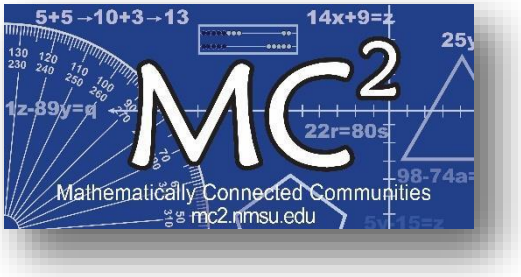
# Mathematically Connected Communities




# PARCC Practice Test Items
# Grade 8 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*

# Contents



| Difficulty Order (Most to Least) | Evidence Statement | CCSS-M | Page Numbers |
|---|---|---|---|
| **1** | 8.C.5-3 | OGL | 4 |
| **2** | 8.EE.3 | 8.EE.A.3 | 5 |
| **3** | 8.EE.4-1 | 8.EE.A.4 | 6 |
| **4** | 8.D.2 | SHK | 7-9 |
| **5** | 8.EE.1 | 8.EE.A.1 | 10-11 |
| **6** | 8.C.2 | OGL | 12 |
| **7** | 8.G.7-2 | 8.G.B.7 | 13 |
| **8** | 8.EE.8c | 8.EE.C.8.C | 14-20 |
| **9** | 8.F.1-1 | 8.F.A.1 | 21-23 |
| **10** | 8.D.4 | OGL | 24 |
| **11** | 8.C.6 | SHK | 25 |
| **12** | 8.EE.7b | 8.EE.C.7.B | 26-27 |
| **13** | 8.G.8 | 8.G.B.8 | 28-29 |
| **14** | 8.C.3-3 | OGL | 30 |
| **15** | 8.C.4-1 | OGL | 31 |
| **16** | 8.EE.2 | 8.EE.A.2 | 32-33 |
| **17** | 8.C.1-1 | OGL | 34 |
| **18** | 8.C.1-2 | OGL | 35 |
| **19** | 8.G.1b | 8.G.A.1.B | 36 |
| **20** | 8.D.3 | OGL | 37 |
| **21** | 8.C.5-1 | OGL | 38 |
| **22** | 8.G.9 | 8.G.C.9 | 39-40 |
| **23** | 8.F.2 | 8.F.A.2 | 41-45 |
| **24** | 8.EE.8b-3 | 8.EE.C.8.B | 46-48 |
| **25** | 8.SP.2 | 8.SP.A.2 | 49 |
| **26** | 8.EE.C.Int.1 | 8.EE.C.7; 8.EE.C.7.A; 8.EE.C.7.B | 50 |
| **27** | 8.F.5-1 | 8.F.B.5 | 51 |
| **28** | 8.EE.4-2 | 8.EE.A.4 | 52 |
| **29** | 8.EE.8b-1 | 8.EE.C.8.B | 53-54 |
| **30** | 8.F.3-2 | 8.F.A.3 | 55-56 |
| **31** | 8.G.2 | 8.G.A.2 | 57-59 |
| **32** | 8.EE.5-2 | 8.EE.B.5 | 60-62 |
| **33** | 8.G.7-1 | 8.G.B.7 | 63 |
| **34** | 8.F.1-2 | 8.F.A.1 | 64-66 |
| **35** | 8.NS.1 | 8.NS.A.1 | 67-68 |
| **36** | 8.SP.3 | 8.SP.A.3 | 69 |
| **37** | 8.SP.4 | 8.SP.A.4 | 70-71 |
| **38** | 8.F.3-1 | 8.F.A.3 | 72 |
| **39** | 8.G.4 | 8.G.A.4 | 73 |
| **40** | 8.SP.1 | 8.SP.A.1 | 74-75 |
| **41** | 8.D.1 | OGL | 76 |
| **42** | 8.G.3 | 8.G.A.3 | 77 |
| **43** | 8.EE.8b-2 | 8.EE.C.8.B | 78-79 |
| **44** | 8.EE.6 | 8.EE.B.6 | 80 |
| **45** | 8.G.1a | 8.G.A.1.A | 81-82 |
| **46** | 8.EE.5-1 | 8.EE.B.5 | 83-86 |
| **47** | 8.NS.2 | 8.NS.A.2 | 87-88 |
| **48** | 8.F.4 | 8.F.B.4 | 89-95 |
| **49** | 8.F.5-2 | 8.F.B.5 | 96 |
| **50** | 8.EE.8a | 8.EE.C.8.A | 97-99 |

## MC² Thinking Protocol: PARCC Test Prep Using Mathematical Practice Prompts

Use the MC² 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 MC² 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** | 8.C.5-3 | OGL | Reasoning | |

*Pending New PARCC Released Test Items*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **2** | 8.EE.3 | 8.EE.A.3 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**17.** The body of a 154-pound person contains approximately $2 \times 10^{-1}$ milligrams of gold and $6 \times 10^{1}$ milligrams of aluminum. Based on this information, the number of milligrams of aluminum in the body is how many times the number of milligrams of gold in the body?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **3** | 8.EE.4-1 | 8.EE.A.4 | Expressions & Equations | Illustrative Mathematics |

# 8.EE Giantburgers

Illustrative Mathematics

This headline appeared in a newspaper.

**Every day 7% of Americans eat at Giantburger restaurants**

Decide whether this headline is true using the following information.

- There are about $8 \times 10^3$ Giantburger restaurants in America.
- Each restaurant serves on average $2.5 \times 10^3$ people every day.
- There are about $3 \times 10^8$ Americans.

Explain your reasons and show clearly how you figured it out.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **4** | 8.D.2 | SHK | Modeling | 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.

The owner of a computer store is offering a discount on a computer sold in the store.

**Computer Sale!**

Original Price: $598.00
25% off original price

*8% tax applied after discount*

**34. Part A**

The owner offers a payment plan where the total cost of the computer is paid in 6 equal monthly payments.

- Determine the amount of each monthly payment.
- Show your work or explain your answer.

Enter the monthly payment and your work or explanation in the space provided.

**Part B**

A different computer is advertised as 40% off of the original price. After the discount, the tax is $44.64.

- Determine the total price of this computer after the discount and tax are applied.
- Show your work or explain your answer.
- Determine the original price of this computer.
- Show your work or explain your answer.

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

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **4** | 8.D.2 | SHK | Modeling | PARCC Released Items Spring 2017 |

## 20.

Jennifer works at a bookstore. She earns an hourly wage plus 4% commission on her monthly sales. Her total earnings for June, July, and August are shown in the table.

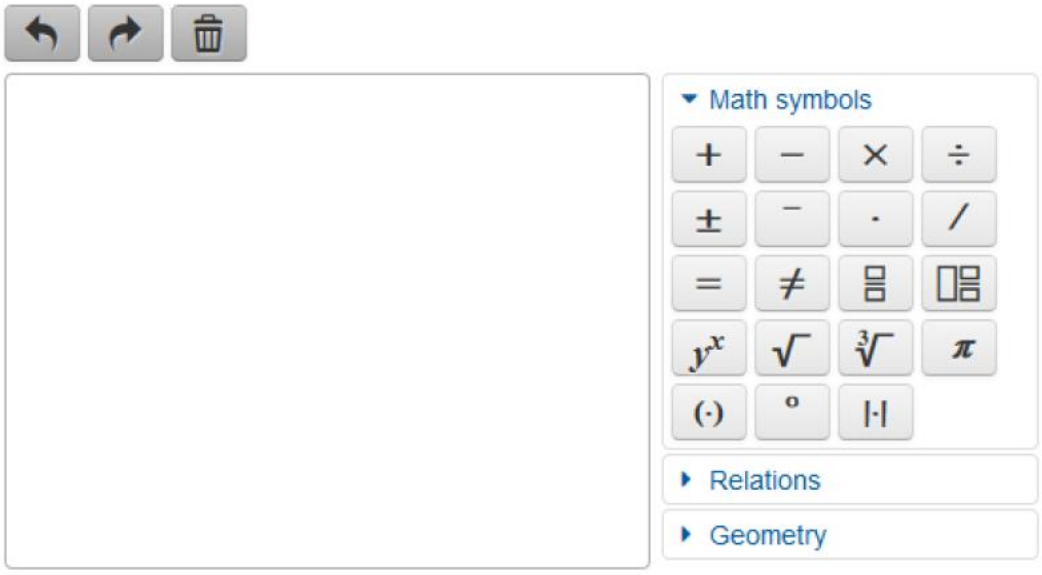
**Jennifer's Paycheck**

| Month | June | July | August |
|---|---|---|---|
| Amount | $1,005 | $884 | $936 |

### Part A

Jennifer worked 60 hours in June, and her total sales were $8,625. Find the amount she earned from commission in June and the hourly wage she is paid.

Enter your answers in the space provided.

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| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| 4 | 8.D.2 | SHK | Modeling | PARCC Released Items Spring 2017 |

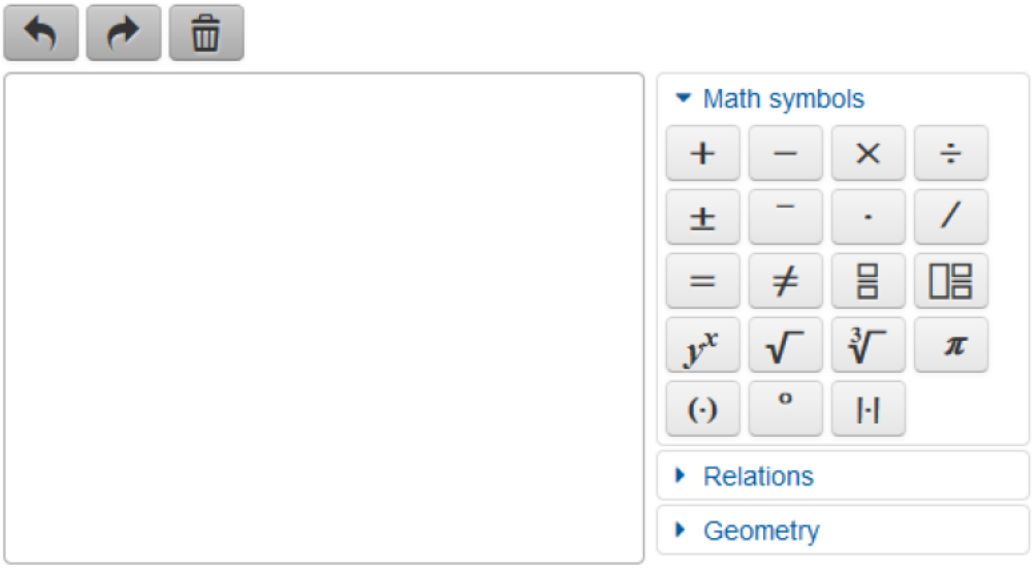
**Part B**

From June to the end of September, Jennifer wants to save at least $1,500.

- Her monthly expenses are $600.
- Jennifer saves whatever money she has left after paying her expenses each month.
- Jennifer is scheduled to work 80 hours in September.

Find the minimum sales she needs in September to meet her goal of saving at least $1,500. Show or explain your work for each step.

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



| Difficulty Order | Evidence Statement | Common Core State Standards | Domain | Source |
|---|---|---|---|---|
| **5** | 8.EE.1 | 8.EE.A.1 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**14.** Which expressions are equivalent to $\frac{3^{-8}}{3^{-4}}$?

Select **all** that apply.

**A.** $3^{-12}$

**B.** $3^{-4}$

**C.** $3^{2}$

**D.** $\frac{1}{3^{2}}$

**E.** $\frac{1}{3^{4}}$

**F.** $\frac{1}{3^{12}}$

| Difficulty Order | Evidence Statement | Common Core State Standards | Domain | Source |
|---|---|---|---|---|
| **5** | 8.EE.1 | 8.EE.A.1 | Expressions & Equations | PARCC Released Items Spring 2017 |

**10.**

Indicate whether each expression in the table is equivalent to $3^2$, $3^{-2}$, or neither.

Select all appropriate cells in the table.

| Expression | Equivalent to $3^2$ | Equivalent to $3^{-2}$ | Neither Equivalent to $3^2$ nor $3^{-2}$ |
|---|---|---|---|
| $(3^{-1})^2$ | ☐ | ☐ | ☐ |
| $(3^{-1})^{-1}$ | ☐ | ☐ | ☐ |
| $\left(\frac{1}{3}\right)^2$ | ☐ | ☐ | ☐ |
| $\left(\frac{1}{3}\right)^{-2}$ | ☐ | ☐ | ☐ |

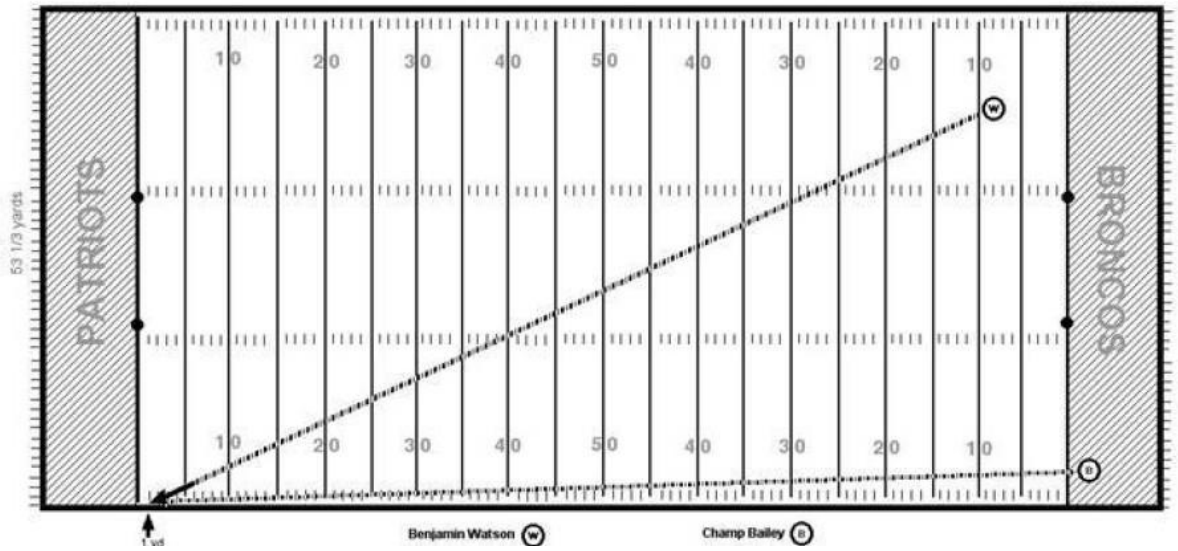
| Difficulty Order | Evidence Statement | Common Core State Standards | Domain | Source |
|---|---|---|---|---|
| **6** | 8.C.2 | OGL | Reasoning | Illustrative Mathematics |

# 8.G.7 Running on the Football Field

Illustrative Mathematics

During the 2005 Divisional Playoff game between The Denver Broncos and The New England Patriots, Bronco player Champ Bailey intercepted Tom Brady around the goal line (see the circled B). He ran the ball nearly all the way to other goal line. Ben Watson of the New England Patriots (see the circled W) chased after Champ and tracked him down just before the other goal line.

In the image below, each hash mark is equal to one yard: note too the the field is $53\frac{1}{3}$ yards wide.




a. How can you use the diagram and the Pythagorean Theorem to find approximately how many yards Ben Watson ran to track down Champ Bailey?

b. Use the Pythagorean Theorem to find approximately how many yards Watson ran in this play.

c. Which player ran further during this play? By approximately how many more yards?

| Difficulty Order | Evidence Statement | Common Core State Standards | Domain | Source |
|---|---|---|---|---|
| **7** | 8.G.7-2 | 8.G.B.7 | Geometry | |

*Pending New PARCC Released Test Items*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | 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 32.

In a system of two linear equations, the lines represented by each equation have the same slope.

**32. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

**A.** no solutions

**B.** 1 solution

**C.** 2 solutions

**D.** 3 solutions

**E.** infinitely many solutions

**Part B**

Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 35.

A chemist has two acid solutions. Solution A contains 10% acid, and solution B contains 30% acid. He will mix the two solutions to make 10 liters of a third solution, solution C, containing 25% acid.

The system of equations shown can be used to represent this situation.

$$\begin{cases} x + y = 10 \\ 0.10x + 0.30y = 2.5 \end{cases}$$

**35. Part A**

Which statement about the system of equations is true?

**A.** In the system of equations, $x$ represents the number of liters of acid in solution A, and $y$ represents the number of liters of acid in solution B.

**B.** In the system of equations, $x$ represents the number of liters of acid in solution B, and $y$ represents the number of liters of acid in solution A.

**C.** In the system of equations, $x$ represents the number of liters of solution A in solution C, and $y$ represents the number of liters of solution B in solution C.

**D.** In the system of equations, $x$ represents the number of liters of solution B in solution C, and $y$ represents the number of liters of solution A in solution C.

**Part B**

What does the expression $0.30y$ represent?

**A.** the number of liters of acid in solution C that come from solution A

**B.** the number of liters of acid in solution C that come from solution B

**C.** the number of liters of solution A in solution C

**D.** the number of liters of solution B in solution C

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 35.

A chemist has two acid solutions. Solution A contains 10% acid, and solution B contains 30% acid. He will mix the two solutions to make 10 liters of a third solution, solution C, containing 25% acid.

The system of equations shown can be used to represent this situation.

$$\begin{cases} x + y = 10 \\ 0.10x + 0.30y = 2.5 \end{cases}$$

**Part C**

If the system of equations is graphed in a coordinate plane, what is the $x$-coordinate of the intersection of the two lines?

Enter your answer in the box.

**Part D**

What is the number of liters of solution B the chemist mixes with solution A to create solution C containing 25% acid?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

A school is selling T-shirts and sweatshirts for a fund-raiser. The table shows the number of T-shirts and the number of sweatshirts in each of three recent orders. The total cost of orders A and B are given. Each T-shirt has the same cost, and each sweatshirt has the same cost.

| Order | Number of T-shirts | Number of Sweatshirts | Total Cost of Order (dollars) |
|---|---|---|---|
| A | 2 | 2 | 38 |
| B | 3 | 1 | 35 |
| C | 1 | 2 | ? |

The system of equations shown can be used to represent this situation.

$$\begin{cases} 2x + 2y = 38 \\ 3x + y = 35 \end{cases}$$

**Part A**

What is the total cost of 1 T-shirt and 1 sweatshirt?

Enter your answer in the box.

$ [ ]

**Part B**

Select a choice from each drop-down menu to correctly complete the statement.

In the system of equations, $x$ represents [Choose...] and $y$ represents [Choose...].

- the number of T-shirts in the order
- the number of sweatshirts in the order
- the cost, in dollars, of each T-shirt
- the cost, in dollars, of each sweatshirt

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**Part C**

If the system of equations is graphed in a coordinate plane, what are the coordinates $(x, y)$ of the intersection of the two lines?

( ☐ , ☐ )

**Part D**

What is the total cost, in dollars, of order C?

$ ☐

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | PARCC Released Items Spring 2017 |

**21.**

A designer builds and sells small chairs and large chairs.

The cost of material is $10 for each small chair and $15 for each large chair.

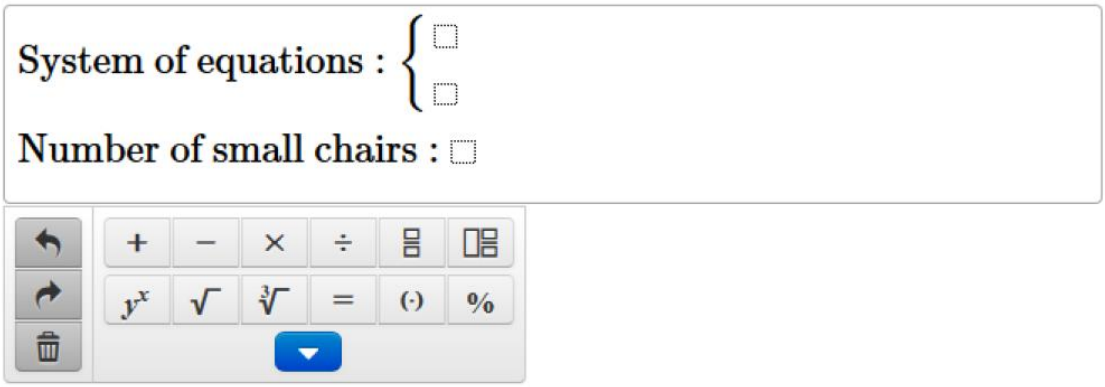
The selling price is $22 for a small chair and $51 for a large chair.

**Part A**

The designer spends $305 on material to make chairs. The designer makes 8 more small chairs than large chairs.

- Write a system of equations that can be used to determine $s$ , the number of small chairs, and $t$ , the number of large chairs, the designer makes.
- How many small chairs did the designer make?

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

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| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **8** | 8.EE.8c | 8.EE.C.8.C | Expressions & Equations | PARCC Released Items Spring 2017 |

### Part B

The designer sold *x* small chairs and *y* large chairs. After subtracting the cost of the material from the selling price of each chair, the designer earned a total of $312. The system of equations describes this situation.

$$\begin{cases} x = 3.5y \\ 12x + 36y = 312 \end{cases}$$

Which pair of sentences correctly describes the chairs the designer sold?

- A. The designer sold 3.5 times as many large chairs as small chairs.The designer earned $12 for each small chair sold and $36 for each large chair sold.
- B. The designer sold 3.5 times as many small chairs as large chairs.The designer earned $12 for each small chair sold and $36 for each large chair sold.
- C. The designer sold 3.5 times as many small chairs as large chairs.The designer earned $22 for each small chair sold and $51 for each large chair sold.
- D. The designer sold 3.5 times as many large chairs as small chairs.The designer earned $22 for each small chair sold and $51 for each large chair sold.

### Part C

The system of equations describes the number of small chairs, *x* , and the number of large chairs, *y* , sold when the designer earned a total of $312.

$$\begin{cases} x = 3.5y \\ 12x + 36y = 312 \end{cases}$$

Determine the number of small chairs and the number of large chairs sold.

Select from the drop-down menus to choose the number of chairs.

| | | |
|---|---|---|
| Number of small chairs: | 4<br>8 | 7<br>14 |
| Number of large chairs: | 2<br>6 | 4<br>14 |

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **9** | 8.F.1-1 | 8.F.A.1 | Functions | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**1.** Which of these equations represent functions where $x$ is the input and $y$ is the output?

Select **each** correct answer.

**A.** $x = 2$

**B.** $y = 2$

**C.** $y = 2x$

**D.** $x = 2y$

**E.** $x + y = 2$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **9** | 8.F.1-1 | 8.F.A.1 | Functions | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

A partially filled input-output table is shown. Complete the table so that it represents a function.

Drag and drop each number from the list into the correct Input or Output box.

1 5 8 10

| Input | Output |
|---|---|
| 1 | 4 |
| | 6 |
| 5 | |
| | |

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **9** | 8.F.1-1 | 8.F.A.1 | Functions | PARCC Released Items Spring 2017 |

**1.**

The table shows a relation that is a function, where *x* is the input and *y* is the output.

| *x* | *y* |
|---|---|
| −4 | 6 |
| −2 | 0 |
| 1 | −4 |
| 0 | 3 |

Which ordered pairs could be included in the table so that the relation remains a function?

Select **each** correct answer.

- ☐ A. $(-4, 2)$
- ☐ B. $(0, 0)$
- ☐ C. $(1, 2)$
- ☐ D. $(2, -4)$
- ☐ E. $(4, 0)$
- ☐ F. $(-6, -4)$
- ☐ G. $(-1, 5)$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **10** | 8.D.4 | OGL | Modeling | |

*Pending New PARCC Released Test Items*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **11** | 8.C.6 | SHK | Modeling | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part C for question 25.

Martin is considering the expressions $\frac{1}{2}(7x + 48)$ and $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$. He wants to know if one expression is greater than the other for all values of $x$.

**25. Part A**

Which statement about the relationship between the expressions is true?

**A.** The value of the expression $\frac{1}{2}(7x + 48)$ is always equal to the value of the expression $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$.

**B.** The value of the expression $\frac{1}{2}(7x + 48)$ is always less than the value of the expression $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$.

**C.** The value of the expression $\frac{1}{2}(7x + 48)$ is always greater than the value of the expression $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$.

**D.** The value of the expression $\frac{1}{2}(7x + 48)$ is sometimes greater than and sometimes less than the value of the expression $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$.

**Part B**

Show or explain how you found your answer to Part A.

Enter your work or your explanation in the space provided.

**Part C**

Write a new expression that always has a greater value than both of these expressions.

Enter your expression in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **12** | 8.EE.7b | 8.EE.C.7.B | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**2.** Solve this equation for $x$.

$$0.5(5 - 7x) = 8 - (4x + 6)$$

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **12** | 8.EE.7b | 8.EE.C.7.B | Expressions & Equations | PARCC Released Items Spring 2017 |

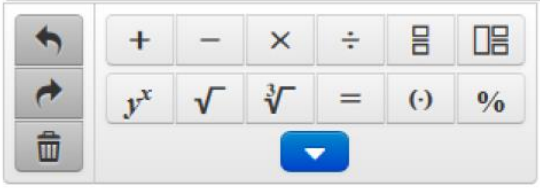
**2.**

$$7(2m-1)-\frac{3}{5}m=\frac{6}{5}(4-3m)$$

Solve for $m$.

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

$m =$ ☐



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **13** | 8.G.8 | 8.G.B.8 | Geometry | Illustrative Mathematics |

# 8.G Finding the distance between points

Illustrative Mathematics

a. Plot the points (5,3), (-1,1), and (2,-3) in the coordinate plane and find the lengths of the three segments connecting the points.

b. Find the distance between (5,9) and (-4,2) without plotting the points.

c. If $(u, v)$ and $(s, t)$ are two distinct points in the plane, what is the distance between them? Explain how you know.

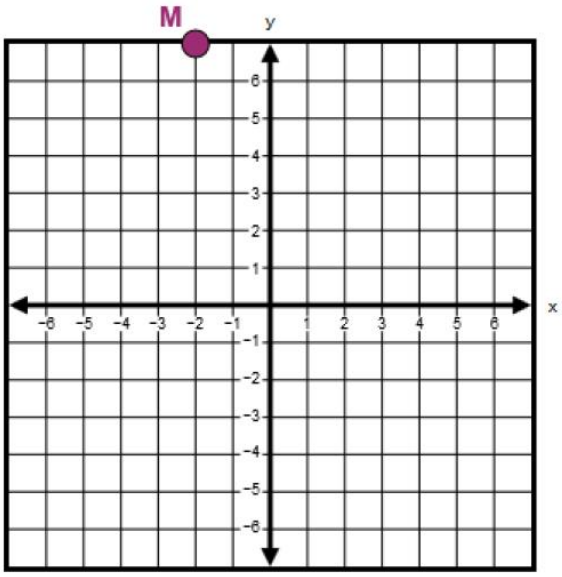
d. Does your answer to (c) agree with your calculations in parts (a) and (b)? Explain.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **13** | 8.G.8 | 8.G.B.8 | Geometry | PARCC Released Items Spring 2017 |

**18.**

Point $M$ is located at $(-2,7)$. Point $N$ is located at $(6,y)$. The distance between points $M$ and $N$ on the coordinate plane is 10 units. Find a possible *y*-value of point $N$ and plot point $N$ on the graph.

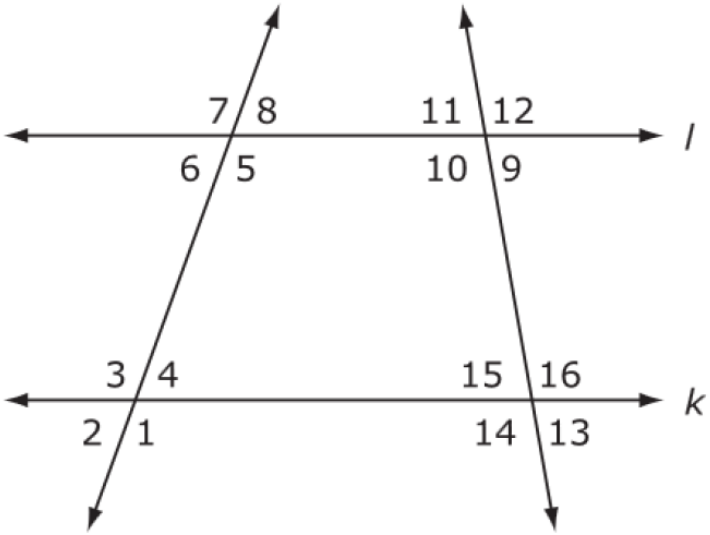
Select the place on the coordinate plane to plot the point.



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **14** | 8.C.3-3 | OGL | Reasoning | PARCC Released Items Spring 2017 |

**14.**

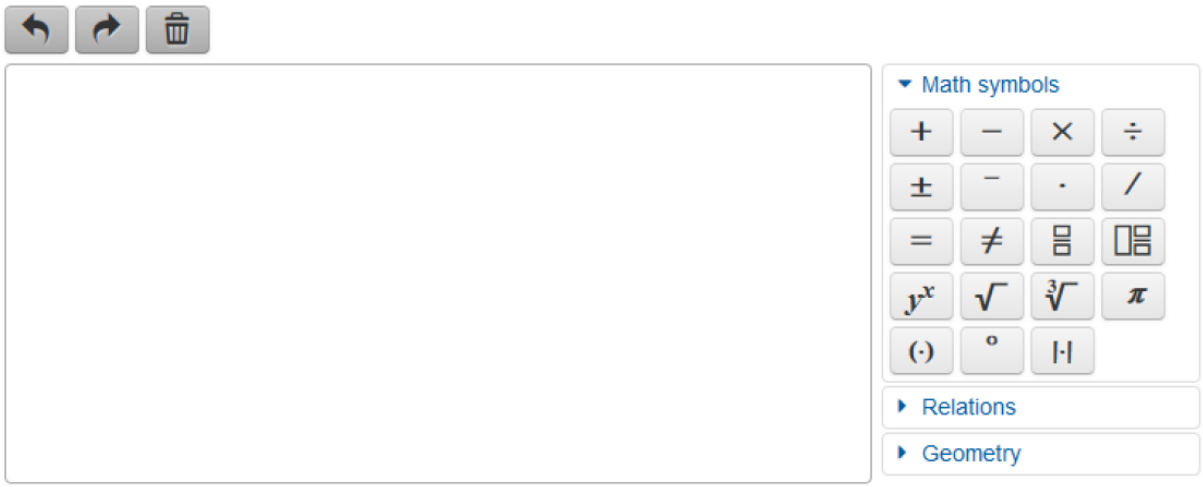
In the figure shown, lines *k* and *l* are parallel.




Amy claims that $m\angle 4 + m\angle 5 = m\angle 10 + m\angle 9$.

Is Amy correct? Use appropriate mathematical language to justify your response.

Enter your answer and your justification in the space provided.



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **15** | 8.C.4-1 | OGL | Reasoning | |

*Pending New PARCC Released Test Items*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **16** | 8.EE.2 | 8.EE.A.2 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**6.** Which equation has **both** 4 and −4 as possible values of $y$?

**A.** $y^2 = 8$

**B.** $y^3 = 8$

**C.** $y^2 = 16$

**D.** $y^3 = 64$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **16** | 8.EE.2 | 8.EE.A.2 | Expressions & Equations | PARCC Released Items Spring 2017 |

**3.**

Indicate whether each value of *x* in the table is a solution to the equation $x^2 = 30$, the equation $x^3 = 30$, or neither equation.

Select all appropriate cells in the table.

| Value of *x* | Solution of $x^2 = 30$ | Solution of $x^3 = 30$ | Solution of Neither $x^2 = 30$ nor $x^3 = 30$ |
|---|---|---|---|
| $x = \sqrt{30}$ | ☐ | ☐ | ☐ |
| $x = -\sqrt{30}$ | ☐ | ☐ | ☐ |
| $x = \sqrt[3]{30}$ | ☐ | ☐ | ☐ |
| $x = -\sqrt[3]{30}$ | ☐ | ☐ | ☐ |

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **17** | 8.C.1-1 | OGL | Reasoning | |

*Pending New PARCC Released Test Items*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **18** | 8.C.1-2 | OGL | 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 32.

In a system of two linear equations, the lines represented by each equation have the same slope.

**32. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

**A.** no solutions

**B.** 1 solution

**C.** 2 solutions

**D.** 3 solutions

**E.** infinitely many solutions

**Part B**

Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **19** | 8.G.1b | 8.G.A.1.B | Geometry | |

*Pending New PARCC Released Test Items*

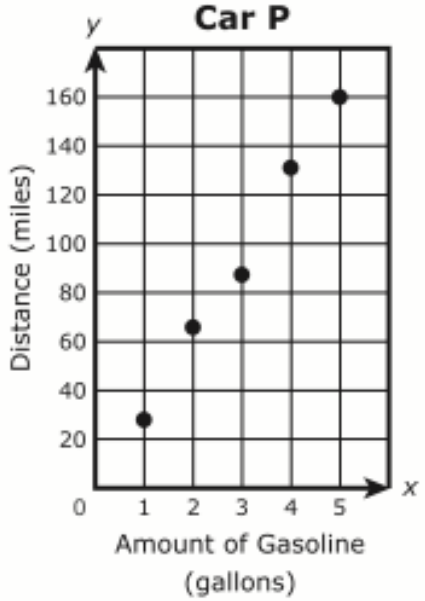
| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **20** | 8.D.3 | OGL | Modeling | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**20.** The gasoline mileage for two cars can be compared by finding the distance each car traveled and the amount of gasoline used. The table shows the distance that car M traveled using $x$ gallons of gasoline. The graph shows the distance, $y$, that car P traveled using $x$ gallons of gasoline.

**Car M**

| Amount of Gasoline (gallons) | Distance (miles) |
|---|---|
| 2 | 50.4 |
| 3 | 80.5 |
| 7 | 181.3 |
| 5 | 137.5 |

**Car P**




Based on the information in the table and the graph, compare the approximate miles per gallon of car M to car P. Show your work or explain your answer.

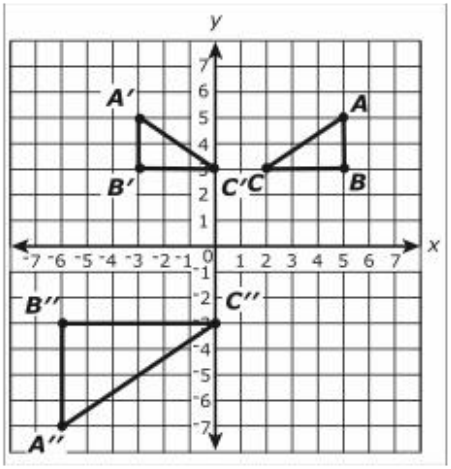
Enter your answer and your work or explanation in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **21** | 8.C.5-1 | OGL | 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 29.

In the coordinate plane shown, triangle *ABC* is congruent to triangle *A′B′C′*.

Triangle *A′B′C′* is similar to triangle *A″B″C″*.




**29. Part A**

Describe a single transformation that shows that triangle *A′B′C′* is congruent to triangle *ABC*. Include all the necessary information to complete the transformation.

Enter your description in the space provided.

**Part B**

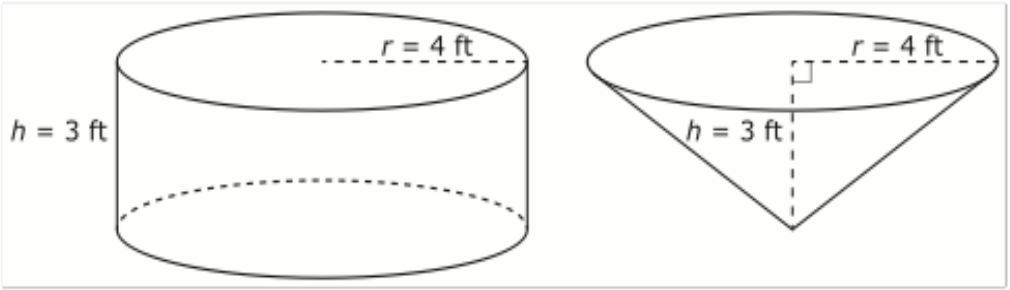
Describe a sequence of transformations that shows that triangle *A″B″C″* is similar to triangle *A′B′C′*. Include all the necessary information to complete each transformation.

Enter your description in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **22** | 8.G.9 | 8.G.C.9 | 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 24.

The figure shows a right-circular cylinder and a right-circular cone. The cylinder and the cone have the same base and the same height.




**24. Part A**

What is the volume, in cubic feet, of the cone?

**A.** $12\pi$

**B.** $16\pi$

**C.** $36\pi$

**D.** $48\pi$

**Part B**

What is the ratio of the cone's volume to the cylinder's volume?

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

**B.** $\frac{1}{2}$

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

**D.** $\frac{1}{4}$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **22** | 8.G.9 | 8.G.C.9 | Geometry | PARCC Released Items Spring 2017 |

## 16.

A manufacturer makes candles in the shapes of right circular cylinders and right circular cones.

### Part A

One candle, in the shape of a right circular cylinder, has a height of 7.5 inches and a diameter of 5 inches. What is the volume of the candle? Round your answer to the nearest cubic inch.

Enter your answer in the box.

[ ] cubic inches

### Part B

Another candle, in the shape of a right circular cone, has the same height and diameter as the candle in Part A. What is the volume of this candle? Round your answer to the nearest cubic inch.

Enter your answer in the box.

[ ] cubic inches

### Part C

A third candle, in the shape of a right circular cone, has a volume of 16 cubic inches and a radius of 1.5 inches. What is the height, in inches, of the candle? Round your answer to the nearest inch.

Enter your answer in the box.

[ ] inches

### Part D

A fourth candle, in the shape of a right circular cylinder, has a volume of 75 cubic inches and a height of 6 inches. What is the radius, in inches, of this candle? Round your answer to the nearest inch.

Enter your answer in the box.

[ ] inches

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **23** | 8.F.2 | 8.F.A.2 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**21.** Function A and Function B are linear functions. Function A is represented by the table of values. Function B is represented by the equation.

**Function A**

| $x$ | $y$ |
|---|---|
| 1 | 2 |
| 3 | 10 |
| 4 | 14 |
| 7 | 26 |

**Function B**

$y = 3x + 4$

Which statements about the properties of Function A and Function B are true?

Select **each** correct statement.

**A.** The $y$-intercept of Function A is equal to the $y$-intercept of Function B.

**B.** The $y$-intercept of Function A is less than the $y$-intercept of Function B.

**C.** The $y$-intercept of Function A is greater than the $y$-intercept of Function B.

**D.** The rate of change of Function A is equal to the rate of change of Function B.

**E.** The rate of change of Function A is less than the rate of change of Function B.

**F.** The rate of change of Function A is greater than the rate of change of Function B.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **23** | 8.F.2 | 8.F.A.2 | Functions | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**36.** Function A is a linear function. Some values of Function A are shown in the table.

**Function A**

| $x$ | $y$ |
|---|---|
| −1 | −5 |
| 3 | 3 |
| 5 | 7 |
| 6 | 9 |

Function B is a linear function with a $y$-intercept of 3 and an $x$-intercept of $-5$.

Which statement is true?

**A.** The slope of Function A is greater than the slope of Function B, and the $y$-intercept of Function A is greater than the $y$-intercept of Function B.

**B.** The slope of Function A is less than the slope of Function B, and the $y$-intercept of Function A is greater than the $y$-intercept of Function B.

**C.** The slope of Function A is greater than the slope of Function B, and the $y$-intercept of Function A is less than the $y$-intercept of Function B.

**D.** The slope of Function A is less than the slope of Function B, and the $y$-intercept of Function A is less than the $y$-intercept of Function B.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **23** | 8.F.2 | 8.F.A.2 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Functions A, B, and C are linear functions.

Some values of Function A are shown in the table.

**Function A**

| $x$ | $y$ |
|---|---|
| 3 | 3 |
| 5 | 7 |
| 6 | 9 |

The graph of Function B has a y-intercept of $(0, 3)$ and an x-intercept of $(-5, 0)$.

Function C is defined by the equation $y = (3x + 1)$.

Order the linear functions based on rate of change, from least to greatest.

**Least Rate of Change** **Greatest Rate of Change**

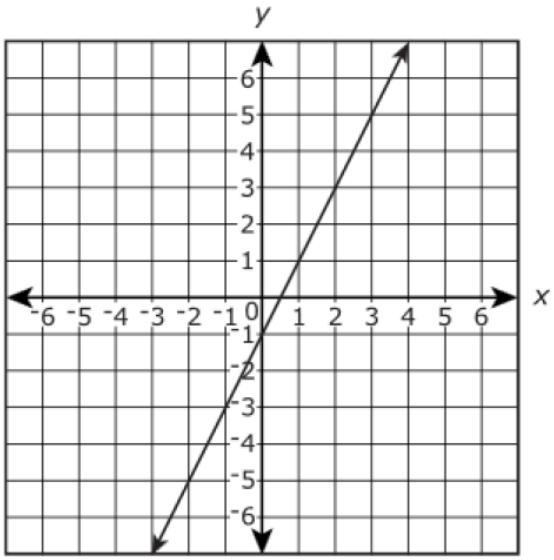
Function A | Function B | Function C

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **23** | 8.F.2 | 8.F.A.2 | Functions | PARCC Released Items Spring 2017 |

**13.**

The graph of Function 1 is shown on the coordinate plane.

**Function 1**




The equations of three other functions are given. Indicate whether the slope of each function is greater than, equal to, or less than the slope of Function 1.

Drag and drop each equation into the correct box.

| $y = 3 + 2x$ | $y = 2$ | $y = \frac{3}{2}x + 6$ |
|---|---|---|

| Slope of the function is greater than the slope of Function 1 | Slope of the function is equal to the slope of Function 1 | Slope of the function is less than the slope of Function 1 |
|---|---|---|

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **23** | 8.F.2 | 8.F.A.2 | Functions | PARCC Released Items Spring 2017 |

## 22.

Two linear functions are shown.

**Function 1**

$y = \frac{4}{3}x + 2$

**Function 2**

| $x$ | $y$ |
|---|---|
| −3 | −2.5 |
| −1 | 0.5 |
| 2 | 5 |
| 4 | 8 |

Which statements about the functions are true?

Select **each** correct answer.

- ☐ A. The rate of change for function 1 is greater than the rate of change for function 2.
- ☐ B. The rate of change for function 2 is greater than the rate of change for function 1.
- ☐ C. The rate of change for function 1 is equal to the rate of change for function 2.
- ☐ D. The *y*-intercept of the line for function 1 is greater than the *y*-intercept of the line for function 2.
- ☐ E. The *y*-intercept of the line for function 2 is greater than the *y*-intercept of the line for function 1.
- ☐ F. The *y*-intercept of the line for function 1 is equal to the *y*-intercept of the line for function 2.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **24** | 8.EE.8b-3 | 8.EE.C.8.B | 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 32.

In a system of two linear equations, the lines represented by each equation have the same slope.

**32. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

**A.** no solutions

**B.** 1 solution

**C.** 2 solutions

**D.** 3 solutions

**E.** infinitely many solutions

**Part B**

Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **24** | 8.EE.8b-3 | 8.EE.C.8.B | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2015 |

The table shows two systems of linear equations.

Indicate whether each system of equations has no solution, one solution, or infinitely many solutions by selecting the correct cell in the table. Select one cell per column.

| System of Equations | $\begin{cases} y = -x \\ 8y = -8x \end{cases}$ | $\begin{cases} y = (3x + 1) \\ y = -4 \end{cases}$ |
|---|---|---|
| No Solution | ☐ | ☐ |
| One Solution | ☐ | ☐ |
| Infinitely Many Solutions | ☐ | ☐ |

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **24** | 8.EE.8b-3 | 8.EE.C.8.B | Expressions & Equations | PARCC Released Items Spring 2017 |

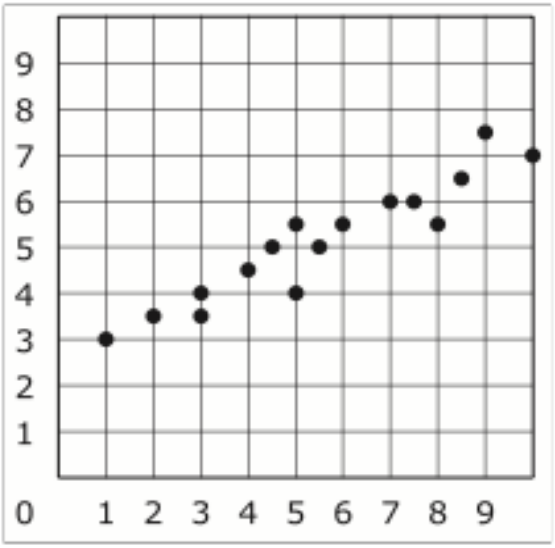
**4.**

Four systems of equations are shown in the table. Indicate whether each system of equations has no solution, one solution, or infinitely many solutions by selecting a box in each row in the table.

| System of Equations | No Solution | One Solution | Infinitely Many Solutions |
|---|---|---|---|
| $2x + y = 4$<br>$-4x - 2y = -8$ | ☐ | ☐ | ☐ |
| $x = 1$<br>$y = 4$ | ☐ | ☐ | ☐ |
| $y = 2x - 5$<br>$y = 2x + 5$ | ☐ | ☐ | ☐ |
| $y = 2x + 1$<br>$y = -3x + 1$ | ☐ | ☐ | ☐ |

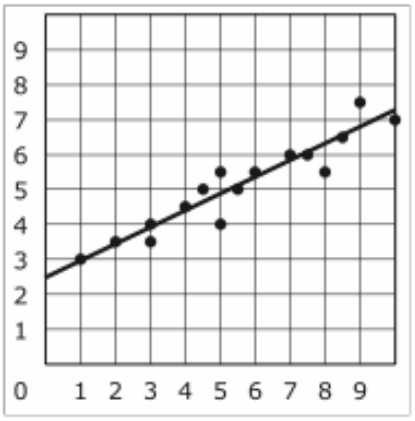
| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **25** | 8.SP.2 | 8.SP.A.2 | Statistics & Probability | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**16.** A scatter plot is shown on the coordinate plane.

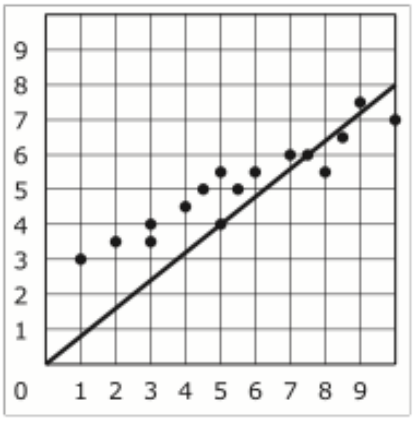



Which of these **most closely** approximates a line of best fit for the data in the scatter plot?

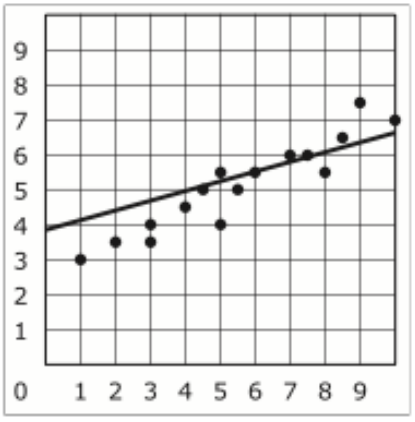
**A.**



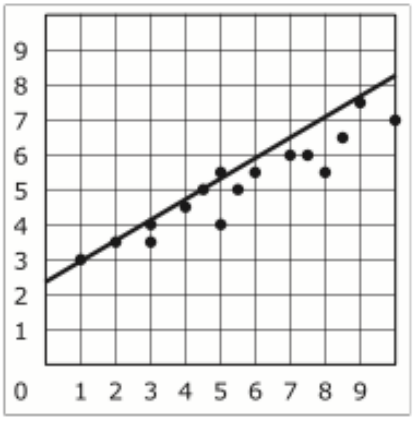

**B.**




**C.**




**D.**



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **26** | 8.EE.C.Int.1 | 8.EE.C.7<br>8.EE.C.7.A<br>8.EE.C.7.B | 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 19.

Filipo is building a rectangular sandbox for his younger brother. The length of the sandbox is 1 foot longer than twice the width of the sandbox. The perimeter of the sandbox is 29 feet.

**19. Part A**

Which equation could be used to determine $w$, the width, in feet, of the sandbox?

**A.** $w + w + 2 = 29$

**B.** $w + 2w + 1 = 29$

**C.** $2w + 2(w + 2) = 29$

**D.** $2w + 2(2w + 1) = 29$

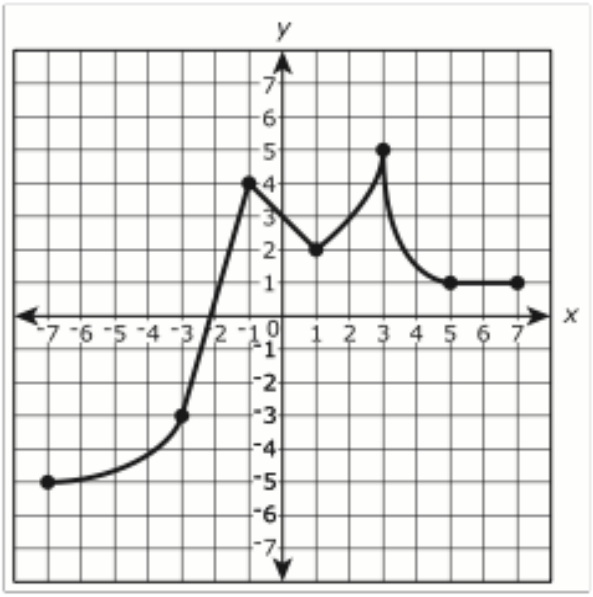
**Part B**

What is the width, in feet, of the sandbox?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **27** | 8.F.5-1 | 8.F.B.5 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**3.** The graph shows $y$ as a function of $x$.




For which intervals is the function decreasing?

Select **all** that apply.

**A.** $-7 < x < -3$

**B.** $-3 < x < -1$

**C.** $-1 < x < 1$

**D.** $1 < x < 3$

**E.** $3 < x < 5$

**F.** $5 < x < 7$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **28** | 8.EE.4-2 | 8.EE.A.4 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2015 |

Liz saw the number shown on her calculator screen.


Which numbers represents the number Liz saw?

A. $0.0000006$

B. $0.00000006$

C. $-6,000,000$

D. $-60,000,000$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **29** | 8.EE.8b-1 | 8.EE.C.8.B | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**7.** A system of equations is shown.

$$\begin{cases} x = 10 \\ 3x + 5y = 20 \end{cases}$$

In the system of equations, what is the value of $y$?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **29** | 8.EE.8b-1 | 8.EE.C.8.B | 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 32.

In a system of two linear equations, the lines represented by each equation have the same slope.

**32. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

**A.** no solutions

**B.** 1 solution

**C.** 2 solutions

**D.** 3 solutions

**E.** infinitely many solutions

**Part B**

Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **30** | 8.F.3-2 | 8.F.A.3 | Functions | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**8.** Which equations define $y$ as a nonlinear function of $x$?

Select **all** that apply.

**A.** $y = 7.4x$

**B.** $y = 2x + 5^2$

**C.** $y = 10x^2$

**D.** $y = 5x - 3$

**E.** $y = \frac{x}{2}$

**F.** $y = 2x^3 + 1$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **30** | 8.F.3-2 | 8.F.A.3 | Functions | PARCC Released Items Spring 2017 |

**5.**

Which equations represent functions that are non-linear?

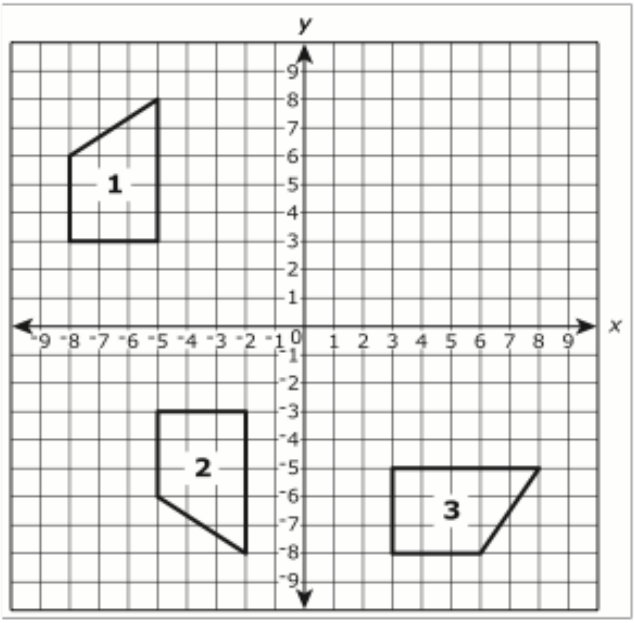
Select **each** correct answer.

- ☐ A. $y = x$
- ☐ B. $2y = \frac{1}{2}x$
- ☐ C. $y = 8 + x$
- ☐ D. $y - 6 = x^2$
- ☐ E. $y = \frac{1}{3} - 5x$
- ☐ F. $y = 2x^2 + 5 - 3x^3$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **31** | 8.G.2 | 8.G.A.2 | 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 12.

Three congruent figures are shown in the coordinate plane.




**12. Part A**

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 2?

**A.** a reflection across the *x*-axis, followed by a translation 2 units to the left

**B.** a reflection across the *x*-axis, followed by a translation 3 units to the right

**C.** a rotation 180° clockwise about the origin, followed by a translation 2 units to the left

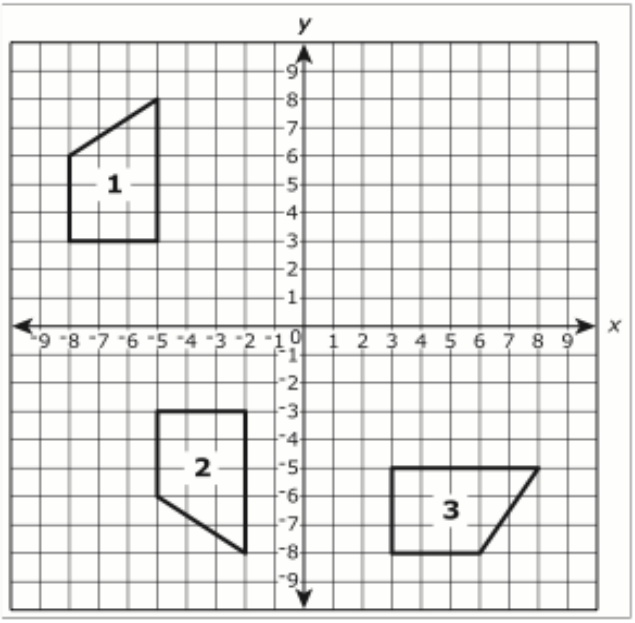
**D.** a rotation 180° clockwise about the origin, followed by a translation 3 units to the right

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **31** | 8.G.2 | 8.G.A.2 | 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 12.

Three congruent figures are shown in the coordinate plane.




**Part B**

Figure 3 can also be created by transforming figure 1 with a sequence of two transformations.

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 3?

**A.** a rotation 180° clockwise about the origin, followed by a translation 2 units to the left

**B.** a rotation 90° clockwise about the origin, followed by a reflection across the *x*-axis

**C.** a rotation 180° clockwise about the origin, followed by a reflection across the *y*-axis

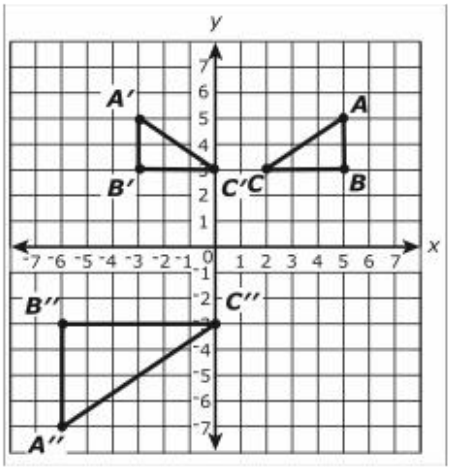
**D.** a rotation 90° clockwise about the origin, followed by a translation 3 units to the right

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **31** | 8.G.2 | 8.G.A.2 | 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.

In the coordinate plane shown, triangle $ABC$ is congruent to triangle $A'B'C'$.

Triangle $A'B'C'$ is similar to triangle $A''B''C''$.




**29. Part A**

Describe a single transformation that shows that triangle $A'B'C'$ is congruent to triangle $ABC$. Include all the necessary information to complete the transformation.

Enter your description in the space provided.

**Part B**

Describe a sequence of transformations that shows that triangle $A''B''C''$ is similar to triangle $A'B'C'$. Include all the necessary information to complete each transformation.

Enter your description in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **32** | 8.EE.5-2 | 8.EE.B.5 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**28.** Relationship A is defined by the equation $y = 9x$.

Some values of relationship B are shown in the table.

**Relationship B**

| $x$ | $y$ |
|---|---|
| 0 | 0 |
| 3 | 34.5 |
| 5 | 57.5 |
| 8 | 92 |

Both relationships represent a direct proportion between $x$ and $y$. The rate of change of relationship B is how many units greater than the rate of change of relationship A?

**A.** 1.5

**B.** 2.5

**C.** 25.5

**D.** 43.5

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **32** | 8.EE.5-2 | 8.EE.B.5 | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**31.** Two utility companies sell electricity in units of kilowatt-hours. The cost of electricity for company P is shown in the table. The cost of electricity for company M can be found by using the equation shown, where $y$ represents the total cost in dollars for $x$ kilowatt-hours of electricity.

**Electricity Costs**

**Company P**

| Number of Kilowatt-hours | Total Cost (dollars) |
|---|---|
| 1,250 | 150.00 |
| 1,650 | 198.00 |

**Company M**

$y = 0.15x$

- Use the information provided to find the unit rate, in dollars per kilowatt-hour, for each company. Show your work or explain your answers.
- Find the total cost, in dollars, of buying 2,375 kilowatt-hours of electricity from the **least** expensive company.

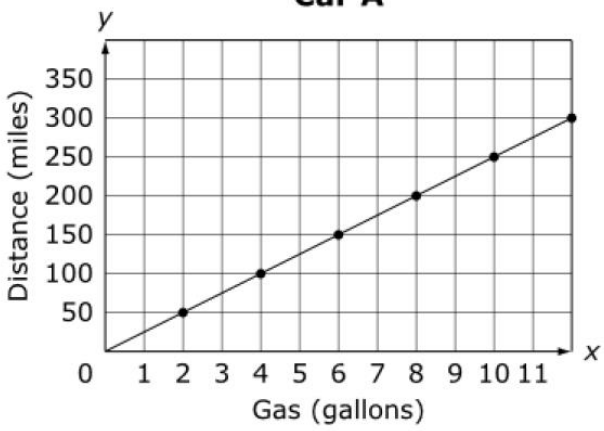
Enter your answers and your work or explanation in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **32** | 8.EE.5-2 | 8.EE.B.5 | Expressions & Equations | PARCC Released Items Spring 2017 |

**19.**

A car manufacturer provided information about two different car models.

**Car A**




**Car B**

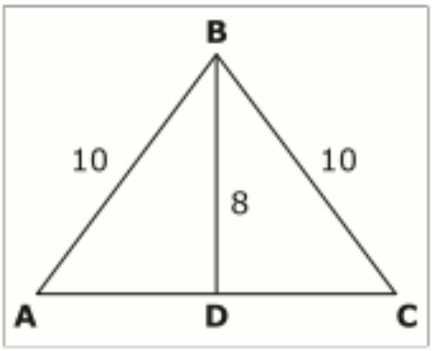
| Gas (gallons) | Distance (miles) |
|---|---|
| 0 | 0 |
| 3 | 60 |
| 5 | 100 |
| 7 | 140 |
| 10 | 200 |

The graph and table each show a proportional relationship between the number of miles traveled and the advertised number of gallons of gas used for the two car models, A and B, respectively. Based on the graph and table, car A can travel how many times the distance car B can travel when both cars use 1 gallon of gas? Write your answer as a decimal.

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **33** | 8.G.7-1 | 8.G.B.7 | Geometry | $MC^2$ PARCC Practice Test tem Packets-Preparing for Spring 2017 |

**27.** In $\triangle ABC$, $\overline{BD}$ is perpendicular to $\overline{AC}$. The dimensions are shown in centimeters.

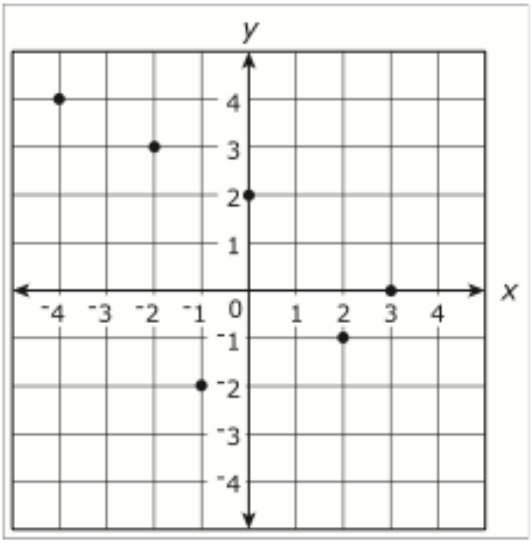



What is the length, in centimeters, of $\overline{AC}$?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **34** | 8.F.1-2 | 8.F.A.1 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**13.** The graph represents $y$ as a function of $x$.




Which additional point can be plotted so that the graph continues to represent $y$ as a function of $x$?

**A.** $(0, 1)$

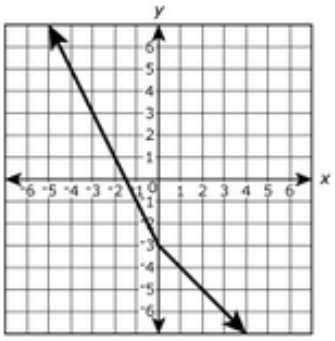
**B.** $(2, 2)$

**C.** $(3, 4)$

**D.** $(4, 2)$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **34** | 8.F.1-2 | 8.F.A.1 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2015 |

The graph of a nonlinear function is shown on the coordinate plane. In the graph, *y* is a function of *x*.



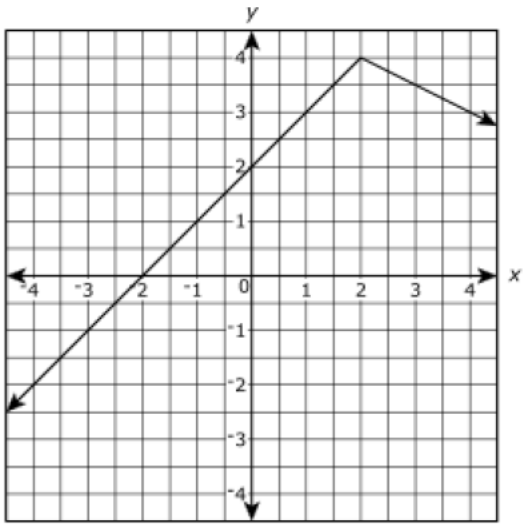

When the input of the function is $-4$, what is the output of the function?

- A. $-5$
- B. $-1$
- C. $1$
- D. $5$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **34** | 8.F.1-2 | 8.F.A.1 | Functions | PARCC Released Items Spring 2017 |

**9.**

The graph of a function is shown on the coordinate plane.




Which table of values consists of ordered pairs that are represented on the graph?

A.

| x | y |
|---|---|
| −1 | 1 |
| 0 | 2 |
| 2 | 4 |
| 4 | 6 |

C.

| x | y |
|---|---|
| −3 | −1 |
| −1 | 3 |
| 1 | 3 |
| 3 | 1 |

B.

| x | y |
|---|---|
| −2 | 0 |
| −1.5 | 0.5 |
| 0.5 | 2.5 |
| 3 | 5 |

D.

| x | y |
|---|---|
| −4 | −2 |
| −0.5 | 1.5 |
| 0.5 | 2.5 |
| 4 | 3 |

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **35** | 8.NS.1 | 8.NS.A.1 | The Number System | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**10.** Which decimal is the equivalent of $\frac{6}{11}$?

**A.** $0.18\overline{3}$

**B.** $0.1\overline{83}$

**C.** $0.5\overline{4}$

**D.** $0.\overline{54}$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **35** | 8.NS.1 | 8.NS.A.1 | The Number System | PARCC Released Items Spring 2017 |

## 7.

What is the value of $0.5 + 0.\bar{2}$?

- A. $\frac{7}{9}$
- B. $\frac{7}{10}$
- C. $\frac{13}{18}$
- D. $\frac{15}{22}$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **36** | 8.SP.3 | 8.SP.A.3 | Statistics & Probability | $MC^2$ PARCC Practice Test tem Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A and Part B for question 30.

Eric planted a seedling in his garden and recorded its height each week. The equation shown can be used to estimate the height, $h$, in inches, of the seedling by the end of each week, $w$, after it was planted.

**30. Part A**

What does the slope of the graph of the equation $h = \frac{3}{4}w + \frac{9}{4}$ represent?

**A.** the height, in inches, of the seedling after $w$ weeks

**B.** the height, in inches, of the seedling when Eric first planted it

**C.** the increase in the height, in inches, of the seedling each week

**D.** the total increase in the height, in inches, of the seedling after $w$ weeks

**Part B**

The equation $h = \frac{3}{4}w + \frac{9}{4}$ estimates the height of the seedling to be 8.25 inches after how many weeks?

Enter your answer in the box.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **37** | 8.SP.4 | 8.SP.A.4 | Statistics & Probability | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**26.** The table shows the results of a random survey of students in grade 7 and grade 8. Every student surveyed gave a response. Each student was asked if he or she exercised less than 5 hours last week or 5 or more hours last week.

| | Less than 5 Hours | 5 or More Hours |
|---|---|---|
| Grade 7 Students | 49 | 63 |
| Grade 8 Students | 58 | 51 |

Based on the results of the survey, which statements are true?

Select **each** correct statement.

**A.** More grade 8 students were surveyed than grade 7 students.

**B.** A total of 221 students were surveyed.

**C.** Less than 50% of the grade 8 students surveyed exercised 5 or more hours last week.

**D.** More than 50% of the students surveyed exercised less than 5 hours last week.

**E.** A total of 107 grade 7 students were surveyed.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **37** | 8.SP.4 | 8.SP.A.4 | Statistics & Probability | PARCC Released Items Spring 2017 |

**17.**

The table shows the results of a survey of students and their parents. The students and their parents were asked, "If you had an hour to spend by yourself, would you prefer to read a book or would you prefer to watch TV?"

**Free Time Survey**

| | Read a Book | Watch TV |
|---|---|---|
| Students | 18 | 32 |
| Parents | 25 | 9 |

Based on the results of the survey, which of these statements are true?

Select **all** that apply.

- ☐ A. A total of 84 people were surveyed.
- ☐ B. A total of 43 students were surveyed.
- ☐ C. Of the parents surveyed, 9 prefer to watch TV.
- ☐ D. Of the students surveyed, 18 prefer to watch TV.
- ☐ E. A greater percentage of the people surveyed prefer to read a book than to watch TV.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **38** | 8.F.3-1 | 8.F.A.3 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2015 |

A relationship between $x$ and $y$ is defined by the equation $y = -\frac{4}{3}x + \frac{1}{3}$, where $x$ is the input and $y$ is the output.

Which statements about the relationship are true?

Select **each** correct statement.

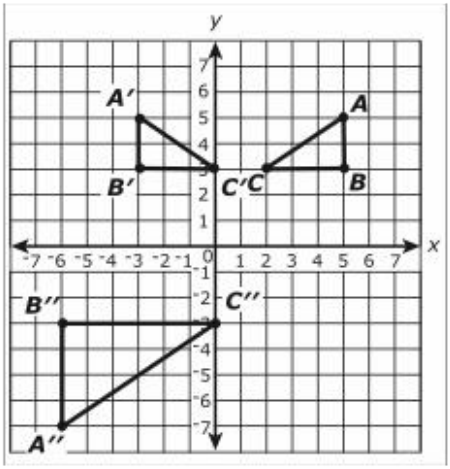
- ☐ A. $y$ is a function of $x$.
- ☐ B. The graph of the relationship is a line.
- ☐ C. When the input is $-3$, the output is $4$.
- ☐ D. When the input is $-2$, the output is $3$.
- ☐ E. The $y$ -intercept of the relationship is $(0,1)$.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **39** | 8.G.4 | 8.G.A.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 29.

In the coordinate plane shown, triangle *ABC* is congruent to triangle *A′B′C′*.

Triangle *A′B′C′* is similar to triangle *A″B″C″*.




**29. Part A**

Describe a single transformation that shows that triangle *A′B′C′* is congruent to triangle *ABC*. Include all the necessary information to complete the transformation.

Enter your description in the space provided.

**Part B**

Describe a sequence of transformations that shows that triangle *A″B″C″* is similar to triangle *A′B′C′*. Include all the necessary information to complete each transformation.

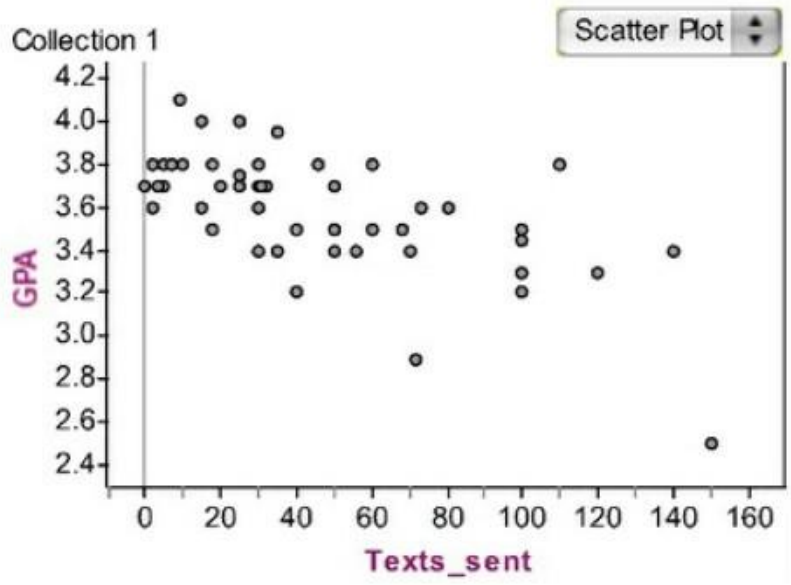
Enter your description in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **40** | 8.SP.1 | 8.SP.A.1 | Statistics & Probability | Illustrative Mathematics |

# 8-SP.1 Texting and Grades I

Illustrative Mathematics

Medhavi suspects that there is a relationship between the number of text messages high school students send and their academic achievement. To explore this, she asks each student in a random sample of 52 students from her school how many text messages he or she sent yesterday and what his or her grade point average (GPA) was during the most recent marking period. The data are summarized in the scatter plot of number of text messages sent versus GPA shown below.



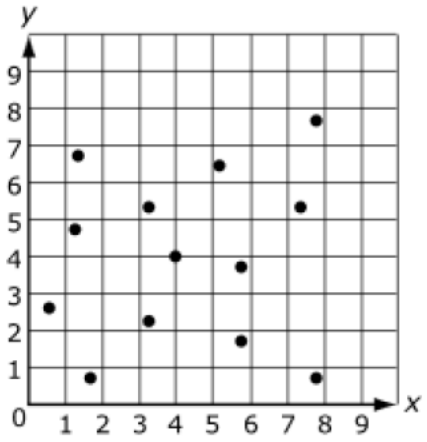

Describe the relationship between number of text messages sent and GPA. Discuss both the overall pattern and any deviations from the pattern.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **40** | 8.SP.1 | 8.SP.A.1 | Statistics & Probability | PARCC Released Items Spring 2017 |

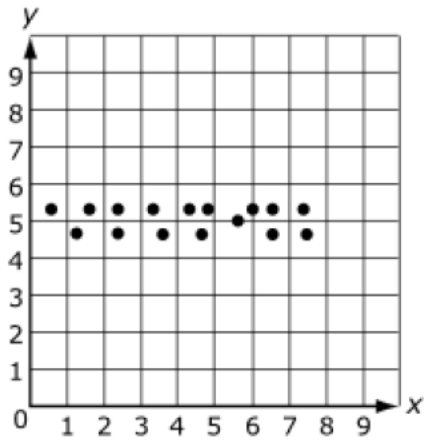
## 11.

Which scatter plot shows data with a negative linear association?

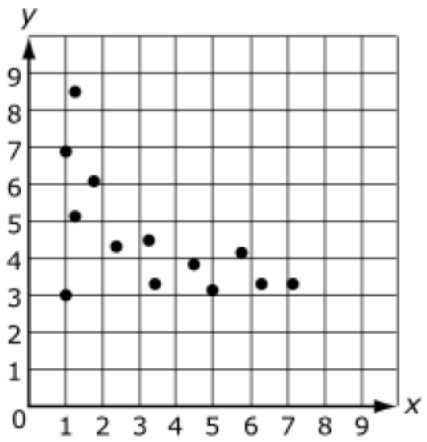
A.



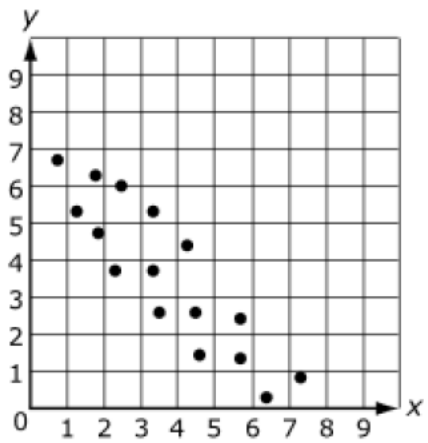

C.




B.




D.



| Difficulty Order | Evidence Statement | Common Core State Standard | Do m | Source |
|---|---|---|---|---|
| **41** | 8.D.1 | OGL | Modeling | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**31.** Two utility companies sell electricity in units of kilowatt-hours. The cost of electricity for company P is shown in the table. The cost of electricity for company M can be found by using the equation shown, where $y$ represents the total cost in dollars for $x$ kilowatt-hours of electricity.

**Electricity Costs**

**Company P**

| Number of Kilowatt-hours | Total Cost (dollars) |
|---|---|
| 1,250 | 150.00 |
| 1,650 | 198.00 |

**Company M**

$y = 0.15x$

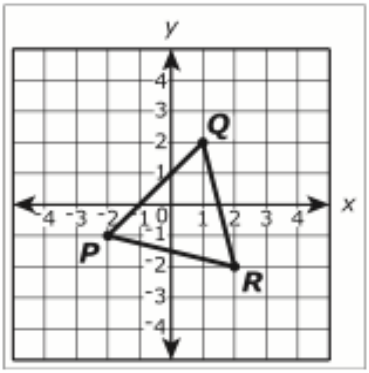
- Use the information provided to find the unit rate, in dollars per kilowatt-hour, for each company. Show your work or explain your answers.
- Find the total cost, in dollars, of buying 2,375 kilowatt-hours of electricity from the **least** expensive company.

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

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **42** | 8.G.3 | 8.G.A.3 | 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 5.

Triangle *PQR* is shown on the coordinate plane.




Triangle *PQR* is rotated 90° counterclockwise about the origin to form the image triangle *P′Q′R′* (not shown). Then triangle *P′Q′R′* is reflected across the *x*-axis to form triangle *P″Q″R″* (not shown).

**5. Part A**

What are the signs of the coordinates $(x, y)$ of point $P'$?

**A.** Both $x$ and $y$ are positive.

**B.** $x$ is negative and $y$ is positive.

**C.** Both $x$ and $y$ are negative.

**D.** $x$ is positive and $y$ is negative.

**Part B**

What are the signs of the coordinates $(x, y)$ of point $Q''$?

**A.** Both $x$ and $y$ are positive.

**B.** $x$ is negative and $y$ is positive.

**C.** Both $x$ and $y$ are negative.

**D.** $x$ is positive and $y$ is negative.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **43** | 8.EE.8b-2 | 8.EE.C.8.B | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

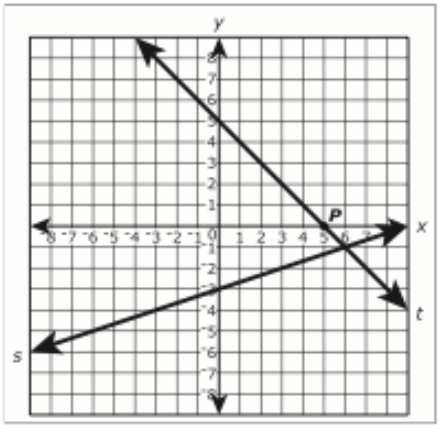
**15.** The equation of line $s$ is $y = \frac{1}{3}x - 3$.

The equation of line $t$ is $y = -x + 5$.

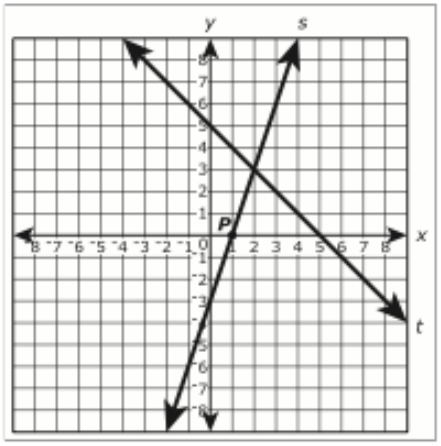
The equations of lines $s$ and $t$ form a system of equations. The solution to the system of equations is located at point $P$.

Which graph correctly shows line $s$, line $t$, and point $P$?

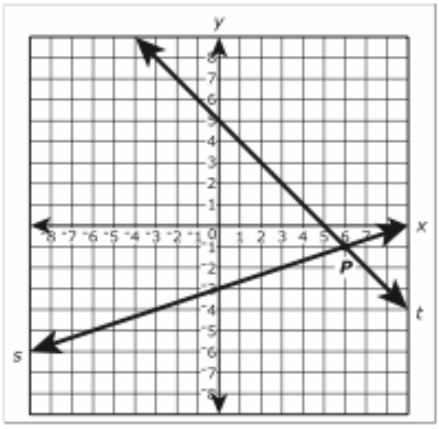
**A.**



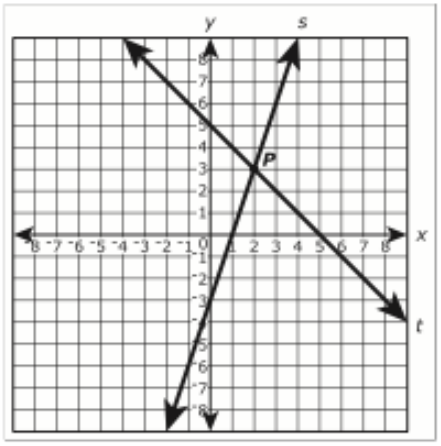

**B.**




**C.**




**D.**



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **43** | 8.EE.8b-2 | 8.EE.C.8.B | 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 32.

In a system of two linear equations, the lines represented by each equation have the same slope.

**32. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

**A.** no solutions

**B.** 1 solution

**C.** 2 solutions

**D.** 3 solutions

**E.** infinitely many solutions

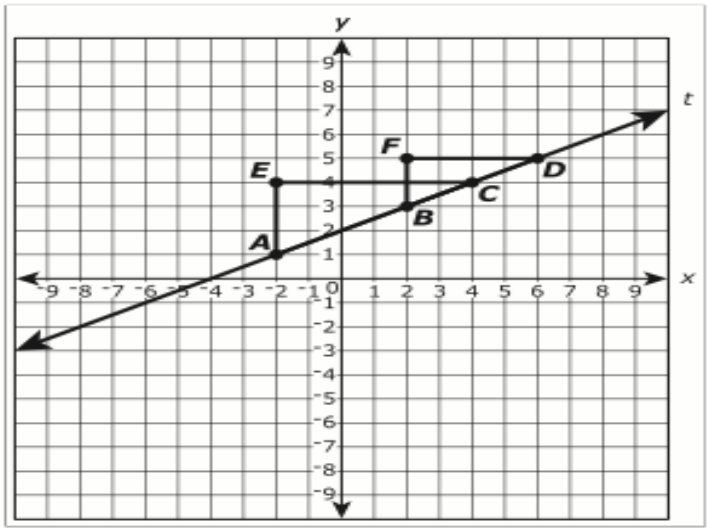
**Part B**

Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **44** | 8.EE.6 | 8.EE.B.6 | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**33.** Line $t$ and $\triangle ECA$ and $\triangle FDB$ are shown on the coordinate plane.




Which statements are true?

Select **all** that apply.

**A.** The slope of $\overline{AC}$ is equal to the slope of $\overline{BC}$.

**B.** The slope of $\overline{AC}$ is equal to the slope of $\overline{BD}$.

**C.** The slope of $\overline{AC}$ is equal to the slope of line $t$.

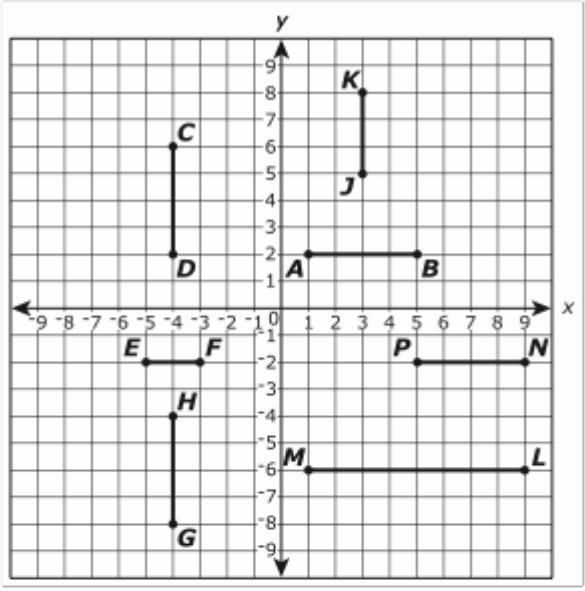
**D.** The slope of line $t$ is equal to $\frac{EC}{AE}$.

**E.** The slope of line $t$ is equal to $\frac{FB}{FD}$.

**F.** The slope of line $t$ is equal to $\frac{AE}{FD}$.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **45** | 8.G.1a | 8.G.A.1.A | Geometry | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**11.**




Seven line segments are shown on the coordinate plane.

Which of these segments could be the image of segment *AB* after a sequence of reflections, rotations, and/or translations?

Select **each** correct answer.

**A.** line segment *CD*

**B.** line segment *EF*

**C.** line segment *GH*

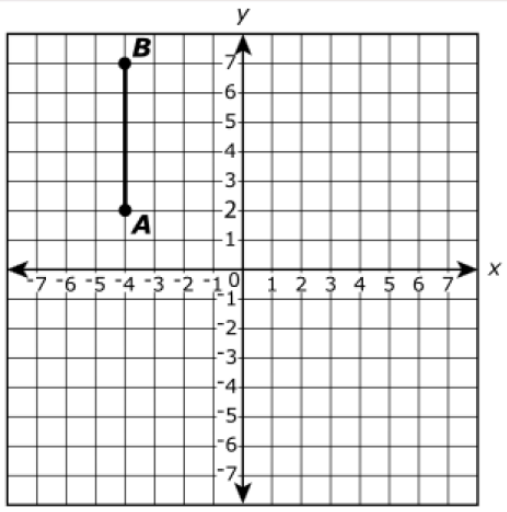
**D.** line segment *JK*

**E.** line segment *LM*

**F.** line segment *NP*

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **45** | 8.G.1a | 8.G.A.1.A | Geometry | PARCC Released Items Spring 2017 |

**8.**




On the coordinate plane shown, $\overline{AB}$ is a vertical segment with a length of 5 units. If $\overline{A'B'}$ is the image of $\overline{AB}$ after a rotation, which must be true about $\overline{A'B'}$ ?

A. The length of $\overline{A'B'}$ is 5 units.

B. The length of $\overline{A'B'}$ cannot be determined.

C. $\overline{A'B'}$ is a horizontal segment.

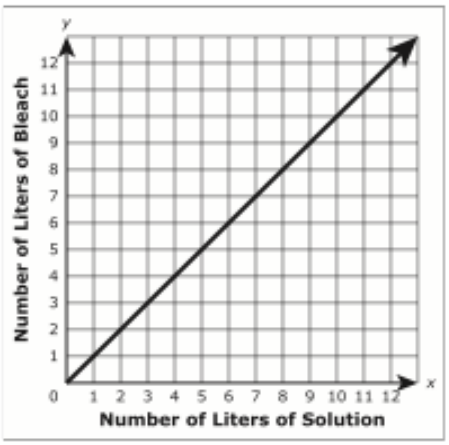
D. $\overline{A'B'}$ is a vertical segment.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **46** | 8.EE.5-1 | 8.EE.B.5 | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

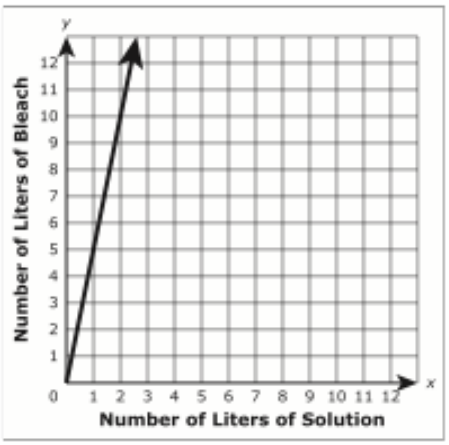
**18.** A solution is 20% bleach.

Which graph represents the number of liters of bleach, $y$, contained in $x$ liters of solution?

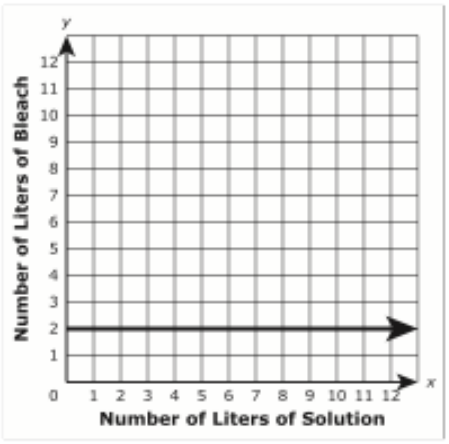
**A.**



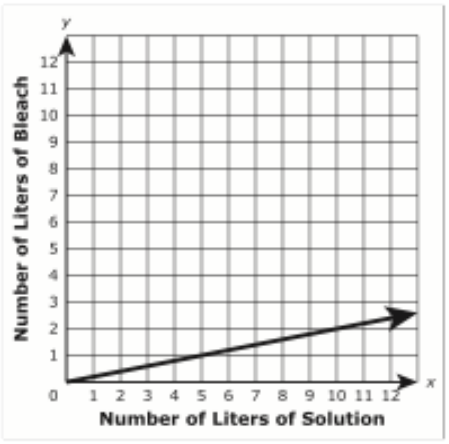

**B.**




**C.**



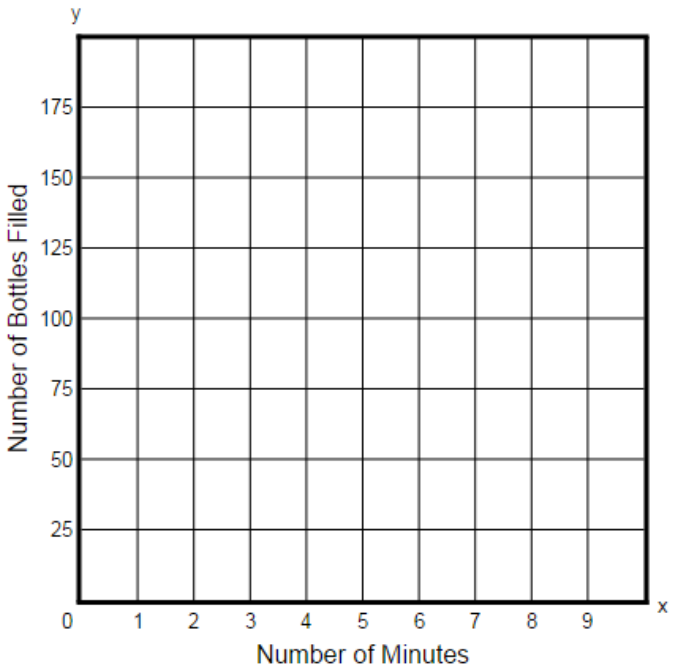

**D.**



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **46** | 8.EE.5-1 | 8.EE.B.5 | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

The number of bottles a machine fills is proportional to the number of minutes the machine operates. The machine fills 250 bottles every 20 minutes. Create a graph that shows the number of bottles, *y*, the machine fills in *x* minutes.

To graph a line, select two points on the coordinate plane. A line will be drawn through the points.



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **46** | 8.EE.5-1 | 8.EE.B.5 | Expressions & Equations | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**31.** Two utility companies sell electricity in units of kilowatt-hours. The cost of electricity for company P is shown in the table. The cost of electricity for company M can be found by using the equation shown, where $y$ represents the total cost in dollars for $x$ kilowatt-hours of electricity.

**Electricity Costs**

**Company P**

| Number of Kilowatt-hours | Total Cost (dollars) |
|---|---|
| 1,250 | 150.00 |
| 1,650 | 198.00 |

**Company M**

$y = 0.15x$

- Use the information provided to find the unit rate, in dollars per kilowatt-hour, for each company. Show your work or explain your answers.
- Find the total cost, in dollars, of buying 2,375 kilowatt-hours of electricity from the **least** expensive company.

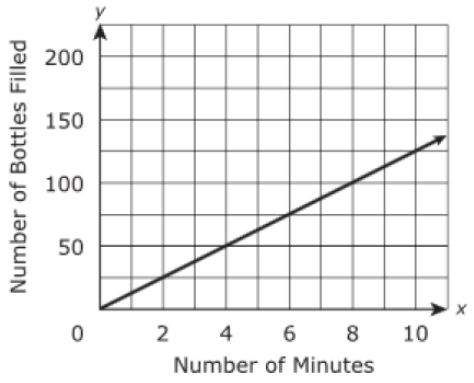
Enter your answers and your work or explanation in the space provided.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **46** | 8.EE.5-1 | 8.EE.B.5 | Expressions & Equations | PARCC Released Items Spring 2017 |

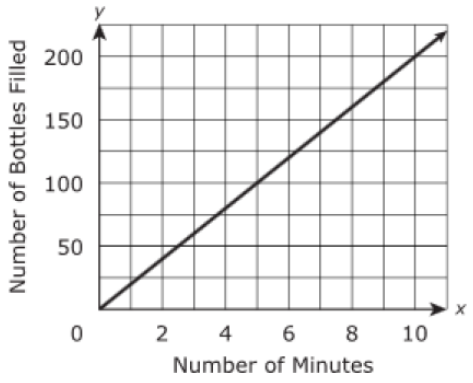
**12.**

The number of bottles a machine fills is proportional to the number of minutes the machine operates. The machine fills 250 bottles every 20 minutes. Which graph shows the number of bottles, $y$, the machine fills in $x$ minutes?

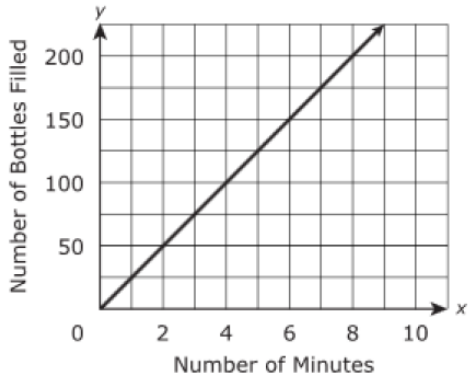
A.



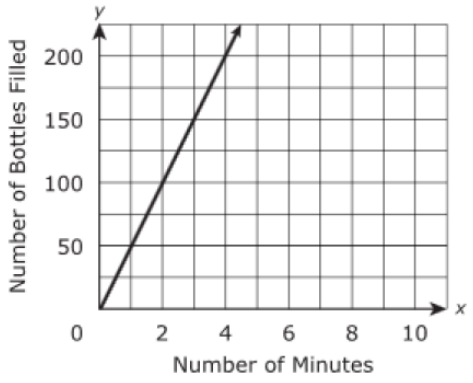

B.




C.




D.



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **47** | 8.NS.2 | 8.NS.A.2 | The Number System | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**4.** Which statement **best** describes the value of $\sqrt{8}$ ?

**A.** The value of $\sqrt{8}$ is between 2 and 2.5.

**B.** The value of $\sqrt{8}$ is between 2.5 and 3.

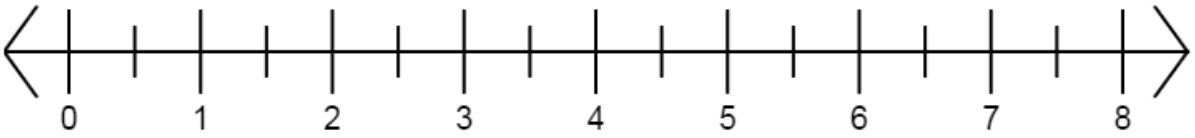
**C.** The value of $\sqrt{8}$ is between 3 and 3.5.

**D.** The value of $\sqrt{8}$ is between 3.5 and 4.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **47** | 8.NS.2 | 8.NS.A.2 | The Number System | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Select the point on the number line that **best** approximates the location of $\sqrt{14}$ .

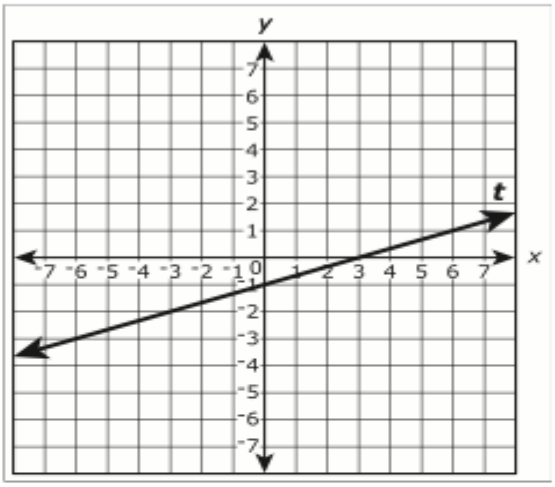
Select a place on the number line to plot the point.



| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 23.

Line $t$ is shown in the coordinate plane.




**23. Part A**

What is the slope of line $t$?

**A.** 3

**B.** $\frac{1}{3}$

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

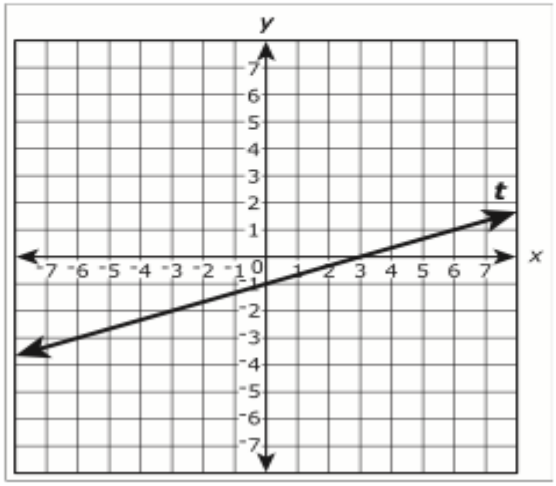
**D.** $-3$

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 23.

Line *t* is shown in the coordinate plane.




**Part B**

What is the *y*-intercept of line *t*?

**A.** −1

**B.** $-\frac{1}{3}$

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

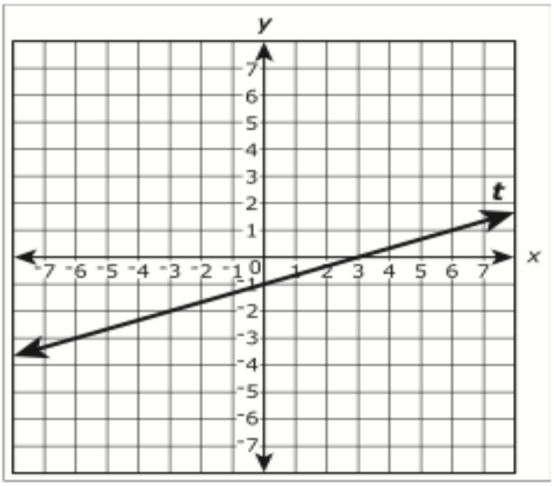
**D.** 3

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 23.

Line *t* is shown in the coordinate plane.




**Part C**

Line *s* (not shown) has the same slope and passes through the point (0, 4).

Which table represents 4 points on line *s*?

**A.**

| *x* | *y* |
|---|---|
| −6 | 2 |
| −3 | 3 |
| 0 | 4 |
| 3 | 5 |

**B.**

| *x* | *y* |
|---|---|
| −6 | −14 |
| −3 | −5 |
| 0 | 4 |
| 3 | 13 |

**C.**

| *x* | *y* |
|---|---|
| −6 | 6 |
| −3 | 5 |
| 0 | 4 |
| 3 | 3 |

**D.**

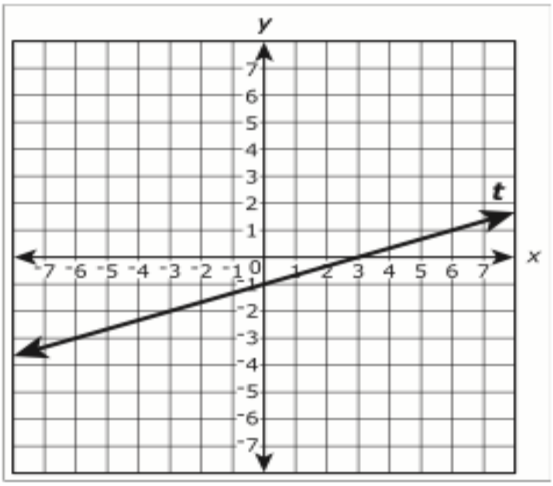
| *x* | *y* |
|---|---|
| −6 | 22 |
| −3 | 13 |
| 0 | 4 |
| 3 | −5 |

Continued on next page

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

Use the information provided to answer Part A through Part D for question 23.

Line *t* is shown in the coordinate plane.




**Part D**

Which equation could represent line *s*?

**A.** $y = -\frac{1}{3}x + 4$

**B.** $y = -3x + 4$

**C.** $y = 3x + 4$

**D.** $y = \frac{1}{3}x + 4$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

A pool cleaning service drained a full pool. The table shows the number of hours it drained and the amount of water remaining in the pool at that time.

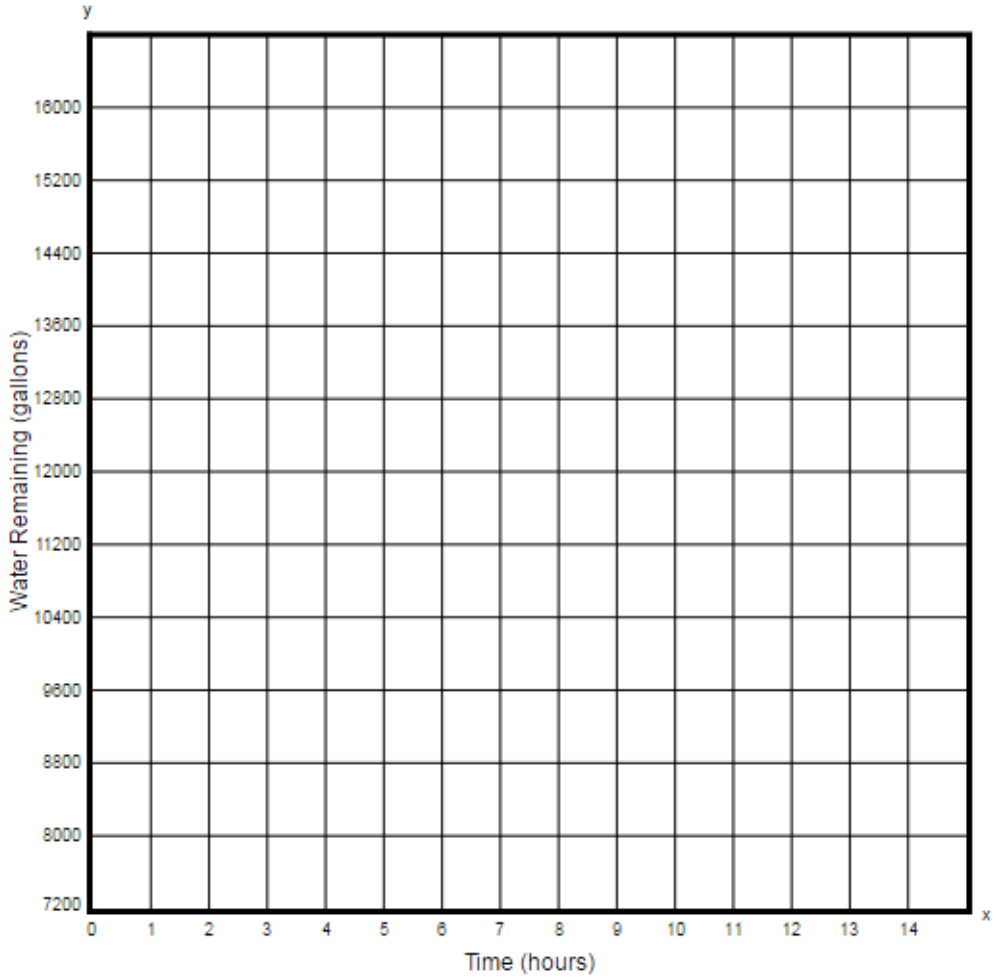
**Pool Draining**

| Time (hours) | 3 | 5 | 7 | 9 | 11 |
|---|---|---|---|---|---|
| Water Remaining (gallons) | 13,200 | 12,000 | 10,800 | 9,600 | 8,400 |

**Part A**

Plot the points that show the relationship between the number of hours elapsed and the number of gallons of water left in the pool.

Select a place on the grid to plot each point.

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| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | MC$^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**Part B**

The data suggest a linear relationship between the number of hours the pool had been draining and the number of gallons of water remaining in the pool. Assuming the relationship is linear, what does the rate of change represent in the context of this relationship?

- A. the number of gallons of water in the pool after 1 hour
- B. the number of hours it took to drain 1 gallon of water
- C. the number of gallons drained each hour
- D. the number of gallons of water in the pool when it is full

**Part C**

What does the $y$ -intercept of the linear function represent in the context of this relationship?

- A. the number of gallons of water in the pool after 1 hour
- B. the number of hours it took to drain 1 gallon of water
- C. the number of gallons drained each hour
- D. the number of gallons of water in the pool when it is full

**Part D**

Which equation describes the relationship between the time elapsed and the number of gallons of water remaining in the pool?

- A. $y = -600x + 15,000$
- B. $y = -600x + 13,200$
- C. $y = -1,200x + 13,200$
- D. $y = -1,200x + 15,000$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **48** | 8.F.4 | 8.F.B.4 | Functions | PARCC Released Items Spring 2017 |

**15.**

A pool is in the shape of a rectangular prism. On Monday, water was pumped out of the pool at a constant rate, starting at 12:00 p.m. At 12:15 p.m., the water in the pool was 45 inches deep. At 12:35 p.m., the water in the pool was 41 inches deep.

**Part A**

By how many inches does the depth of the water decrease each minute?

Enter your answer in the box.

[ ] inch(es)

**Part B**

Write an equation that represents *y*, the depth of the water (in inches), after *x* minutes.

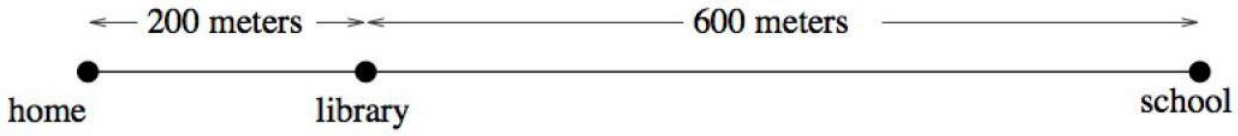
Enter your equation in the space provided. Enter **only** your equation.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **49** | 8.F.5-2 | 8.F.B.5 | Functions | **Illustrative Mathematics** |

# 8.F Riding by the Library

Illustrative Mathematics

Nina rides her bike from her home to school passing by the library on the way, and traveling at a constant speed for the entire trip. (See map below.)




a. Sketch a graph of Nina's distance from school as a function of time.

b. Sketch a graph of Nina's distance from the library as a function of time.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **50** | 8.EE.8a | 8.EE.C.8.A | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2017 |

**9.** Consider the system of equations.

$$\begin{cases} y = 2x + 2 \\ y = 6x + 2 \end{cases}$$

Which statements are true about the system of equations?

Select **each** correct answer.

**A.** The graph of the system consists of lines that have no points of intersection.

**B.** The graph of the system consists of lines that have exactly one point of intersection.

**C.** The graph of the system consists of lines that have more than one point of intersection.

**D.** The system has no solution.

**E.** The system has exactly one solution.

**F.** The system has more than one solution.

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **50** | 8.EE.8a | 8.EE.C.8.A | Expressions & Equations | $MC^2$ PARCC Practice Test Item Packets-Preparing for Spring 2015 |

Two lines are graphed on the same coordinate plane. The lines only intersect at the point $(3, 6)$. Which of these systems of linear equations could represent the two lines?

Select **all** that apply.

- A. $\begin{cases} x = 3 \\ y = 6 \end{cases}$
- B. $\begin{cases} x = 6 + y \\ y = 3 + x \end{cases}$
- C. $\begin{cases} y = 3x - 3 \\ y = x - 1 \end{cases}$
- D. $\begin{cases} x = 3 + y \\ y = 6 + x \end{cases}$
- E. $\begin{cases} y = x + 3 \\ y = 2x \end{cases}$

| Difficulty Order | Evidence Statement | Common Core State Standard | Domain | Source |
|---|---|---|---|---|
| **50** | 8.EE.8a | 8.EE.C.8.A | Expressions & Equations | PARCC Released Items Spring 2017 |

**6.**

$$y = mx + 2$$
$$y = px + 6$$

In the system of equations shown, *m* and *p* are the slopes of the lines represented by the equations. The *x*-coordinate of the solution to the system of equations is 4.

Which of the following is true?

A. $m > 0$

B. $p < 0$

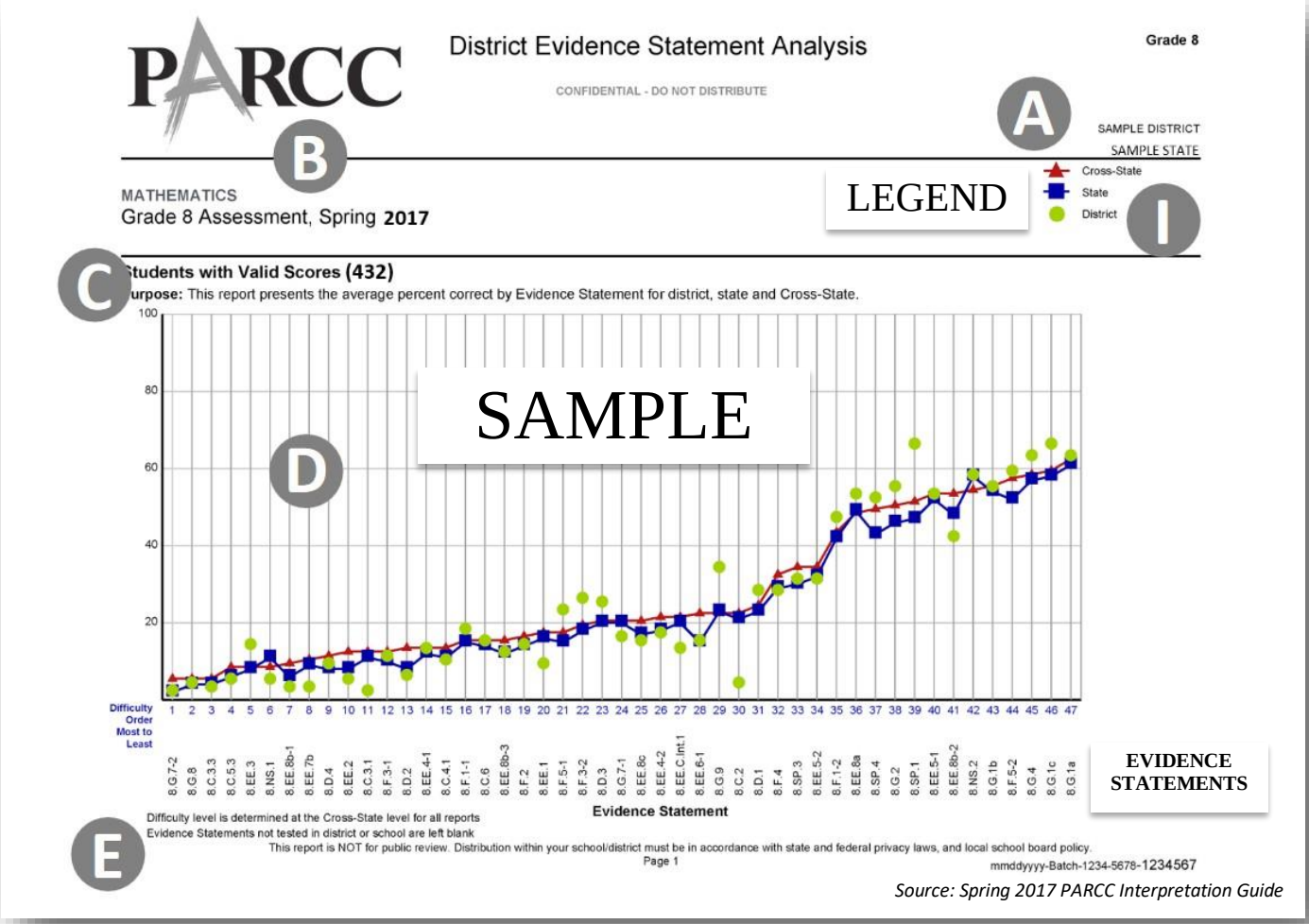
C. $m > p$

D. $p > m$

# 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

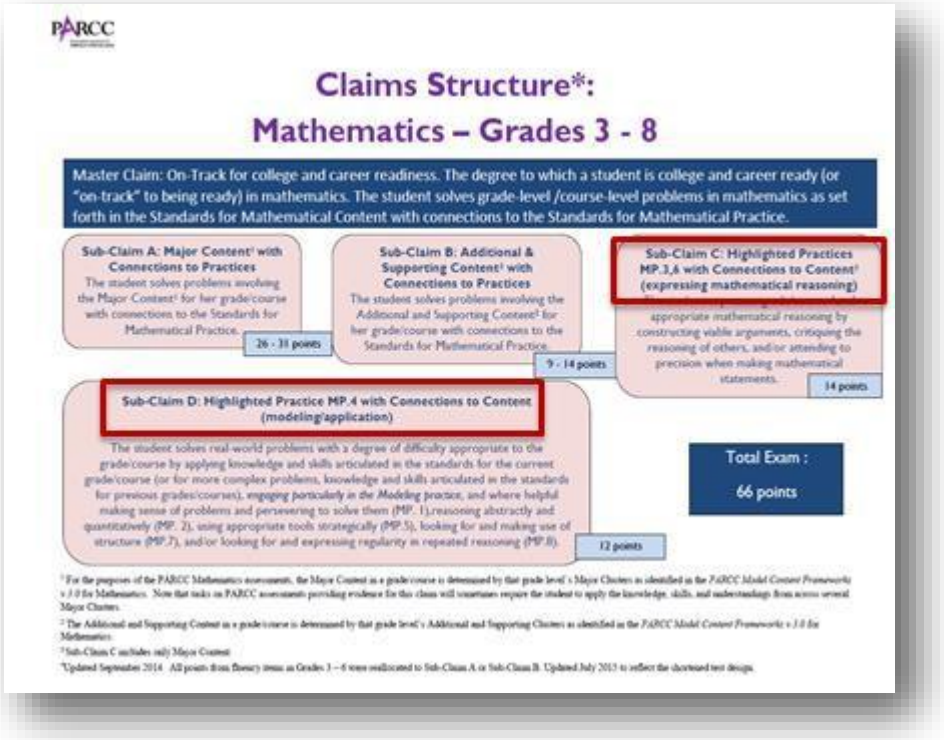
   When the focus is on reasoning, the Evidence Statement may also require the student to reason about *securely held knowledge* (SHK-see pg. 4) from a previous grade.

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.

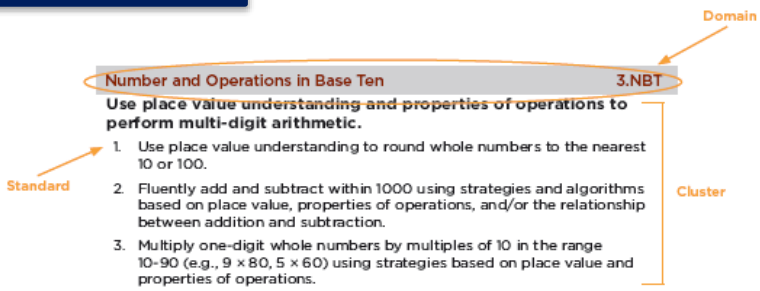
   For example, Evidence Statement HS.D.5:
   - Type of Modeling: Given an equation or system of equations, reason about the number or nature of the solutions.
   - Content Scope: A-REI.11, involving any of the function types measured in the standards.

   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/](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.*

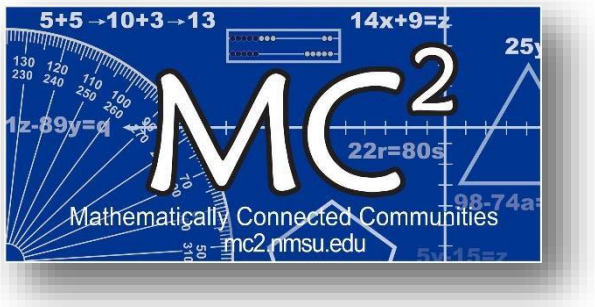
**Domains**

- The Number System (NS)
- Expressions & Equations (EE)
- Functions (F)
- Geometry (G)
- Statistics & Probability (SP)

**Sources**

Identifies where the practice test items were excerpted from (e.g., MC$^2$ PARCC Practice Test Item Packets; Illustrative Mathematics)

**For more information, email mc2@nmsu.edu**

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**Higher Education Department (HED)**

**Participating School Districts' Cost Share**