, she will assign a digit to each section of the wheel. Which option describes how the digits can be assigned?

A. Assign the digit 0 to blue, 1 to yellow, 2 to red, and 3 to green.

B. Assign the digit 4 to blue, 3 to yellow, 2 to red, and 1 to green.

C. Assign the digits 0, 1, and 2 to blue; 3, 4, and 5 to yellow; 6, 7, and 8 to red; and 9 to green.

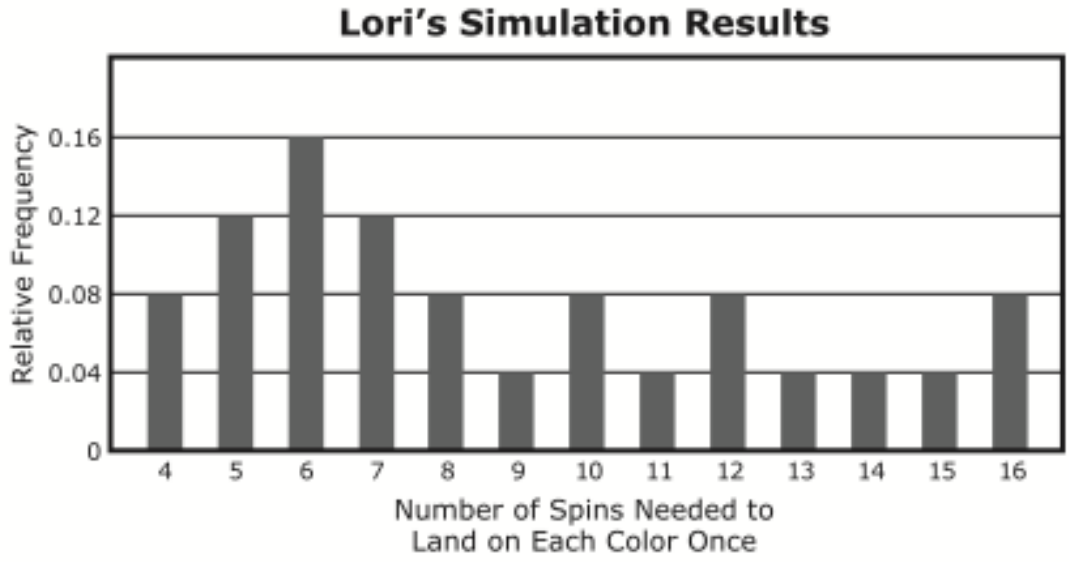
D. Assign the digits 0, 1, 2, and 3 to blue; 4, 5, and 6 to yellow; 7 and 8 to red; and 9 to green.

Continued on next page.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
38	7.SP.8c	7.SP.C.8.C	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Part B

Lori designs a computer simulation with 25 trials and uses the data from the simulation to create a graph. The graph shows the relative frequency of the number of spins in her simulation to land on each color once. Using the graph, what is the probability that a player lands on each color once in less than 7 spins?



Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
38	7.SP.8c	7.SP.C.8.C	Statistics & Probability	PARCC Practice Test Item Packets-Preparing for Spring 2017

Lindsey would like to know the number of people at a movie theater who will buy a movie ticket and popcorn. Based on past data, the probability that a person who is selected at random from those who buy movie tickets will also buy popcorn is 0.6. Lindsey designs a simulation to estimate the probability that exactly two in a group of three people selected randomly at a movie theater will buy both a movie ticket and popcorn. For the simulation, Lindsey uses a number generator that generates random numbers.

- Any number from 1 through 6 represents a person who buys a movie ticket and popcorn.
- Any number from 7 through 9 or 0 represents a person who buys only a movie ticket.

For each trial, Lindsey generates three numbers. Lindsey ran 30 trials of the simulation and recorded the results in the following table:

266	342	847	672	567
268	252	465	429	573
100	818	139	730	910

Part A

In the simulation, one result was "100." What does this result simulate?

A. No one in a group of three randomly chosen people who buy movie tickets also buys popcorn.

B. Exactly one person in a group of three randomly chosen people who buy movie tickets also buys popcorn.

C. Exactly two people in a group of three randomly chosen people who buy movie tickets also buy popcorn.

D. All three people in a group of three randomly chosen people who buy movie tickets also buy popcorn.

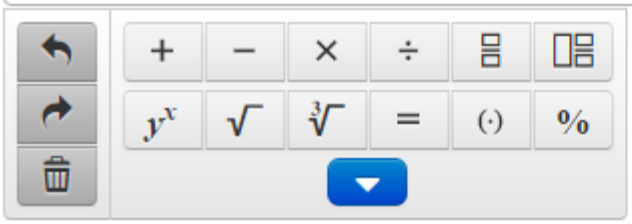
Continued on next page.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
38	7.SP.8c	7.SP.C.8.C	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Part B

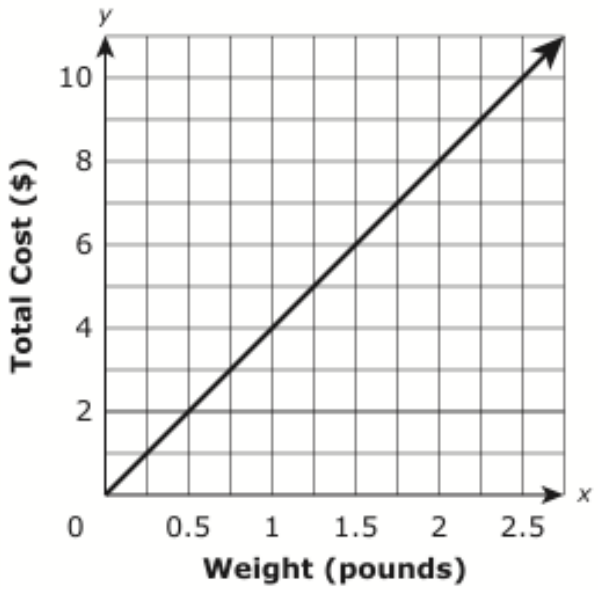
Use the results of the simulation to estimate the probability that exactly two of three people selected at random from those who buy movie tickets will also buy popcorn.

Enter your answer in the space provided. Enter **only** your answer.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
39	7.RP.2d	7.RP.A.2.D	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

3. This graph shows the relationship between the pounds of cheese bought at a deli and the total cost, in dollars, for the cheese.



Select **each** statement about the graph that is true.

Select **all** that apply.

A. The point (0, 0) shows the cost is $0.00 for 0 pounds of cheese.

B. The point (0.25, 1) shows the cost is $0.25 for 1 pound of cheese.

C. The point (0.5, 2) shows that 0.5 pound of cheese costs $2.00.

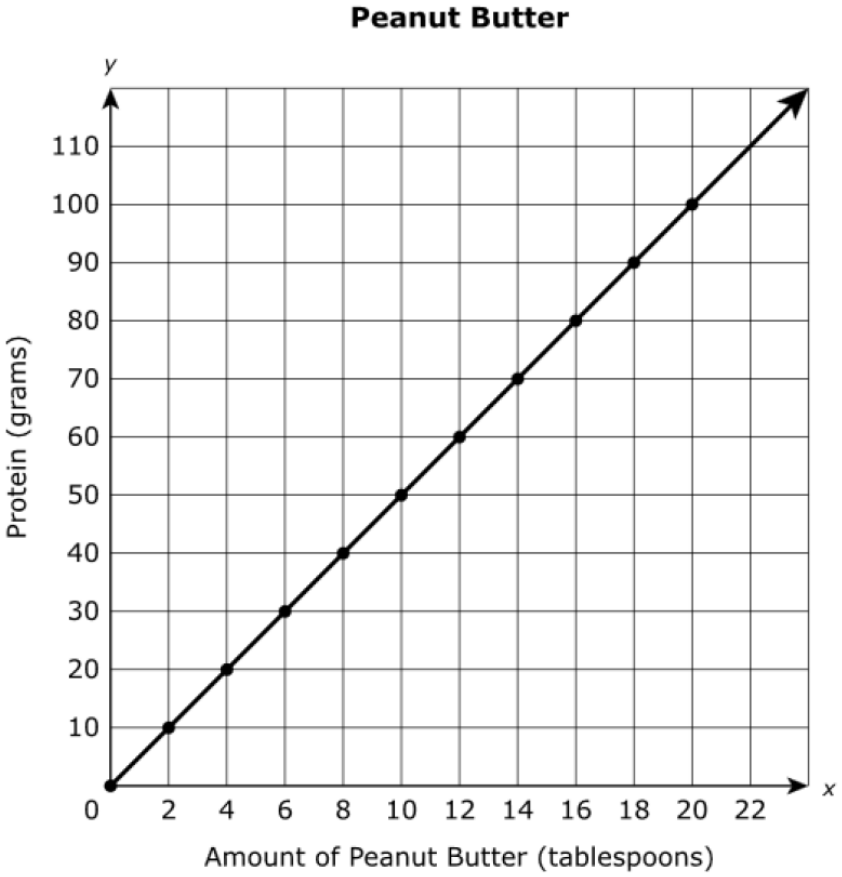
D. The point (1, 4) shows the cost is $4.00 for 1 pound of cheese.

E. The point (2, 8) shows that 8 pounds of cheese cost $2.00.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
39	7.RP.2d	7.RP.A.2.D	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

3.

The graph shows the amount of protein contained in a certain brand of peanut butter.



Describe the meaning of the point $(6,30)$ on the graph.

Select from the drop-down menus to correctly complete the sentence.

The number 30 represents the number of [grams of protein / tablespoons of peanut butter / grams per tablespoon] for every 6 [grams of protein / tablespoons of peanut butter / grams per tablespoon].

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
40	7.RP.2b	7.RP.A.2.B	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

7. Which equation has a constant of proportionality equal to 4?

A. $4y = 4x$

B. $4y = 12x$

C. $3y = 4x$

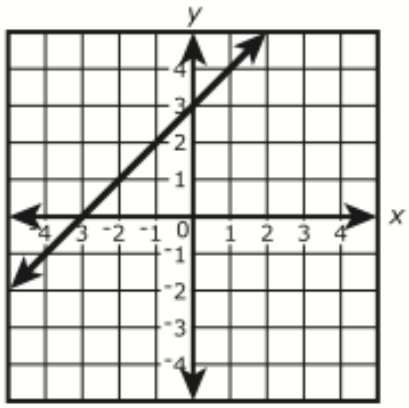
D. $3y = 12x$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
40	7.RP.2b	7.RP.A.2.B	Ratios & Proportional Relationships	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

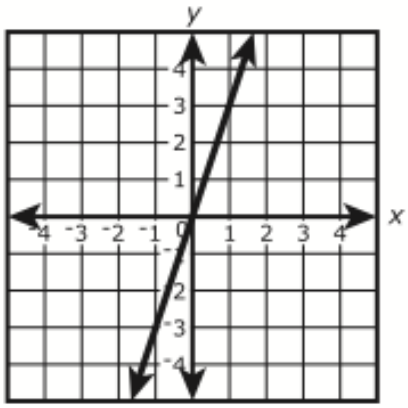
11. Which relationships have the same constant of proportionality between y and x as in the equation $y = \frac{1}{3}x$?

Select **each** correct answer.

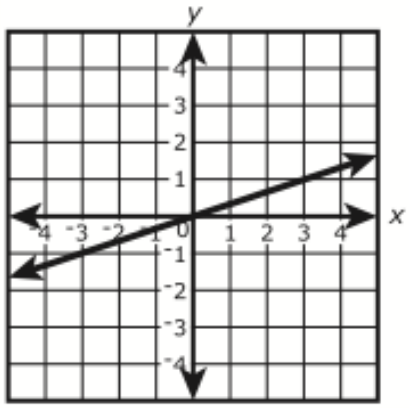
A.



B.



C.



D.

x	−1.5	0	1.6	9.7
y	−4.5	0	4.8	29.1

E.

x	−5.4	−2.7	1.5	2.4
y	−1.8	−0.9	0.5	0.8

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
40	7.RP.2b	7.RP.A.2.B	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

7.

The cost of pumpkin seeds is proportional to their weight. A 24-ounce bag of pumpkin seeds costs $6.00.

What is the unit rate for the pumpkin seeds?

A. $0.24 per ounce

B. $0.25 per ounce

C. $0.40 per ounce

D. $0.60 per ounce

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
40	7.RP.2b	7.RP.A.2.B	Ratios & Proportional Relationships	PARCC Released Items Spring 2017

11.

This table represents a proportional relationship between x and y.

x	y
2	3
4	6
6	9

Based on the values in the table, complete the sentence shown.

Enter your answer in the boxes.

When x increases by 1, y increases by

_____

.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
41	7.NS.2b-1	7.NS.A.2.B	The Number System	MC² PARCC Practice Test Item Packets-Preparing for Spring 2017

Which expressions are equivalent to $\frac{-5}{19}$?

Select **each** correct answer.

- A. $\frac{5}{19}$
- B. $-\frac{5}{19}$
- C. $\frac{-5}{-19}$
- D. $\frac{5}{-19}$
- E. $-\left(\frac{5}{19}\right)$
- F. $-\left(-\frac{5}{19}\right)$

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
42	7.SP.2	7.SP.A.2	Statistics & Probability	Illustrative Mathematics

7.SP.2 – Valentine Marbles

Task

A hotel holds a Valentine's Day contest where guests are invited to estimate the percentage of red marbles in a huge clear jar containing both red marbles and white marbles. There are 11,000 total marbles in the jar: 3696 are red, 7304 are white. The actual percentage of red marbles in the entire jar ($33.6\% = \frac{3696}{11000}$) is known to some members of the hotel staff.

Any guest who makes an estimate that is within 9 percentage points of the true percentage of red marbles in the jar wins a prize, so any estimate from 24.6% to 42.6% will be considered a winner. To help with the estimating, a guest is allowed to take a random sample of 16 marbles from the jar in order to come up with an estimate. (Note: when this occurs, the marbles are then returned to the jar after counting.)

One of the hotel employees who does not know that the true percentage of red marbles in the jar is 33.6% is asked to record the results of the first 100 random samples. A table and dotplot of the results appears below.

Percentage of red marbles in the sample of size 16	Number of times the percentage was obtained
12.50%	4
18.75%	8
25.00%	15
31.25%	22
37.50%	20
43.75%	12
50.00%	12
56.25%	4
62.50%	2
68.75%	1
Total:	100

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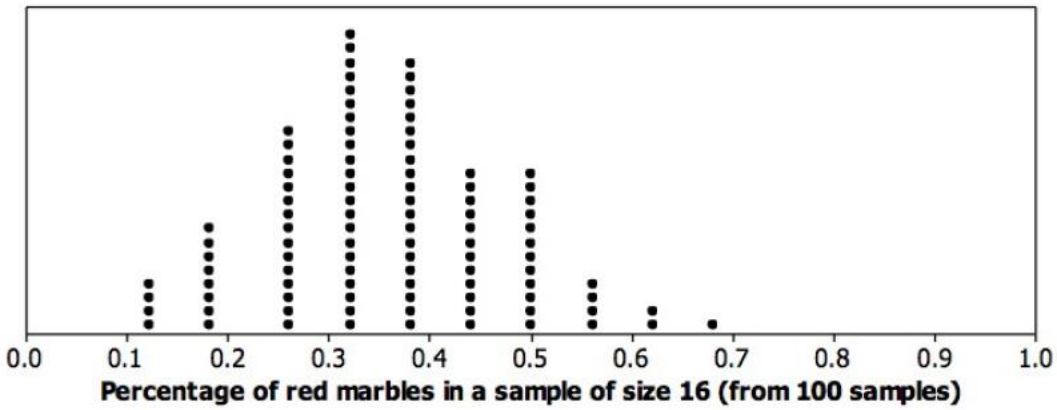
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
42	7.SP.2	7.SP.A.2	Statistics & Probability	Illustrative Mathematics



For example, 15 of the random samples had exactly 25.00% red marbles; only 2 of the random samples had exactly 62.50% red marbles, and so on.

a. Assuming that each of the 100 guests who took a random sample used their random sample's red marble percentage to estimate the whole jar's red marble percentage. Based on the table above, how many of these guests would be "winners"?

b. How many of the 100 guests obtained a sample that was *more than* half red marbles?

c. Should we be concerned that none of the samples had a red marble percentage of exactly 33.6% even though that value is the true red marble percentage for the whole

jar? Explain briefly why a guest can't obtain a sample red marble percentage of 33.6% for a random sample of size 16.

d. Recall that the hotel employee who made the table and dotplot above didn't know that the real percentage of red marbles in the entire jar was 33.6%. If another person thought that half of the marbles in the jar were red, explain briefly how the hotel employee could use the dotplot and table results to challenge this person's claim. Specifically, what aspects of the table and dotplot would encourage the employee to challenge the claim?

e. Design a simulation that takes a large number of samples of size 16 from a population in which 65% of the members of the population have a particular characteristic. For each sample of size 16, compute the percentage of red items in the sample. Record these percentages, and then summarize all of your sample percentages using a table and dotplot similar to those shown above. In what ways is your dotplot similar to the dotplot used in this task? In what ways does it differ?

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
43	**7.SP.8b**	**7.SP.C.8.B**	**Statistics & Probability**	

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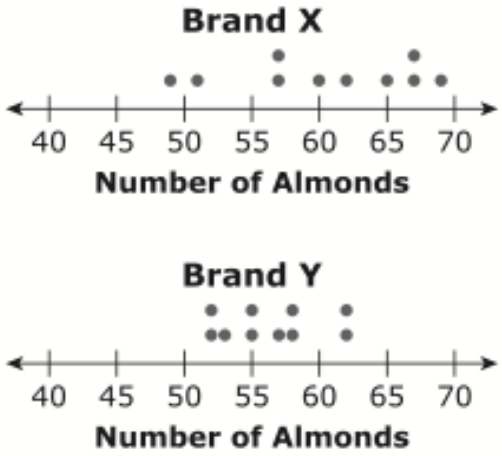
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
44	7.SP.4	7.SP.B.4	Statistics & Probability	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

33. Alexis chose a random sample of 10 jars of almonds from each of two different brands, X and Y. Each jar in the sample was the same size. She counted the number of almonds in each jar. Her results are shown in the plots.



Based on the plots, which statement **best** compares the number of almonds in the jars from the two brands?

A. The number of almonds in jars from Brand X tends to be greater and more consistent than those from Brand Y.

B. The number of almonds in jars from Brand X tends to be greater and less consistent than those from Brand Y.

C. The number of almonds in jars from Brand X tends to be fewer and more consistent than those from Brand Y.

D. The number of almonds in jars from Brand X tends to be fewer and less consistent than those from Brand Y.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
44	7.SP.4	7.SP.B.4	Statistics & Probability	PARCC Released Items Spring 2017

25.

Liz and Sara each ride their bikes every day.

The table shows the number of miles Liz and Sara rode their bikes during five randomly selected days.

Number of Miles Ridden

	Day 1	Day 2	Day 3	Day 4	Day 5
Liz's distance (miles)	13	9	8	9	11
Sara's distance (miles)	5	5	15	9	6

Based on the data in the table, which is the best comparative statement about the number of miles each girl rides on a typical day?

A. On a typical day, Liz rides farther than Sara because the mean of Liz's data is greater than the mean of Sara's data.

B. On a typical day, Sara rides farther than Liz because the mean of Sara's data is greater than the mean of Liz's data.

C. On a typical day, Liz rides farther than Sara because the range of Liz's data is greater than the range of Sara's data.

D. On a typical day, Sara rides farther than Liz because the range of Sara's data is greater than the range of Liz's data.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
45	7.NS.3	7.NS.A.3	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

2. At the start of the month, the value of an investment was $48.45. By the end of the month, the value of the investment changed by a loss of $13.80.

What was the value, in dollars, of the investment at the end of the month?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
45	7.NS.3	7.NS.A.3	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

8. An airplane's altitude changed −378 feet over 7 minutes. What was the mean change of altitude in feet per minute?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
45	7.NS.3	7.NS.A.3	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

25. Chris made at least one error as she found the value of this expression.

$$2(-20) + 3\left[\frac{5}{4}(-20)\right] + 5\left[\frac{2}{5}(50)\right] + 4(50)$$

Step 1: $2(-20) + 3(-25) + 5(20) + 4(50)$

Step 2: $(3 + 2)(-20 + -25) + (5 + 4)(20 + 50)$

Step 3: $5(-45) + 9(70)$

Step 4: $-225 + 630$

Step 5: 405

Identify the step in which Chris made her first error. After identifying the step with the first error, write the corrected steps and find the final answer.

Enter the identified step, your work, and the final answer in the space provided.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
45	7.NS.3	7.NS.A.3	The Number System	PARCC Released Items Spring 2017

2.

Over a period of 3 hours, the outside temperature changed an average of -2.25° Fahrenheit per hour.

Select from the drop-down menus to correctly complete the sentence.

The temperature [increased / decreased] by [0.75 / 2.25 / 6.75] degrees Fahrenheit from the beginning to the end of the 3-hour period.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
45	7.NS.3	7.NS.A.3	The Number System	PARCC Released Items Spring 2017

8.

A weather forecaster reported that the total amount of rainfall for the month was 0.75 inch. He also reported that this amount was 0.55 inch below the average amount of rainfall for the same month during the last ten years. The forecaster summarized his findings in this table.

Rainfall Findings

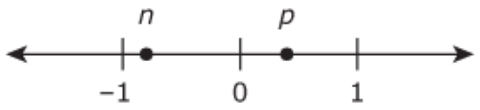
Amount of rainfall for the month:	0.75 in.
Compared to average amount of rainfall for the month:	-0.55 in.

What was the average amount of rainfall, in inches, for this month during the last ten years?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
46	7.NS.1b-1	7.NS.A.1.B	The Number System	MC² PARCC Practice Test Item Packets-Preparing for Spring 2017

Two numbers, n and p are plotted on the number line shown.



The numbers $n - p$, $n + p$, and $p - n$ will be plotted on the number line.

Select an expression from each drop-down menu to make this statement true.

The number with the least value is Choose... , and the number with the greatest value is Choose... .

n – p
n + p
p - n

n – p
n + p
p - n

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
46	7.NS.1b-1	7.NS.A.1.B	The Number System	PARCC Released Items Spring 2017

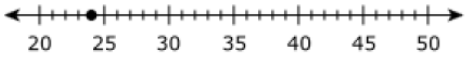
9.

At 8 a.m. on Sunday morning, the temperature was 35° Fahrenheit (°F). A student recorded the change in temperature at 8 a.m. for the next three days.

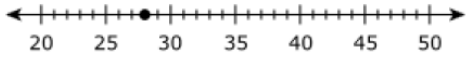
- The change in temperature from Sunday to Monday was -4° F.
- The change in temperature from Monday to Tuesday was $+2^\circ$ F.
- The change in temperature from Tuesday to Wednesday was -5° F.

Which number line shows a point representing the temperature, in degrees Fahrenheit, on Wednesday morning at 8 a.m.?

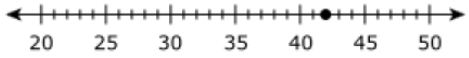
A.



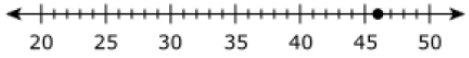
B.



C.



D.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
47	7.EE.4a-1	7.EE.B.4.A	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

10. Jessica rented 1 video game and 3 movies for a total of $11.50.

- The video game cost $4.75 to rent.
- The movies cost the same amount each to rent.

What amount, in dollars, did Jessica pay to rent each movie?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
47	7.EE.4a-1	7.EE.B.4.A	Expressions & Equations	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

Use the information provided to answer Part A and Part B for question 23.

Rebecca and Megan are shopping at a store that sells jewelry, scarves, and purses. The cost of all the items at the store include tax.

23. Part A

Rebecca buys some scarves that cost \$5 each and 2 purses that cost \$12 each. The cost of Rebecca's total purchase is \$39. Which equation can be used to find n, the number of scarves that Rebecca buys?

A. $5 + 24n = 39$

B. $5n + 24 = 39$

C. $(24 + 5)n = 39$

D. $24 \cdot 5 + n = 39$

Part B

Megan buys 3 bracelets and 3 necklaces. Each bracelet costs \$5. Megan pays the clerk \$40 and gets \$4 change. What is the cost, in dollars, of one necklace?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
47	7.EE.4a-1	7.EE.B.4.A	Expressions & Equations	PARCC Released Items Spring 2017

10.

Andy currently runs a total of 12 miles each week. He plans to increase the number of miles he runs each week by 1.5 miles until he is running a total of 26 miles each week. Which equation can be used to determine *x*, the number of weeks that it will take Andy to reach his goal?

A. $12 + 1.5x = 26$

B. $(12 + 1.5)x = 26$

C. $12(1.5 + x) = 26$

D. $12 + 1.5 + x = 26$

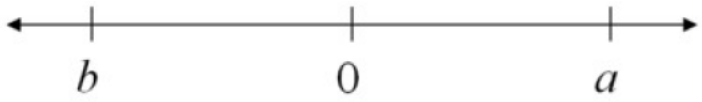
Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
48	7.G.4-2	7.G.B.4	Geometry	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
49	7.NS.1b-2	7.NS.A.1.B	The Number System	Illustrative Mathematics

7.NS Distances on the Number Line 2

Task



On the number line above, the numbers a and b are the same distance from 0. What is $a + b$? Explain how you know.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
50	7.RP.2c	7.RP.A.2.C	Ratios & Proportional Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

14. Hayden mixed 6 cups of blue paint with 8 cups of yellow paint to make green paint. To represent the relationship between the number of cups of blue paint, b, and the number of cups of yellow paint, y, needed to make the same shade of green paint, Hayden wrote the equation $b = \square y$.

What number should be placed in the box?

Enter your answer in the box.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
50	7.RP.2c	7.RP.A.2.C	Ratios & Proportional Reasoning	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

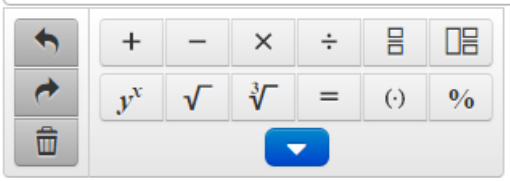
The numbers of parts produced by three different machines are shown in the table.

Numbers of Machine Parts

Minutes	Machine Q	Machine R	Machine S
1	9	8	6
3	18	24	18
9	72	72	52

Only one of the machines produces parts at a constant rate. Write an equation that can be used to represent y, the number of parts produced in x minutes, for that machine.

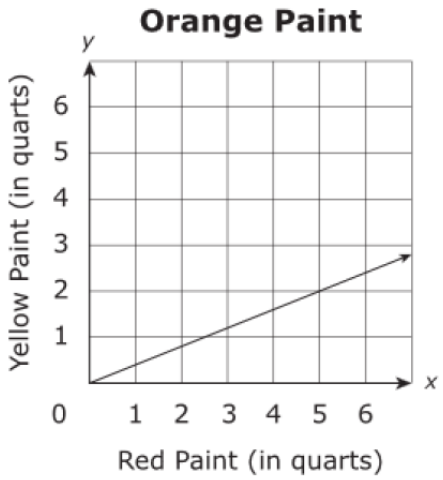
Enter your equation in the space provided. Enter **only** your equation.



Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
50	7.RP.2c	7.RP.A.2.C	Ratios & Proportional Reasoning	PARCC Released Items Spring 2017

14.

The graph shows the numbers of quarts of yellow paint that must be mixed with different numbers of quarts of red paint to make a certain shade of orange paint.



Based on the graph, write an equation that shows the relationship between the number of quarts of yellow paint, y, and the number of quarts of red paint, x, needed to make the shade of orange paint.

Enter your equation in the space provided. Enter **only** your equation.

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
51	**7.SP.5**	**7.SP.C.5**	**Statistics & Probability**	

Pending New PARCC Released Test Items

Difficulty Order	Evidence Statement	Common Core State Standard	Domain	Source
52	7.NS.1a	7.NS.A.1.A	The Number System	MC^2 PARCC Practice Test Item Packets-Preparing for Spring 2017

9. In which of these situations would the answer to the question be 0?

A. Teddy jumped into a pool from a diving board 8 feet above the water. He sank 8 feet and then swam straight up to the surface of the water. How many feet did Teddy swim?

B. Jerry left his house and walked 1.5 miles directly west. Then he walked 1.5 miles directly east. At this point, how many miles was Jerry from his house?

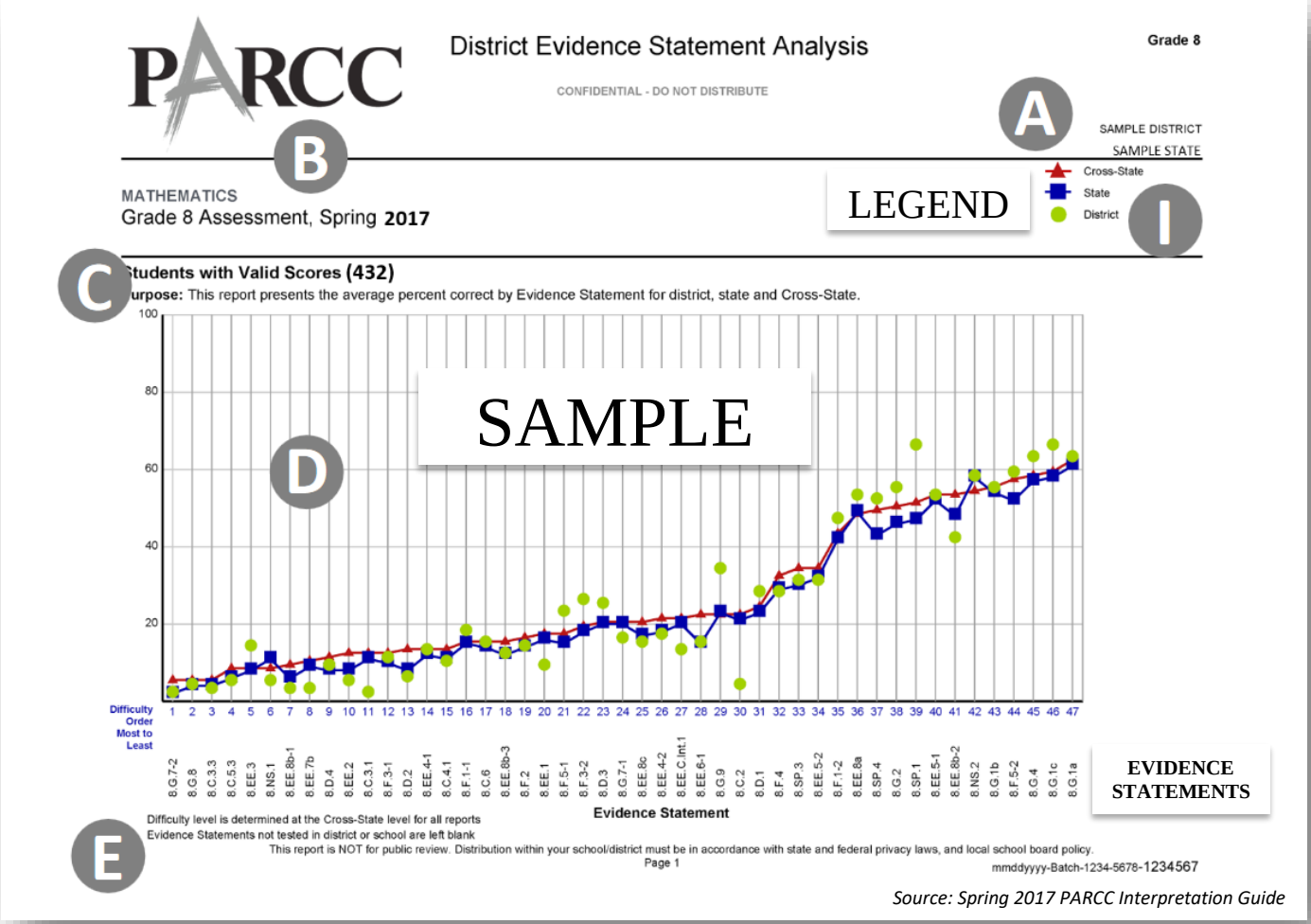
C. A trail begins at an elevation of −50 feet. The trail ends at an elevation of 50 feet. By how many feet does the elevation of the trail change from beginning to end?

D. The low temperature one day was −3° Celsius. The high temperature that day was 3° Celsius. What is the difference between the low temperature and the high temperature that day?

User's Guide

To support New Mexico educators in preparing students for the Spring 2018 PARCC Assessment, Mathematically Connected Communities (MC^2) has again compiled *Practice Test Item Packets* posted on the MC^2 website. Each packet is **organized in order of difficulty (most to least)** based on the *Spring 2017 Evidence Statement Analysis* at the cross-state level used for all reports. Each grade-level/subject analysis contains a graph (see sample below) representing the following data:

- Average percent correct for each item represented by **cross-state** (aggregation of all states in PARCC consortium), **state**, **district**, and for the school report, at school level (see legend below)
- Evidence Statements are located along the bottom and left blank on the district/school report if not tested in that particular location (see below)



Source: Spring 2017 PARCC Interpretation Guide

Each page contains **only one problem** and identifies the following for that item:

Difficulty Order The practice test items are presented in order from most to least difficult based on the *Spring 2017 Evidence Statement Analysis* at the cross-state level used for all reports. Since the harder problems are found at the beginning of the document, teachers may want to start with the easier items at the end.

Evidence Statements Describe the knowledge and skills that the assessment item/task elicits from students and are derived from the Common Core State Standards for Mathematics (CCSS-M). Evidence Statements for grades 3 through 8 will begin with the grade number. High School Evidence Statements begin with "HS" or with the label for a conceptual category. Numbers at the end of *Integrated Evidence Statements* and those focused on *Reasoning* and *Modeling* are added for assessment clarification and tracking purposes. Evidence Statement documents are available at: *http://parcc-assessment.org/assessments/test-design/mathematics/math-test-specifications-documents*

An Evidence Statement might:

1. **Use exact language as the CCSS-M.** For example, Evidence Statement 8.EE.1 uses the exact language as standard 8.EE.1 *Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3-5 = 3-3 = 1/33 = 1/27.*

2. **Be derived by focusing on specific parts of a standard.** For example, CCSS-M 8.F.5 *Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally* was split into the following two Evidence Statements:
   - 8.F.5-1 *Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).*
   - 8.F.5-2 *Sketch a graph that exhibits qualitative features of a function that has been described verbally.*

   Together these two evidence statements are CCSS-M 8.F.5.

3. **Be integrative (Int).** Integrative Evidence Statements allow for the testing of more than one of the Common Core Standards and can be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:
   - **Grade/Course–4.Int.2** (Integrated across Grade 4)
   - **Conceptual Category–F.Int.1** (Integrated across the Functions Conceptual Category)
   - **Domain–4.NBT.Int.1** (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster–3.NF.A.Int.1** (Integrated across the Number and Operations–Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning.** A Reasoning Evidence Statement (keyed with C as per PARCC Claims Structure, see pg. 4) will state the type of reasoning that an item/task will require and content scope from the CCSS-M that the item/task will require students to reason about. Such as, Evidence Statement 3.C.2
   - Type of Reasoning: *Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.*
   - Content Scope: Knowledge and skills are articulated in 3.OA.6

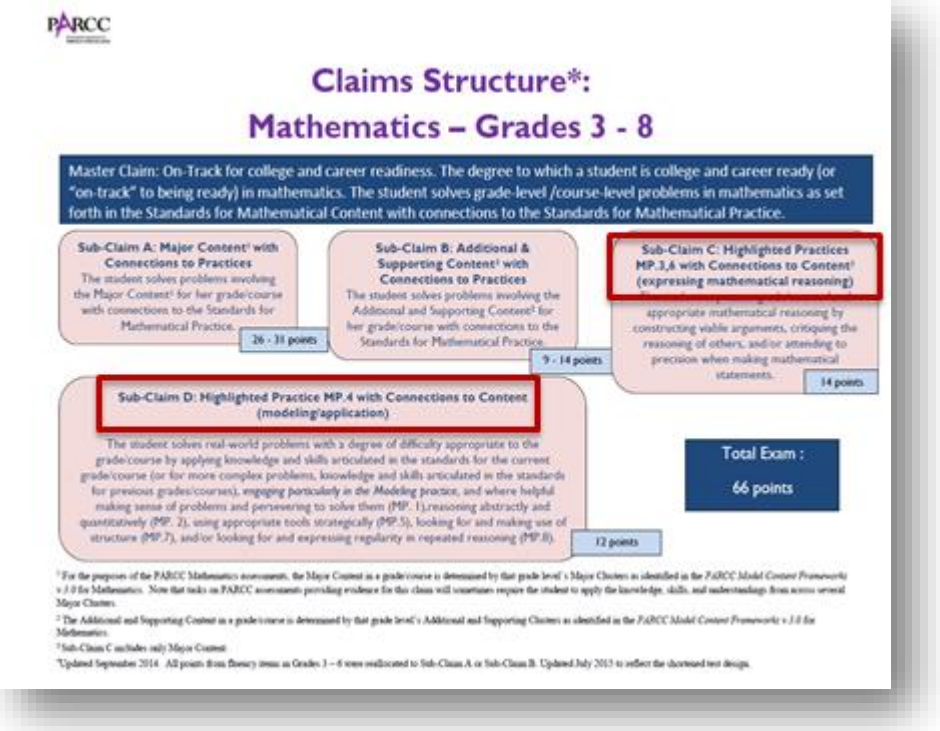
   When the focus is on reasoning, the Evidence Statement may also require the student to reason about *securely held knowledge* (SHK-see pg. 4) from a previous grade.

5. **Focus on mathematical modeling.** A Modeling Evidence Statement (keyed with D as per PARCC Claims Structure, see pg. 4) will state the type of modeling that an item/task will require and the content scope from the CCSS-M that the item/task will require students to model about.

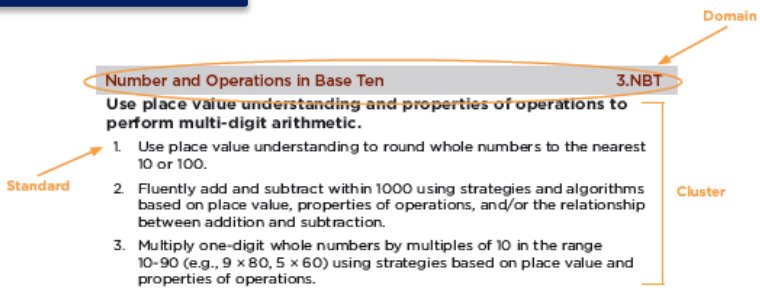
   For example, Evidence Statement HS.D.5:
   - Type of Modeling: Given an equation or system of equations, reason about the number or nature of the solutions.
   - Content Scope: A-REI.11, involving any of the function types measured in the standards.

   Evidence Statement 4.D.2 below is of an example in which an item/task aligned to the evidence statement will require the student to model *on grade level* (OGL), using *securely held knowledge* from a previous grade.
   - Type of Modeling: Solve multi-step contextual problems with degree of difficulty appropriate to Gr. 4
   - Securely Held Knowledge: requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8, 3.NBT, and/or 3.MD.

Sub-Claim C (expressing mathematical reasoning) and Sub-Claim D (modeling/application) in the PARCC Claims Structure are not explicitly found in the CCSS-M as domains but are included in the Mathematical Practices.



Common Core State Standards *http://www.corestandards.org/Math/*



An Evidence Statement focusing on Reasoning or Modeling will not indicate a specific standard in the Common Core column because these are not explicitly found in the CCSS-M as a domain. Instead it will indicate:

- **OGL-On Grade Level**
- **Securely Held Knowledge (SHK)**-Ability to flexibly apply what one already knows to a non-routine or complex problem. For example, modeling is a sophisticated practice. This means that modeling and other complex tasks will naturally draw upon securely held knowledge and skills. Some tasks may demand flexible application of content knowledge first gained in previous grades to solve complex problems. Examples of standards which refer to *securely held knowledge* begin with the words *Apply and Extend.*

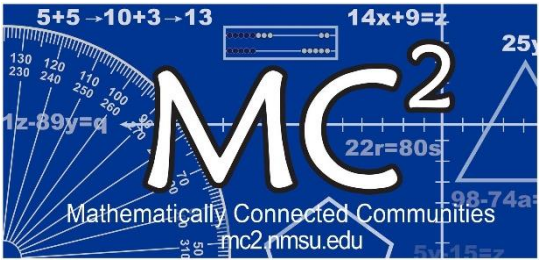
Domains

- Ratios & Proportional Relationships (RP)
- The Number System (NS)
- Expressions & Equations (EE)
- Geometry (G)
- Statistics & Probability (SP)

Sources

Identifies where the practice test items were excerpted from (e.g., MC2 PARCC Practice Test Item Packets; Illustrative Mathematics)

For more information, email mc2@nmsu.edu



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