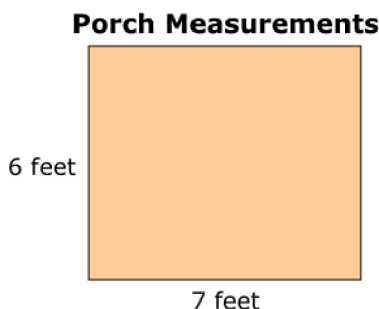


1. **Part A**

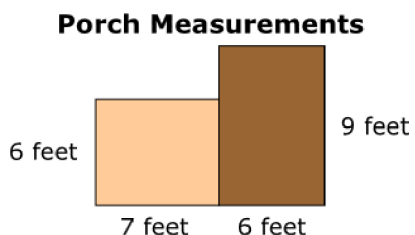
The length and width of the rectangular porch Jacob built are shown.



What is the area of the porch?

Part B

Jacob adds another part to the porch.



What is the area, in square feet, of both parts of the porch all together? Show all your work or explain how you figured out the total area of the porch.

2. Jessica came home at 3:20 p.m. She worked on her homework for 24 minutes. After she finished her homework, she did her three chores.

- It took her 23 minutes to clean her room.
- It took her 8 minutes to feed the animals.
- It took her 10 minutes to set the table.

What time did she finish her homework? How long did it take her to finish her three chores? Show all your work

3. The table shows the number of computers sold at a store in three different months.

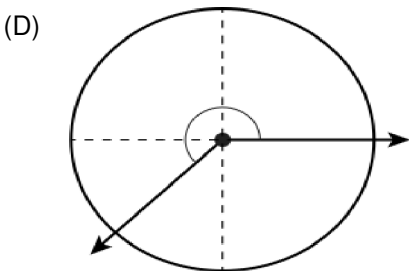
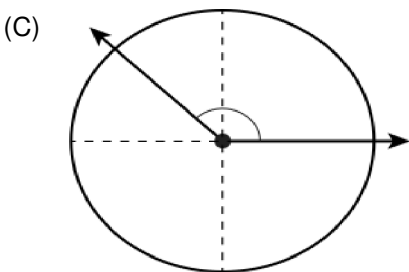
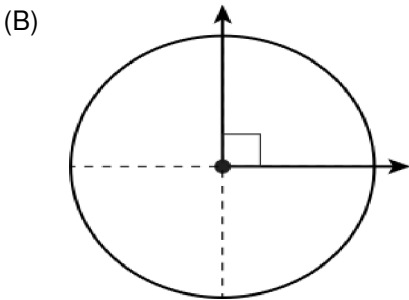
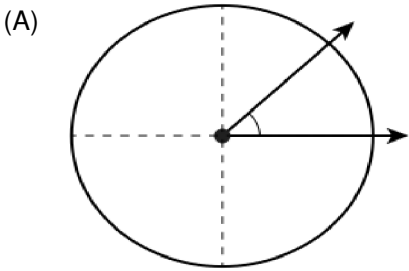
Month	Number of Computers
January	6,521
February	2,374
March	2,498

- a) What is the total number of computers sold at the store in the three months?
- b) How many *more* computers were sold at the store in January than in both February and March combined?

4. Select the *three* choices that are factor pairs for the number 28.

- 1 and 28
- 2 and 14
- 3 and 9
- 4 and 7
- 6 and 5
- 8 and 3

5. Which diagram shows a 45° angle from the center of the circle?



6. At elementary school held a fund-raiser. The third grade raised \$3,681, the fourth grade raised \$5,532, and the fifth grade raised \$4,989.

Part A

What is the total amount raised by all three grade levels?

- (A) \$12,092
- (B) \$12,202
- (C) \$14,002
- (D) \$14,202

Part B

How much more did the third- and fifth-grade classes raise together than the fourth-grade class?

- (A) \$2,028
- (B) \$3,138
- (C) \$3,142
- (D) \$4,224

7. Maria bought wood, paper, and string to make one kite. The list shows the amount and the unit cost of each item she bought.

- 12 square feet of paper at \$1 per square foot
- 4 feet of wood at \$3 per foot
- 14 yards of string at \$2 per yard

Part A

What was the total cost of the items Maria bought? Show all the steps you took to find your answer. Be sure to label your answer.

Part B

Maria will make 4 more kites for her friends. Determine how much paper, wood, and string are needed and the total cost to make the 4 kites. Show all the steps you took to find your answer.

8. Which explanation about figures is correct?
- (A) All rhombuses are parallelograms. Parallelograms have 2 pairs of parallel sides. Therefore, all rhombuses have 2 pairs of parallel sides.
- (B) All rhombuses are parallelograms. Parallelograms have exactly 1 pair of parallel sides. Therefore, all rhombuses have exactly 1 pair of parallel sides.
- (C) Only some rhombuses are parallelograms. Parallelograms have 2 pairs of parallel sides. Therefore, only some rhombuses have 2 pairs of parallel sides.
- (D) Only some rhombuses are parallelograms. Parallelograms have exactly 1 pair of parallel sides. Therefore, only some rhombuses have exactly 1 pair of parallel sides.

9. Which statement is true?
- (A) The value of 7 in 0.75 is $\frac{1}{10}$ the value of 7 in 0.075.
- (B) The value of 7 in 7.5 is $\frac{1}{100}$ the value of 7 in 0.75.
- (C) The value of 7 in 75 is 10 times the value of 7 in 7.5.
- (D) The value of 7 in 750 is 100 times the value of 7 in 75.

10. The ratio of the sales tax to the amount of purchase is a fixed number in Town Q. The table shows the sales tax for a purchase of \$1,200.

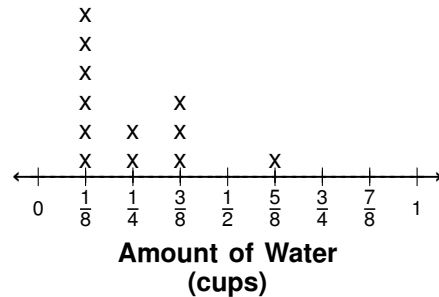
Town Q Tax

Purchase	Sales Tax
\$1,200	\$72
\$2,500	?
?	\$108

What is the cost of an item with a sales tax of \$108?

- (A) \$432 (B) \$648
- (C) \$1,092 (D) \$1,800
11. The line plot shows the amount of water used by 12 students during an experiment.

Experiment



- a) Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.
- b) The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker. What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

12. The table represents a proportional relationship.

x	y
6	7.5
8	10.0
10	12.5

A student states that the constant of proportionality is 2.5 since $10 - 7.5 = 2.5$.

- Explain why the student's reasoning is incorrect.
- Find the correct constant of proportionality. Show your work or explain your answer.

13. 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?

Part B

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

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

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

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

Select *all* that apply.

- $4x + 40$
- $2(2x + 20)$
- $2(x + 15)(x + 5)$
- $4(x + 15)(x + 5)$
- $2(x + 15) + 2(x + 5)$

15. A family purchased tickets to a museum and spent a total of \$38.00. The family purchased 4 tickets. There was a \$1.50 processing fee for each ticket. Write and solve an equation that can be used to find x , the cost of one ticket to the museum. Show your work or explain your answer.

16. Which expression is equivalent to $\frac{2^{-3}}{2^{-5}}$?

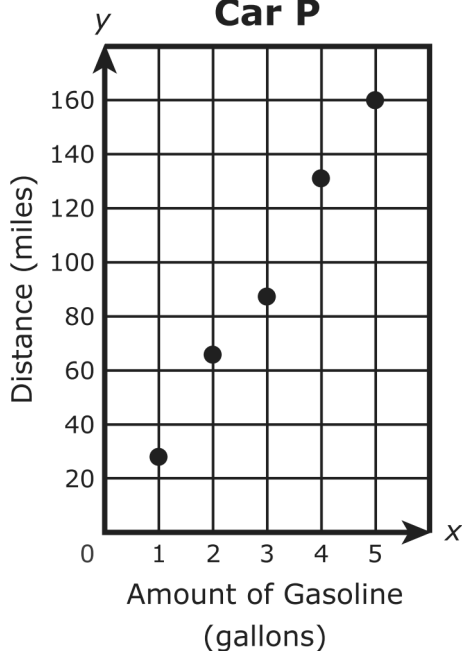
- (A) 2^2 (B) $\frac{1}{2^2}$ (C) 2^8 (D) $\frac{1}{2^8}$

17. 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

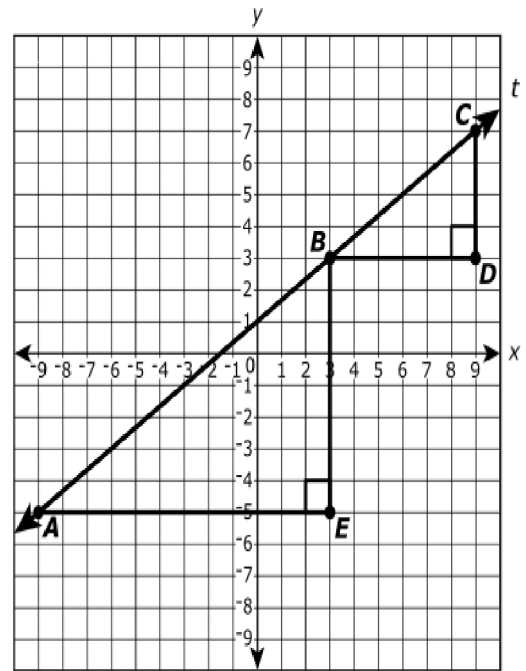
Amount of Gasoline (gallons)	Distance (miles)
2	50.4
3	80.5
7	181.3
5	137.5

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.

18. Similar triangles *ABE* and *BCD* are shown on the coordinate plane. Line t passes through points *A*, *B*, and *C*.



Part A Select from the drop-down menu to correctly complete the sentence.

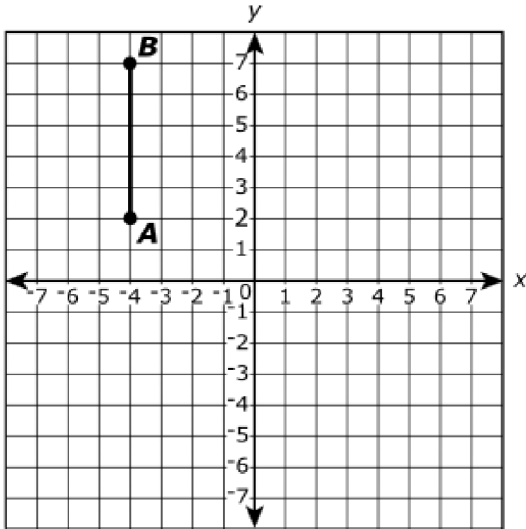
The slope of segment *AB* is greater than
less than
equal to the slope of segment *BC*.

Part B Use the ratios of the side lengths of triangle *ABE* and triangle *BCD* to explain your answer to Part A.

Part C Write an equation for line t .

Show or explain how you determined your equation.

19.



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.

20. Consider the following claim: If the point $(2 + d, y)$ is on the graph of the function $f(x) = x(x - 4)$, then the point $(2 - d, y)$ is also on the graph.

Part A

Use algebra to show that the claim is true.

Part B

What is the relationship between the line $x = 2$ and the graph of $f(x)$? Justify your reasoning.

21. The value, V , of an investment is given by the function $V(t)$, where t is the number of years since 1995 and V is measured in thousands of dollars. Which equation indicates that the investment had a value of \$8,000 in 2005?

- (A) $V(8) = 10$
- (B) $V(10) = 8$
- (C) $V(8,000) = 2005$
- (D) $V(2005) = 8,000$

22. Use the quadratic equation $y = -2x^2 + 4x + 5$ to complete the statements.

Write your answers in the spaces.

The equation can be rewritten as

$$y = -2(x + \underline{\hspace{1cm}})^2 + \underline{\hspace{1cm}}.$$

Therefore, the vertex of the graph of the function $y = -2x^2 + 4x + 5$ in the xy -coordinate plane is located at the point $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$.

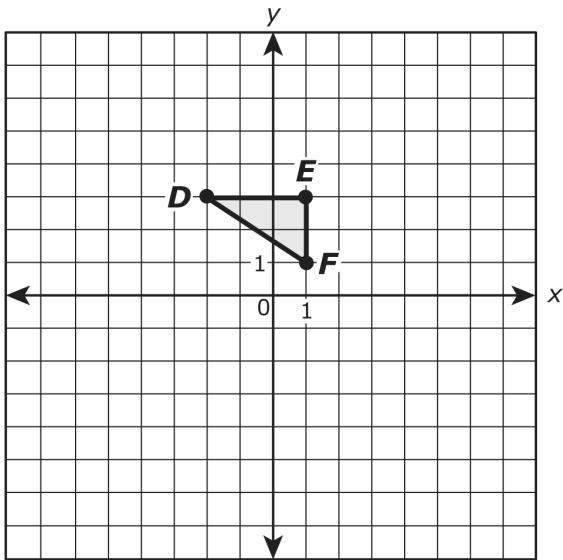
23. A function k whose domain is the set of positive integers is defined as $k(1) = 4$ and $k(n) = k(n - 1) - 2$.

Function k was evaluated for several numbers. Which of the following are true?

Select *each* correct answer.

- $k(-1) = -4$
- $k(0) = -2$
- $k(2) = 2$
- $k(3) = 0$
- $k(6) = 3$

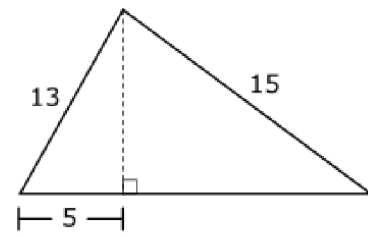
24. In the xy -coordinate plane, $\triangle ABC$ has vertices $A(-4, 6)$, $B(2, 6)$, and $C(2, 2)$. $\triangle DEF$ is shown in the plane.



What is the scale factor and the center of dilation that maps $\triangle ABC$ to $\triangle DEF$?

- (A) The scale factor is 2, and the center of dilation is point B .
- (B) The scale factor is 2, and the center of dilation is the origin.
- (C) The scale factor is $\frac{1}{2}$, and the center of dilation is point B .
- (D) The scale factor is $\frac{1}{2}$, and the center of dilation is the origin.

25. A triangular banner is to be made according to the specifications in the figure shown, with dimensions given in inches.



not to scale

Wooden sticks will be used to outline the perimeter of the banner in order to attach the interior material. How many inches of wooden sticks will be required?

26. Classify each statement in the table as correct or incorrect.

Select one cell per row.

	Correct	Incorrect
If two lines in the same <u>plane</u> do not intersect, the lines must be parallel.	<input type="radio"/>	<input type="radio"/>
If two lines in space do not intersect, the lines must be parallel.	<input type="radio"/>	<input type="radio"/>
If two lines are parallel, the lines must lie in the same plane.	<input type="radio"/>	<input type="radio"/>

27. Which equations are true for all values of x ?

Select *all* that apply.

- $3^{2-x} = 3^2 - 3^x$
- $3^{x+2} = 9(3^x)$
- $(3^x)^2 = (3^2)^x$
- $9^{x+2} = 3^{2x+4}$
- $27^x = (3^x)^3$

28. A system of three equations is given.

$$\begin{cases} 2x - 3y + z = -2 \\ x + 6y - 2z = -6 \\ x + 3y = -1 \end{cases}$$

What is the solution (x, y, z) ?

29. $f(x) = x^2 - 5x$
 $g(x) = 2(3^x)$

The function h is defined by $h(x) = 3g(x) - f(2x)$, where f and g are defined as shown. Complete the equation for $h(x)$.

$$h(x) = \square(3^x) + \square x^2 + \square x$$

30. Jamie has a plan to save money for a trip. Today, she puts 5 pennies in a jar. Tomorrow, she will put the initial amount in plus another 5 pennies. Each day she will put 5 pennies more than she put into the jar the day before, as shown in the table.

Day	0	1	2	3
Deposit (pennies)	5	10	15	20

Part A

Let $f(d)$ represent the amount of pennies she puts into the jar on day d . What does $f(10) = 55$ mean?

- (A) Jamie will put 10 pennies in the jar on day 55.
- (B) Jamie will put 55 pennies in the jar on day 10.
- (C) Jamie will have 10 pennies in the jar on day 55.
- (D) Jamie will have 55 pennies in the jar on day 10.

Part B

Let $f(d)$ represent the amount of pennies that Jamie puts into the jar on day d . Today is day 0.

Select the statement that is true.

- (A) $f(d + 1) = f(d)$
- (B) $f(d + 1) = 5(f(d))$
- (C) $f(d + 1) = f(d) + 1$
- (D) $f(d + 1) = f(d) + 5$