



Math

Spring 2017

Grade 6

Released Items

1.

VF524261

Kent mixed oil and gas for his lawn mower. He mixed 8 fluid ounces of oil for every 1 gallon of gas. Which of the following statements must be true?

Select **each** true statement.

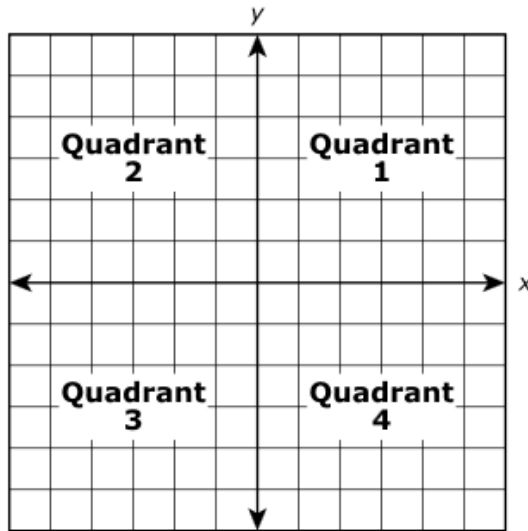
- A. For every 2 gallons of gas, he used 16 fluid ounces of oil.
- B. For every 3 gallons of gas, he used  $\frac{3}{8}$  fluid ounces of oil.
- C. For every 5 gallons of gas, he used 40 fluid ounces of oil.
- D. For every fluid ounce of oil, he used  $\frac{1}{8}$  gallon of gas.
- E. For every 40 fluid ounces of oil, he used 10 gallons of gas.
- F. For every 10 fluid ounces of oil, he used  $1\frac{1}{4}$  gallons of gas.

2.

VF523880

Marilyn has  $\frac{7}{8}$  yard of ribbon. What is the maximum number of  $\frac{1}{16}$  yard-long pieces Marilyn can cut from this ribbon?

Enter your answer in the box.



In which quadrant of the coordinate plane would the point  $(-10, 30\frac{1}{2})$  be located?

- A. Quadrant 1
- B. Quadrant 2
- C. Quadrant 3
- D. Quadrant 4

4.

M21345

What is the product of 35.263 and 0.29?

Enter your answer in the box.

5.

M22245

Which expression is equivalent to  $4 \times 4 \times 4 \times 5 \times 5$ ?

- A.  $3^4 \times 2^5$
- B.  $4^3 \times 5^2$
- C.  $4^4 \times 5^5$
- D.  $12^3 \times 10^2$

6.

M21486

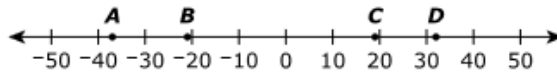
What is the quotient of  $28,435 \div 47$ ?

Enter your answer in the box.

7.

VF967477

Which point shows the location of the number with the greatest absolute value?



- A. point A
- B. point B
- C. point C
- D. point D

8.

VF821040

The area of Melanie's bedroom floor is 1.5 times the area of her kitchen floor. The area of her kitchen floor is  $k$ .

Select **each** of the following that represent the area of Melanie's bedroom floor.

- A.  $1.5k$
- B.  $k + 0.5$
- C.  $k + 1.5$
- D.  $k + 0.5k$
- E.  $k + 1.5k$

9.

M22498

Find the value of  $9.62 + 85.749$ .

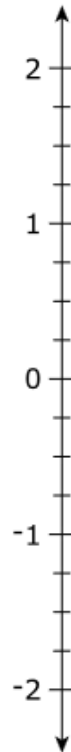
Enter your answer in the box.

10.

M21276

Plot the point  $-1\frac{1}{2}$  on the number line.

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



11.

M21736

The width of stamp M is  $\frac{4}{3}$  inches, and the length is  $\frac{7}{5}$  inches. The dimensions of stamp M are  $\frac{7}{6}$  times the dimensions of stamp P. What is the length of stamp P, in inches?

- A.  $\frac{6}{5}$
- B.  $\frac{8}{7}$
- C.  $\frac{14}{9}$
- D.  $\frac{49}{30}$

12.

VH057889

Tracy bought 5 trays of plants for \$105.

- Each tray contained 12 plants.
- Each plant cost the same amount.
- Plants can be purchased individually.

How much more money will Tracy need to spend for 15 additional plants?

Enter your answer in the box.

\$

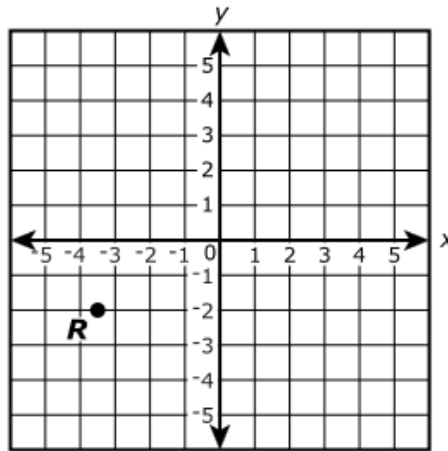
13.

M20300

Point  $R$  is graphed on the coordinate grid. What are the coordinates that best represent the location of point  $R$ ?

Drag and drop the correct number into each box of the ordered pair.

0	1	2	3	4	-1	-2	-3	-4	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{5}{2}$	$\frac{7}{2}$	$-\frac{1}{2}$	$-\frac{3}{2}$	$-\frac{5}{2}$	$-\frac{7}{2}$	$\frac{3}{5}$	$-\frac{3}{5}$
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$R$  (, )

A large city has 6 libraries.

- Each library has at least 1 computer.
- The median number of computers is 12.
- The difference between the maximum number of computers and the minimum number of computers is 35.

Which statements are true about the number of computers in these libraries?

Select **each** correct answer.

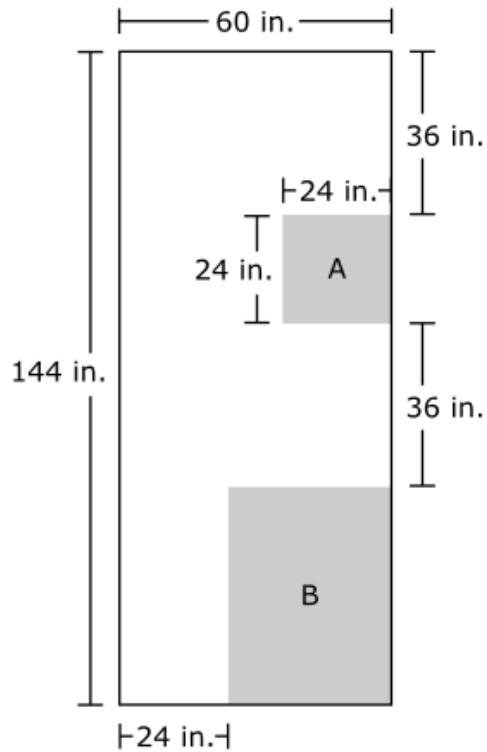
- A. There must be 3 libraries with 12 computers.
- B. A library could have less than 12 computers.
- C. A library could have more than 50 computers.
- D. All libraries must have less than 35 computers.
- E. At least 1 library does not have 12 computers.

Annisa wrote an expression that represents “the product of 6.2 and the sum of  $3c$  and 8.” What are the factors of the expression?

Select **each** correct answer.

- A. 6.2
- B.  $3c$
- C. 8
- D.  $6.2 + 3c$
- E.  $3c + 8$
- F.  $6.2 + 8$

A metal shop is cutting a rectangular piece of sheet metal with a width of 60 inches and a length of 144 inches. The shaded parts of the diagram represent two rectangular sections, A and B, that will be cut and removed.



### Part A

What are the dimensions of section B?

- A. 24 in. by 36 in.
- B. 24 in. by 96 in.
- C. 36 in. by 48 in.
- D. 36 in. by 96 in.

### Part B

What will be the area, in square inches, of the piece of sheet metal after both sections are cut and removed?

Enter your answer in the box.



**Part A**

Select the location of  $-2$  and  $-9$  on the number line.

Select the places on the number line to plot the points.

**Part B**

Use mathematical symbols to write an inequality that compares  $-2$  and  $-9$ . Explain how the number line can be used to show that your inequality is correct.

Enter your inequality and your explanation in the space provided.



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	·	

► Relations

► Geometry

Which of the given values will make the inequality  $n - 93 > 175$  true?

Select **all** that apply.

- A.  $n = 82$
- B.  $n = 105$
- C.  $n = 268$
- D.  $n = 300$
- E.  $n = 312$

**19.****M21434**

In a store, 1 can of soup costs \$1.80. The store also sells a pack of 6 cans of the soup. A customer who buys 1 pack saves 15% compared to buying 6 cans separately. How much money does a customer save by buying 1 pack instead of buying 6 cans separately?

Enter your answer in the box.

\$

**20.****VH028087**

Which expressions represent "the product of  $\frac{3}{4}$  and  $c$ "?

Select **each** correct answer.

- A.  $\frac{3}{4}c$
- B.  $\frac{3}{4} + c$
- C.  $\frac{3}{4c}$
- D.  $\frac{3}{4} - c$
- E.  $\frac{3c}{4}$

A store sells packages of grape drink mix and strawberry drink mix.

- To make 8 quarts of grape drink, 19 ounces of grape drink mix are needed.
- To make 17 quarts of strawberry drink, 2 ounces of strawberry drink mix are needed.

For the grape drink mix, the total cost of 4 packages is \$11.

### Part A

What is the cost, in dollars, of 5 packages of the grape drink mix?

Enter your answer in the box.

### Part B

What is the maximum number of packages of grape drink mix that can be purchased with \$25?

















- A. 9
- B. 10
- C. 68
- D. 69

### Part C

How many ounces of grape drink mix are needed to make 12 quarts of grape drink?

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

**Part D**

Compare the amount, in quarts, of each drink that can be made with 4 ounces of each type of drink mix.

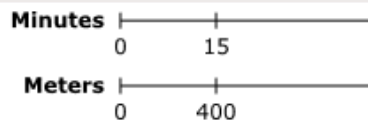
Select from the drop-down menus to correctly complete each statement.

4 ounces of grape drink mix make approximately  quarts of grape drink.

0.4  
1.7  
2  
32  
38

4 ounces of strawberry drink mix make approximately  quarts of strawberry drink.

4.25  
8.5  
34  
68

**22.****VH013021**

The diagram shows the distance a tortoise can walk if it walks at a constant pace for 15 minutes.

At the same rate, how many **kilometers** can the tortoise walk in 1 hour? Write your answer as a decimal.

Enter your answer in the box.

kilometers

A bag contains only red and blue marbles. There are a total of 36 marbles in the bag. There are 5 red marbles for every 4 blue marbles in the bag. A student removes 1 blue marble from the bag. The student reasons that there are now 5 red marbles in the bag for every 3 blue marbles since  $4 - 1 = 3$ .

- Explain the error in the student's reasoning.
- Compute the correct ratio of red to blue marbles after the student draws 1 blue marble. Show your work or explain your answer.

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



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	·	

► Relations

► Geometry

Joanna earns \$12 per hour at her job. Last week, Joanna earned \$432.

### Part A

Which equation can be used to determine the number of hours ( $h$ ) Joanna worked last week?

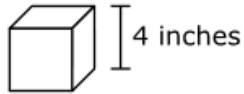
- A.  $h + 12 = 432$
- B.  $432h = 12$
- C.  $12h = 432$
- D.  $\frac{1}{12}h = 432$

### Part B

What is the number of hours Joanna worked last week?

Enter your answer in the box.

Haley has some cubes. Each cube has a side length of 4 inches.



### Part A

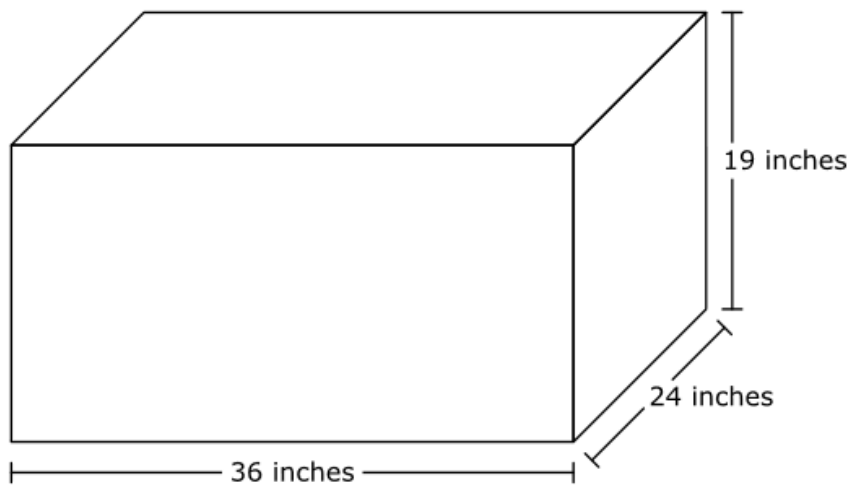
What is the volume, in cubic inches, of each cube?

Enter your answer in the box.

cubic inches

### Part B

Haley is shipping these cubes in a wooden box. The inside measurements of the box are shown. Haley will put as many cubes in the box as possible. She wants to be able to close the box using a lid.



What is the **greatest** number of cubes that Haley can fit in the box and still be able to close the lid? Show or explain how you got your answer.

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



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square\square}{\square\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	H	

► Relations

► Geometry

**Part C**

The remaining space in the box will be filled with packing material.

How much packing material will be needed to fill the remaining space? Express your answer in cubic inches. Show or explain how you got your answer.

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



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
( $\cdot$ )	$^{\circ}$	$\cdot$	

► Relations

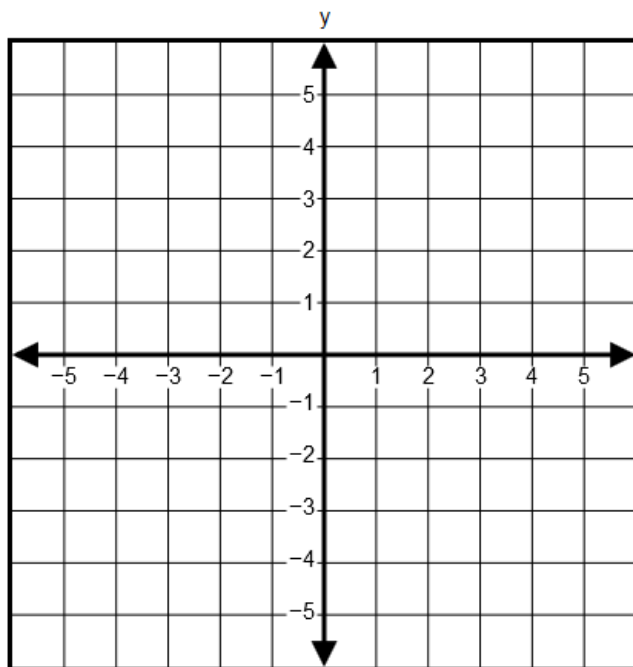
► Geometry

26.

1210-M20337

**Part A**

Triangle  $PQR$  is a right triangle. The triangle has vertices at  $P(-2, 4)$ ,  $Q(3, 4)$  and  $R(-2, -2)$ . Graph the triangle on the coordinate plane. To graph a triangle, plot all the vertices on the coordinate plane.

**Part B**

What is the length of segment  $PQ$ ?

Enter your answer in the box.

 units

Diego will ship 8 boxes in a large carton that is the shape of a right rectangular prism. Each box is 13 inches by 5 inches by 6 inches.

**Part A**

Diego determined the volume of one box by calculating

$$(13 + 5 + 13 + 5) \times 6.$$

Determine whether Diego is correct or incorrect.

- If Diego is correct, show or explain how you know.
- If Diego is incorrect, find the correct answer and show or explain the steps you used to find the correct answer. Include the correct answer in your work or explanation.

Enter your work or explanation in the space provided.



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	·	

► Relations

► Geometry

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**Part B**

Diego has three differently sized cartons that he can use to ship the 8 boxes. He can turn the boxes to make them fit in the carton. Diego will choose one carton to ship all 8 boxes.

- Carton A: 10 inches by 13 inches by 28 inches
- Carton B: 10 inches by 14 inches by 22 inches
- Carton C: 11 inches by 12 inches by 26 inches

Diego will fill any extra space with packing material. He will choose the carton that will hold all 8 boxes completely and use the least amount of packing material.

Which carton should Diego choose to ship the 8 boxes? Show or explain all of the steps you used to find your answer.

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



▼ Math symbols

+	−	×	÷
±	−	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	·	

▶ Relations

▶ Geometry

This table shows the 24 prizes a teacher had in a box.

Prize	Number in the Box
Bookmark	12
Pencil	8
Poster	4

The teacher will add more prizes to the box. He does not want to change the ratios among the three types of prizes. If he adds 2 more pencils to the box, how many more bookmarks and how many more posters should he add to the box?

In the space below, show all the steps you used to solve the problem.

Enter your answers and your work in the space provided.



▼ Math symbols

+	-	×	÷
±	-	·	/
=	≠	$\frac{\square}{\square}$	$\frac{\square}{\square}$
$y^x$	$\sqrt{\quad}$	$\sqrt[3]{\quad}$	$\pi$
(-)	°	·	

► Relations

► Geometry

The managers of 21 supermarkets counted the number of cars in their parking lots at noon on the same day. The results are shown in the list.

98, 100, 101, 102, 108, 109, 111, 118, 129, 132, 133, 135, 135, 145, 146, 146, 156, 170, 176, 180, 180

**Part A**

What is the interquartile range of the number of cars in the parking lots at noon at the 21 supermarkets?

Enter your answer in the box.

**Part B**

Suppose the number of cars in one of the parking lots with 180 cars is changed to 160 cars. Which statement about the median and interquartile range after this change is true?

- A. The median and the interquartile range do not change.
- B. The median and the interquartile range both decrease.
- C. The median decreases, and the interquartile range does not change.
- D. The median does not change, and the interquartile range decreases.