

1. A machine packs boxes at a constant rate of $\frac{2}{3}$ of a box every $\frac{1}{2}$ minute. What is the number of boxes per minute that the machine packs?

- A. $\frac{1}{3}$ B. $\frac{3}{4}$ C. $1\frac{1}{6}$ D. $1\frac{1}{3}$

2. The fountain in the pond behind Landon's school has a pump that recirculates 60 gallons of water every $\frac{1}{5}$ of an hour. Express this rate as a unit rate in gallons per hour.

gal/hour

3. Which options represent a proportional relationship between x and y ? Select all that apply.

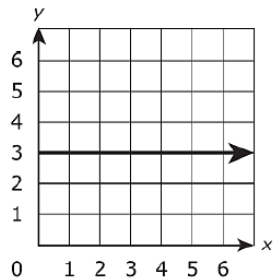
A.

x	y
$1\frac{1}{2}$	6
$3\frac{1}{4}$	13
7	28

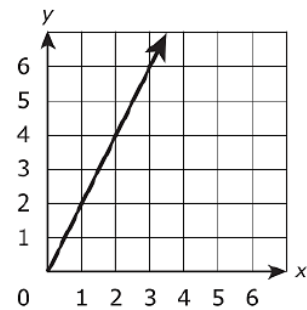
B.

x	y
4	1
5	2
9	6

C.



D.



E. $y = \frac{7}{8}x$

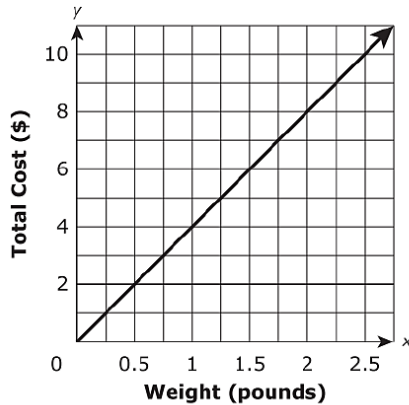
F. $y = x + 1$

4. The table below shows a proportional relationship between x and y . What is the constant of proportionality between x and y as a decimal?

x	y
2	1.25
4	2.5
6	3.75
10	6.25

5. The directions on a bottle of vinegar says "mix 1 cup of vinegar with 1 gallon of water to make a cleaning solution." The ratio of vinegar to water is 1 to 16. How many **cups** of water should be mixed with $\frac{1}{4}$ cup of vinegar to make the cleaning solution?

6. The graph shows the relationship between the pounds of cheese bought at a deli and the total cost, in dollars, for the cheese. Select all the statements that are true.



- A. The point $(0, 0)$ shows the cost is \$0.00 for 0 pounds of cheese.
 B. The point $(0.25, 1)$ shows the cost is \$0.25 for 1 pound of cheese.
 C. The point $(0.5, 2)$ shows that 0.5 pound of cheese costs \$2.00.
 D. The point $(1, 4)$ shows the cost is \$4.00 for 1 pound of cheese.
 E. The point $(2, 8)$ shows that 8 pounds of cheese cost \$2.00.
7. A store owner paid \$15 for a book. She marked up the price of the book by 40% to determine its selling price. What is the selling price of the book?

8. A customer buys a dress that has an original price of \$38. The dress is discounted 25%. The customer pays 6% sales tax on the discounted price of the dress. What is the total cost for the discounted dress?

- A. \$30.21 B. \$28.50 C. \$1.71 D. \$13.78

9. Tiffany plans to use \$275 she earned from a summer job to buy some new clothes for school. She found several items she likes but is trying to decide if she has enough money to buy all of them. She wants to buy three pairs of jeans for \$42 each and five shirts with an average cost of \$27 per shirt. She will have to pay $6\frac{1}{2}\%$ sales tax. Determine the total amount of money needed for this purchase.

10. Recently the price of gasoline at a particular station was \$3.44 per gallon. One year ago, the gasoline price at the same station was \$3.75. Determine the percent of change in these two prices.

- A. 50% B. 9% C. 90% D. 31%

11. Jerome wants to use an internet site to sell his game system. The website will charge him a fee that will be deducted from the selling price. Suppose the fee is $9\frac{1}{2}\%$ of the selling price. Determine the amount of the fee if Jerome sells his system for \$50, and how much he will receive after the fee is deducted.

- A. \$9.50; \$40.50 B. \$5.00; \$45.00 C. \$4.50; \$45.50 D. \$4.75; \$45.25

12. Which expressions are equivalent to $-2.5(1 - 2n) - 1.5n$? Select all that apply.

- A. $-2.5 - 3.5n$ B. $-2.5 + 3.5n$ C. $-2.5 - 6.5n$
 D. $-2.5 - n(5 - 1.5)$ E. $-2.5 + n(5 - 1.5)$

13. Which expressions are factors of $-48xyz - 24xy + 40xyz$? Select all that apply.

- A. 4 B. 24 C. $3x$ D. $8y$ E. $2xy$ F. $6xy$ G. xyz

14. Find the simplest form of $\frac{1}{3}\left(45x - \frac{18}{7}\right)$.

15. Today, Joelle walked 20 minutes at a rate of 3 miles per hour, and she ran 15 minutes at a rate of 6 miles per hour. How many total miles did Joelle travel while walking and running?

- A. 4 miles B. 9 miles C. 2.5 miles D. 4.5 miles

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

Field Trip Choices

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

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

- A. Class E, Class F, Class G, Class H
 B. Class G, Class E, Class F, Class H
 C. Class G, Class E, Class H, Class F
 D. Class H, Class F, Class E, Class G

18. Two equations are shown. Select all statements that are true.

Equation 1: $-0.5x - 4 = 1.5$

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

- A. x represents a negative value in both equations.
- B. x represents a positive value in both equations.
- C. x represents a positive value in one equation and a negative value in the other equation.
- D. The value x represents in Equation 1 is less than the value x represents in Equation 2.
- E. The value x represents in Equation 1 is greater than the value x represents in Equation 2.

19. Autumn bought some bracelets that cost \$5 each and 2 purses that cost \$12 each. The cost of Autumn's total purchase is \$39. What equation can be used to find n , the number of bracelets she bought?

A. $5 + 24n = 39$

B. $5n + 24 = 39$

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

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

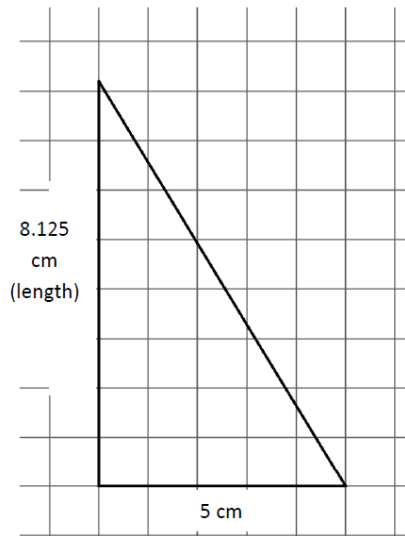
20. A scrapyard had 200 tons of recycled steel. They sold 15 tons per day for several days. There are fewer than 80 tons of steel left at the scrapyard. Write and solve an inequality to determine how many days have passed. Use d for days. Explain the solution in context.

Inequality

Solution

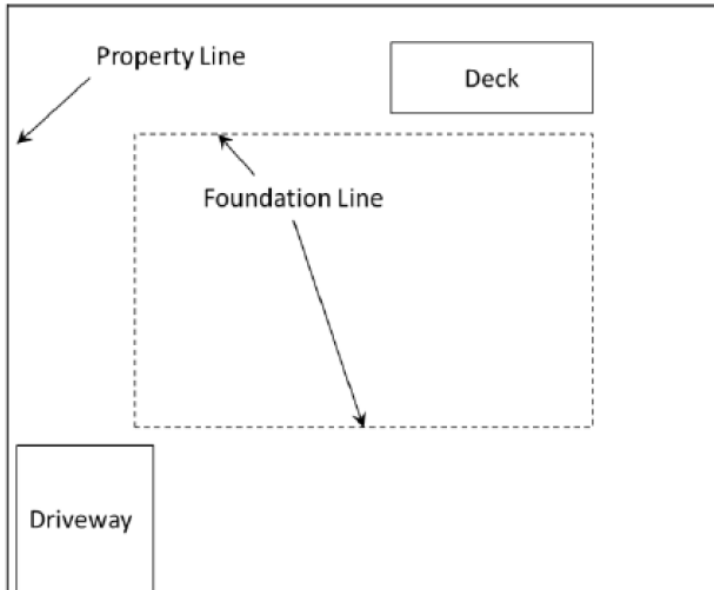
21. Many supersonic jet aircraft in the past have used triangular wings called delta wings. Below is a scale drawing of the top of a delta wing. Find the length of the actual wing.

Scale: 2 centimeters in the drawing = 192 centimeters on the actual wing.



cm

22. Using the blueprint shown and a scale of 4 inches (blueprint) = 52 inches (actual), find the scale factor in simplest form and the area of the actual foundation if the blueprint dimensions show 10 inches by 13 inches.



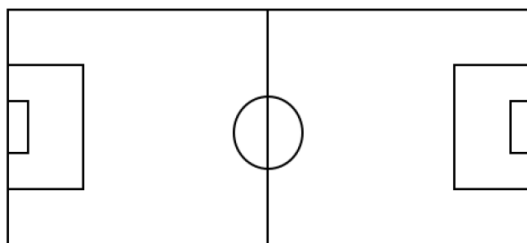
Scale Factor:

Foundation Area = in²

23. A circular mirror has a diameter of 12 inches. It also has a frame that is 3-inches wide that surrounds the mirror. What is the combined area, in square inches, of the circular mirror and its frame?

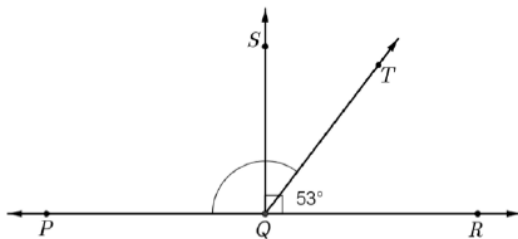
- A. 9π B. 18π C. 54π D. 81π

24. The center circle of a soccer field prohibits a defender from being near the ball at the start or restart of the soccer game. On a professional soccer field this circle is 20 yards in diameter. Find the area of this circle. Use $\pi = 3.14$.



yd²

25. Find the measure of $\angle PQT$.



in²

26. The length of the edge of a cube is 8.2 centimeters. Find the surface area and volume of the cube.

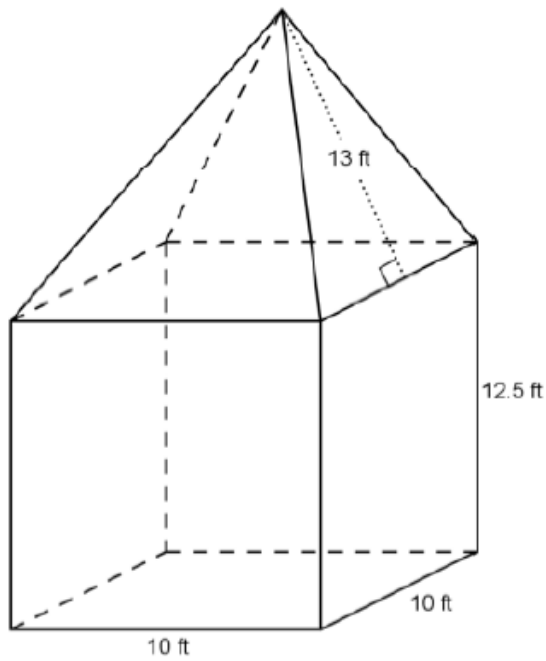
Surface Area =

cm^2

Volume =

cm^3

27. The structure shown below will be built for a carnival. The exterior surfaces, not including the bottom, are going to be painted. What is the total area of the exterior surfaces that need to be painted?



- A. 465 ft^2 B. 552 ft^2 C. 760 ft^2 D. 617 ft^2

28. A random sample of the 1,200 students at Parkside Middle School was asked which type of movie they prefer. The results are shown in the table. Use the data to estimate the total number of students at Parkside Middle School who prefer horror movies.

Action	Comedy	Historical	Horror	Mystery	Science Fiction
15	12	3	10	4	6

- A. 240 B. 10 C. 50 D. 80