



Math

Spring Operational 2016

Grade 6

Released Items

1

M025450P

Here is an expression.

$$\left(\frac{3}{4}\right)^3$$

What is the value of this expression?

- ☐ A. $\frac{9}{64}$
- ☐ B. $\frac{27}{64}$
- ☐ C. $\frac{9}{4}$
- ☐ D. $\frac{27}{4}$

2

VF798705

What is the value of $x^4 + 0.5y^3$ when $x = 2$ and $y = 4$?

Enter your answer in the box.

3

VH045962

Ms. Callahan had 250 sheets of paper. She used 6 sheets of paper. She then gave each student 3 sheets of paper.

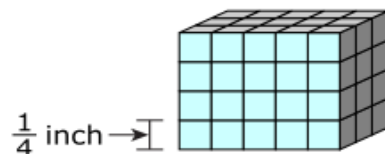
Which expression represents the number of sheets of paper Ms. Callahan had left after she gave paper to n students?

- ☐ A. $250 - 9n$
- ☐ B. $250 - 3n$
- ☐ C. $250 - 9 - 3n$
- ☐ D. $250 - 6 - 3n$

4

M22708

A rectangular prism is packed with cubes that measure $\frac{1}{4}$ inch on each side.



What is the volume, in cubic inches, of the rectangular prism?

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



	+	-	x	÷	$\frac{\Box}{\Box}$	$\frac{\Box}{\Box}$
	y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	=	(.)	%

5

VF885077

Trucks are delivering gravel to a construction site.

- Each truck holds 7.5 cubic yards of gravel.
- The weight of 1 cubic yard of gravel is 1.48 tons.
- The gravel will be placed in containers that each hold 3.7 tons of gravel.

How many containers of this size are needed to hold all the gravel from 1 truck?

Enter your answer in the box.

containers

6

VF646816

A total of $5\frac{1}{4}$ cups of baking soda was used for multiple trials of a science experiment. Each trial used $\frac{3}{4}$ cup of baking soda. How many trials were conducted?

Enter your answer in the box.

A baker is making walnut bread. The recipe uses $\frac{2}{3}$ cup of walnuts for each bread recipe. The baker has $7\frac{1}{2}$ cups of walnuts.

What is the maximum number of full recipes of walnut bread the baker can make?

- ☐ A. 5
- ☐ B. 6
- ☐ C. 11
- ☐ D. 12
-

What is the value of $63,108 \div 72$?

Enter your answer in the box.

9

M25564

What is the value of this expression?

$$49.88 - 38.491$$

Enter your answer in the box.

10

VF822237

What is the value of $62.28 \div 0.72$?

Enter your answer in the box.

Which expression is equivalent to $24 + 30$?

- ☐ A. $6(4 + 5)$
- ☐ B. $6(4 + 6)$
- ☐ C. $8(3 + 4)$
- ☐ D. $8(3 + 12)$

Sea level is located at an elevation of 0 feet. Here are elevations of some locations in Death Valley National Park. Determine whether each of these locations has an elevation above sea level or below sea level.

Drag and drop each location into the appropriate box based on its elevation.

Locations above Sea Level	Locations below Sea Level

Campground: -218 feet

Gas Station: 1,926 feet

Gift Shop: 3,000 feet

Park Hotel: -190 feet

Ranger Station: 10 feet

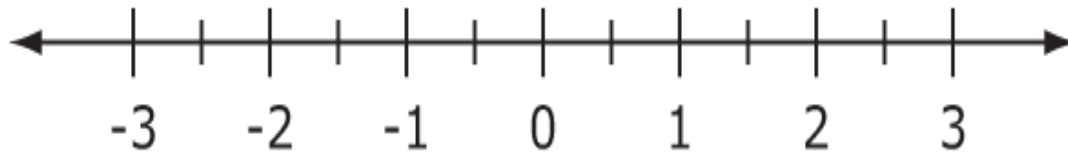
Visitor Center: -196 feet

13

VF646597

Plot a point on the number line to show the opposite of 2.5.

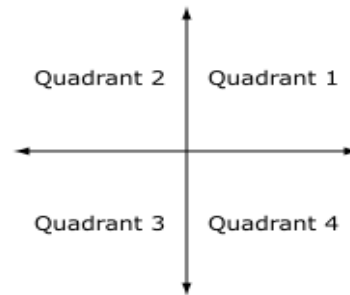
Select a place on the number line to plot the point.



14

VH094233

A point is an ordered pair that is plotted on a coordinate plane.

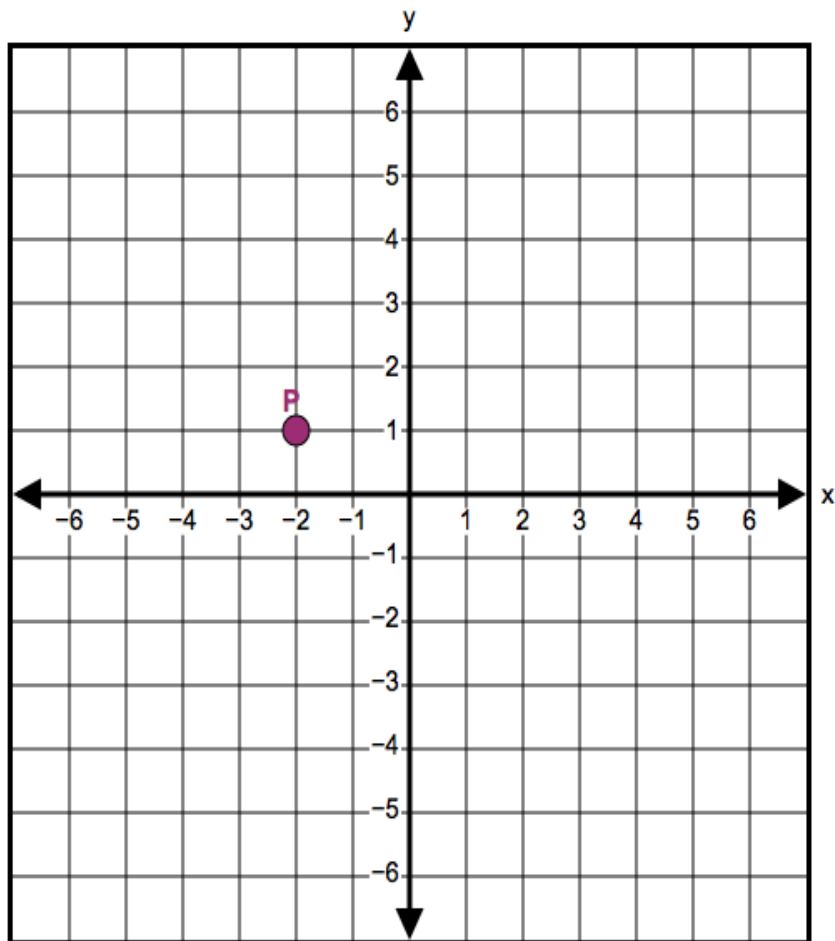


Which point should be plotted in Quadrant 4?

- ☐ A. $(3, -5)$
- ☐ B. $(-4, -2)$
- ☐ C. $(1, 3)$
- ☐ D. $(-1, 2)$

Plot the points that are 4 units from point P and that share the same y -coordinate as point P . Plot all points that apply.

Select the places on the coordinate plane to plot the points.



16

M25571

The owner of a flower shop sells 18 roses for \$90. What is the cost in dollars per rose?

Enter your answer in the box.

17

VF654570

What is 35% of 200?

Enter your answer in the box.

Megan buys a 2-quart bottle of juice for \$2.56.

What is the unit rate of the cost of the juice?

- ☐ A. \$0.04 per fluid ounce
- ☐ B. \$0.64 per fluid ounce
- ☐ C. \$10.24 per fluid ounce
- ☐ D. \$0.32 per fluid ounce

Deb recorded the number of cups of water she drank each day for 7 days. The median daily number of cups of water she drank was 6. The range of the number of cups of water she drank was 4.

Which statement can be made from the given information?

- ☐ A. At least one day, she drank exactly 6 cups of water.
- ☐ B. The least amount of water she drank could have been 1 cup.
- ☐ C. The mean daily number of cups of water she drank is greater than the median daily number of cups of water.
- ☐ D. If the least amount of water she drank was 3 cups, then the greatest amount of water she drank was 9 cups.

















At 9:00, Paula has x cups of food in a container for her dog. Paula pours a $2\frac{1}{2}$ cup box of food into the container. Then she removes $\frac{3}{4}$ cup of food to feed her dog. Now there are $5\frac{1}{4}$ cups of food in the container.

- Write an equation that can be used to determine the number of cups, x , of food in the container at 9:00.
- On the next line, write the solution to your equation.

Enter your equation and your solution in the space provided.

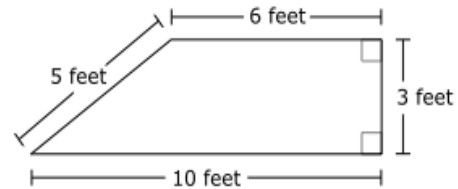
Equation:

Solution: $x =$

Part A

A figure is shown with the given dimensions.



Which expression(s) can be used to determine the area, in square feet, of this figure?

Select **each** correct expression.

- ☐ A. $(6 \times 3) + \frac{4 \times 3}{2}$
- ☐ B. $(10 \times 3) - \frac{5 \times 3}{2}$
- ☐ C. $(6 \times 3) + (10 \times 5)$
- ☐ D. $(6 + 3) + (10 + 5)$
- ☐ E. $(6 \times 3) + \frac{1}{2}(5 \times 4)$
- ☐ F. $(10 \times 3) - \frac{1}{2}(4 \times 3)$

Part B

What is the area, in square feet, of the figure?

Enter your answer in the box.

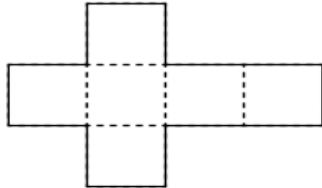
square feet

Part A

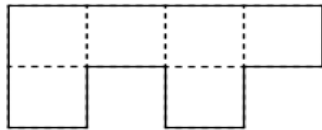
Which net can be folded to make a cube?

Select **all** that apply.

☐ A.



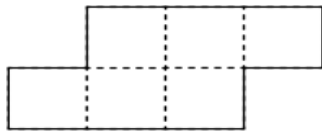
☐ B.



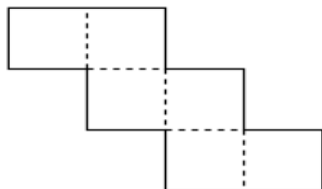
☐ C.



☐ D.



☐ E.

**Part B**

The surface area of the cube is 54 square feet.

What is the length, in feet, of one edge of the cube?

Enter your answer in the box.

feet

This frequency table shows the number of hours each student in Ms. Claiborne's class spent volunteering in one week.

Volunteering

Number of Hours	Students
1	
2	
3	
4	
5	
6	

Part A

What is the total number of hours that the students volunteered that week?

Enter your answer in the box.

Part B

What is the mean number of hours volunteered by a student that week?

Enter your answer in the box.

The manager of a bookstore ordered 480 copies of a book. The manager paid a total of \$7,440 for the books.

The books arrived at the store in 5 cartons. Each carton contained the same number of books.

A worker unpacked books at a rate of 48 books every 2 minutes. The manager unpacked books at a rate of 54 books every 3 minutes.

Part A

How many books were in each carton?

Enter your answer in the box.

Part B

How much money, in dollars, did the manager pay for 1 book?

- ☐ A. 15.50
- ☐ B. 20.67
- ☐ C. 25.83
- ☐ D. 37.20

Part C

How many minutes did the worker need to unpack 200 books?

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

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$\frac{\Box}{\Box}$

y^x

$\sqrt{\Box}$

$\sqrt[3]{\Box}$

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Part D

Compare the number of books that the worker and the manager each unpacked in 9 minutes.

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

The worker unpacked

Choose...

6
27
54
66

Choose...

fewer
more

 books in 9 minutes than the manager unpacked in 9 minutes.

Part A

Thomas knows how to plot point J at $(-3, 4)$ on a coordinate grid. Thomas needs to plot point K at $(-3.5, 4)$.

Explain where point K is on the coordinate grid in relation to point J .

Enter your explanation in the space provided.



▼ Math symbols

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

► Relations

► Geometry

Part B

Thomas needs to plot point L at $(-3.5, -4)$.

Identify any similarities between the ordered pair for point K and the ordered pair for point L . Explain which reflection would create point L from point K .

Enter your answer and your explanation in the space provided.



▼ Math symbols

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=	≠	$\frac{\Box}{\Box}$	$\frac{\Box\Box}{\Box\Box}$
y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	π
(-)	°		

► Relations

► Geometry

There are 4 classrooms for fifth grade and 4 classrooms for sixth grade at a school. Each classroom has 20 students. A teacher is planning a field trip for some fifth and sixth grade students at this school. The teacher knows the following information:

- 90% of fifth and sixth grade students have permission to go on the trip.
- 4 teachers are going on the trip.
- The school requires 1 parent volunteer for every 8 students going on the trip.

Part A

How many parent volunteers are needed to go on the trip? Show your work or explain your answer.

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

**Math symbols**

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±	−	·	/
=	≠	$\frac{\Box}{\Box}$	$\frac{\Box}{\Box}$
y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	π
(·)	°	·	

Relations

Geometry

Part B

All of the students, teachers, and parents going on the trip must ride in a school bus. The teacher needs to reserve 1 school bus for every 44 people. How many school buses does the teacher need to reserve? Show your work or explain your answer.

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

**Math symbols**

+	−	×	÷
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y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	π
(·)	°	·	

Relations

Geometry

This table shows the annual precipitation amounts of 4 towns.

Annual Precipitation	
Town Name	Precipitation (inches)
Cedar Falls	15.68
River Valley	16.43
Middleton	18.37
Hill City	21.45

Jack rounded the precipitation amounts, and the amounts for two of the towns rounded to the same number.

Courtney rounded the precipitation amounts, and the amounts for all of the towns rounded to the same number.

Part A

Show or explain how Jack and Courtney can both be correct.

Enter your work or explanation in the space provided.



▼ Math symbols

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y^x

$\sqrt{\Box}$

$\sqrt[3]{\Box}$

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► Relations

► Geometry

Part B

The annual precipitation amount for Plainville is added to the table. The annual precipitation for Plainville is now the greatest of the amounts in the table. When these amounts are rounded to the nearest tenths place, the amount for Plainville is exactly the same as the amount for Hill City.

Jack and Courtney conclude that the annual precipitation for Plainville must be greater than 21.45 and no more than 21.50.

Explain whether or not their conclusion is correct.

- If their conclusion is correct, justify your answer.
- If their conclusion is incorrect, justify your answer and fix the error in the conclusion.

Enter your explanation in the space provided.

The student council is planning an activity night to raise money. The student council will charge \$5 per student to attend the activity night.

Part A

Write an expression that can be used to calculate the amount of money collected for n number of students.

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

↶	+	−	×	÷	$\frac{\Box}{\Box}$	$\frac{\Box}{\Box}$
↷	y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	=	(·)	%
🗑️	▼					

Part B

The cost to rent the school is \$200. The student council has a goal to raise \$350 after paying the rental fee.

How many students will need to attend the activity night for the student council to pay for the rental fee and reach their goal? Show or explain all the steps you used to solve the problem.

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

↶

↷

🗑️

▼ Math symbols			
+	−	×	÷
±	−	·	/
=	≠	$\frac{\Box}{\Box}$	$\frac{\Box}{\Box}$
y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	π
(·)	°	·	
▶ Relations			
▶ Geometry			

Mrs. Roberts has a favorite recipe for 1 batch of snack mix.

Snack Mix Recipe	
$2\frac{1}{2}$ cups	pretzels
$4\frac{1}{2}$ cups	dry cereal
$2\frac{1}{4}$ cups	peanuts
$\frac{3}{4}$ cup	raisins
Mix all the ingredients together in a large bowl.	

Part A

She estimates that each serving is $\frac{3}{4}$ cup of snack mix.

How many batches of snack mix will she need in order to make 200 servings? Show or explain all of the steps you used to answer the question.

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



▼ Math symbols

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$\frac{\Box}{\Box}$

y^x

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► Relations

► Geometry

Part B

How much of each ingredient will Mrs. Roberts need in order to make 200 servings? Show or explain all of the steps you used to answer the question.

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

Chantal volunteered to bring 1 gallon of freshly squeezed orange juice to a picnic. The local grocery store sells 4-pound bags of oranges for \$3.49. Each bag contains 11 to 12 oranges. After squeezing 2 oranges, Chantal had 5 ounces of juice.

Estimate the number of 4-pound bags of oranges Chantal needs to make 1 gallon of orange juice. Use your estimate to determine the total cost of 1 gallon of freshly squeezed orange juice.

Explain how you found your estimate and show your work.

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



▼ Math symbols

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±	−	·	/
=	≠	$\frac{\Box}{\Box}$	$\frac{\Box\Box}{\Box\Box}$
y^x	$\sqrt{\Box}$	$\sqrt[3]{\Box}$	π
(.)	°	·	

► Relations

► Geometry