

Equations

- 31** Airline passengers pay \$439 to fly to California. For this price, customers may check 2 pieces of luggage. There is a fee of \$25 for each additional piece of luggage a passenger wants to check. Which function can be used to find the amount in dollars a passenger has to pay to fly with p pieces of luggage, where $p \geq 2$?

A $c = 25p + 439$

B $c = 25(p - 2) + 439$

C $c = \frac{p}{25} + 439$

D $c = \frac{p - 2}{25} + 439$

- 10** A city employee paints curbs in parking lots and replaces road signs. It takes 0.5 hour to paint a parking lot curb and 2.5 hours to replace a road sign. The function below can be used to find c , the number of parking lot curbs the employee paints when he replaces r road signs in a 40-hour workweek.

$$c = \frac{40 - 2.5r}{0.5}$$

If the employee painted 20 curbs in one week, how many road signs did he replace that week?

F 20

G 30

H 0

J 12

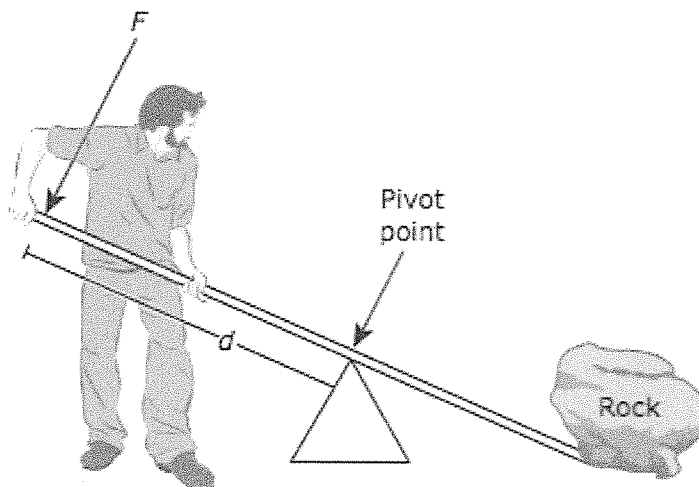
Equations

- 23** What is the equation in standard form of the line that passes through the point $(4, -8)$ and has a slope of $\frac{1}{4}$?
- A** $x - 4y = 36$
- B** $x - 4y = 28$
- C** $x - 4y = -36$
- D** $x - 4y = -28$
- 14** A senior employee who works 16 hours earns \$39.50 more than a junior employee who works 18 hours. The senior employee earns \$14 per hour. What is the hourly pay in dollars and cents for the junior employee?

Record your answer and fill in the bubbles on your answer document.

Equations

- 18 A farmer uses a lever to move a large rock. The force required to move the rock varies inversely with the distance from the pivot point to the point the force is applied. A force of 50 pounds applied to the lever 36 inches from the pivot point of the lever will move the rock. Which function models the relationship between F , the amount of force applied to the lever, and d , the distance of the applied force from the pivot point?

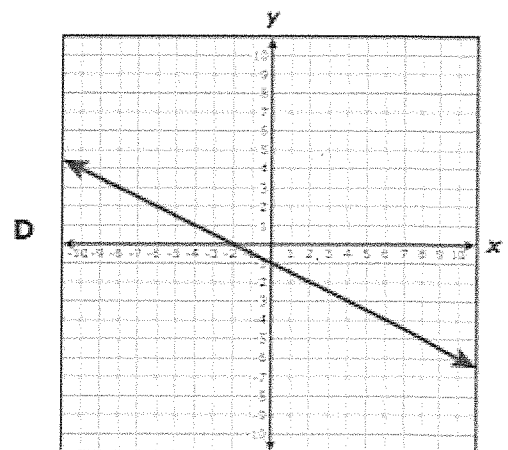
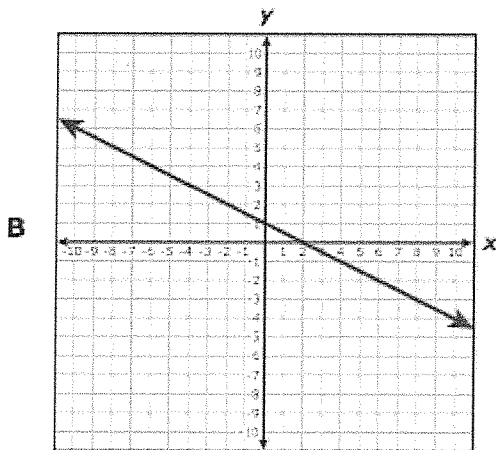
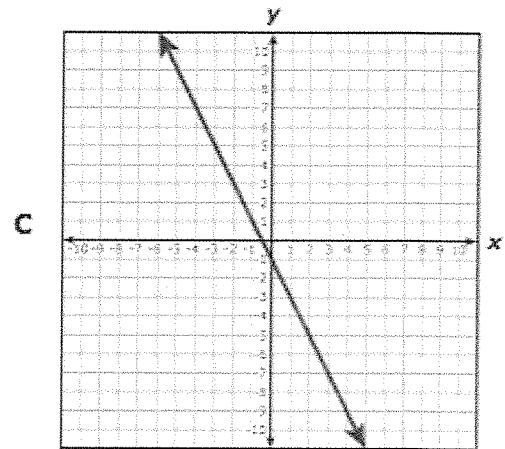
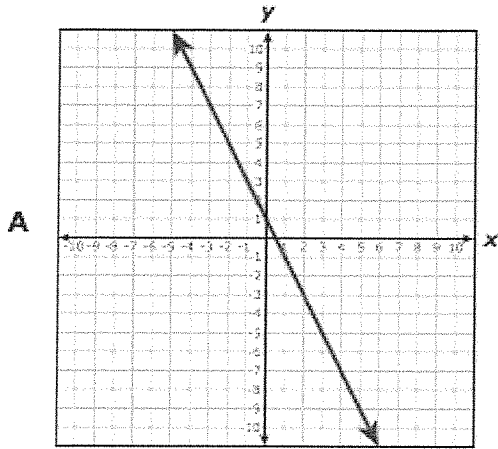


- F $d = \frac{F}{1,800}$
- G $d = \frac{86}{F}$
- H $F = \frac{1,800}{d}$
- J $F = \frac{d}{86}$
- 42 If $f(x) = \frac{2}{3}x^2 + 8x$, what is the value of $f(6)$?

Record your answer and fill in the bubbles on your answer document.

Equations

- 45 The slope and y -intercept of the line represented by $y = \frac{2}{5}x + \frac{3}{15}$ are both divided by $-\frac{1}{5}$ to create a new line. Which graph represents the new line?



Equations

- 48 What is the equation of the line that has a slope of 0 and passes through the point $(6, -8)$?
- F $x = 6$
 - G $y = 6$
 - H $x = -8$
 - J $y = -8$
- 1 Which situation can be represented by $y = 12x - 4$?
- A The number of eggs, y , in x dozen eggs for sale after 4 dozen eggs are sold
 - B The cost, y , of buying x movie tickets that sell for \$8 each
 - C The cost, y , after a \$4 discount, of buying x T-shirts that sell for \$12 each
 - D The number of inches, y , in an x -foot-tall tree after cutting off 4 feet
- 9 One type of redwood tree has an average height of 65 feet when it is 20 years old. If the tree is more than 20 years old, the average height, h , can be modeled by the function $h = 1.95(a - 20) + 65$, where a is the age of the tree in years. Which statement about this situation is true?
- A Every additional 1.95 ft of length over 20 ft adds 45 years to the age of this type of redwood tree.
 - B For this type of redwood tree, the average height increases by 1.95 ft per year throughout its lifetime.
 - C Each additional year of age over 20 years adds 1.95 ft to the average height of this type of redwood tree.
 - D For this type of redwood tree, the average height increases by 65 ft for every 20 years of growth.

Equations

- 12** The length, in feet, of a small train at an amusement park can be modeled by the function $f(c) = 9c + 14$, where c is the number of passenger cars attached to the locomotive. The original passenger cars were replaced, and the length of the train is now modeled by the function $h(c) = 12c + 14$. Based on this information, which statement describes the change in this situation?
- F** The locomotive is now 9 feet long, and the length of each passenger car remained the same.
 - G** The locomotive is now 12 feet long, and the length of each passenger car remained the same.
 - H** Each passenger car is now 9 feet long, and the length of the locomotive remained the same.
 - J** Each passenger car is now 12 feet long, and the length of the locomotive remained the same.

- 53** The cost of staying at a hotel can be found using the function $y = 129x + 9.95$, where x is the number of days a guest stays at the hotel and y is the cost in dollars. The cost includes a flat fee for Internet access. If the fee for Internet access is not included, which statement is true?
- A** The cost is \$9.95 less per day.
 - B** The cost is \$9.95 less.
 - C** The cost is \$9.95 more per day.
 - D** The cost is \$9.95 more.

- 14** A student bought concert tickets online. The total cost, c , in dollars, of t tickets can be found using the function below.

$$c = 24.50t + 9.50$$

If the student spent a total of \$83 on tickets, how many tickets did he buy?

Record your answer and fill in the bubbles on your answer document.

Equations

- 26** The approximate distance in miles between Los Angeles and a commercial jet flying from Boston to Los Angeles can be found using the function $m = -475t + 2,650$, where t is the number of hours the jet has been flying. Which number of hours and minutes is closest to the amount of time that the jet has been flying if the jet is 1,500 miles from Los Angeles?
- F** 2 hours and 25 minutes
- G** 8 hours and 44 minutes
- H** 3 hours and 16 minutes
- J** 9 hours and 13 minutes
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- 27** The total cost of renting a banquet hall is a function of the number of hours the hall is rented. The owner of the banquet hall charges \$85 per half hour up to a maximum of 4 hours plus a \$50 cleaning fee. What is the greatest value in the range for this situation?

Record your answer and fill in the bubbles on your answer document.

- 32** An online music service lets customers download an unlimited number of songs for \$0.25 each after paying a monthly membership fee of \$5.00. The total amount of money a customer spends on music in dollars in a single month can be found using the function $y = 0.25x + 5$. What does the variable x represent in this function?
- F** The total amount of money the customer spends on music each month
- G** The number of songs the customer downloads each month
- H** The number of customers that use the music service
- J** The cost of downloading one song

Equations

- 49 Which set of ordered pairs contains only points that are on the graph of the function $y = 12 - 3x$?
- A $\{(-3, -27), (0, 0), (6, 54)\}$
- B $\{(-18, 10), (-6, 6), (18, -2)\}$
- C $\{(-5, 27), (-1, 15), (8, -12)\}$
- D $\{(-7, -9), (-4, 0), (2, 18)\}$
-
- 30 What is the equation in standard form of the line that passes through the point $(1, 24)$ and has a slope of -0.6 ?
- F $3x + 5y = 125$
- G $3x + 5y = 77$
- H $3x + 5y = 123$
- J $3x + 5y = 115$
-
- 24 An airplane's altitude in feet during its descent for landing can be found using the function $f(x) = -300x + 30,000$, where x represents the horizontal distance in miles from where the plane begins its descent. After new government regulations become law, the airplane's descent will be modeled by the function $g(x) = -300x + 30,500$. Which statement describes this change?
- F The airplane starts its descent from an altitude 500 feet higher.
- G The airplane starts its descent from an altitude 500 feet lower.
- H The airplane descends 500 feet per horizontal mile faster.
- J The airplane descends 500 feet per horizontal mile slower.

Equations

- 29 A store manager begins each shift with the same total amount of money. She keeps \$200 in a safe and distributes the rest equally to the 5 cashiers in the store. This situation can be represented by the function $y = \frac{(x - 200)}{5}$. What does the variable x represent in this situation?
- A The total amount of money the manager has at the beginning of a shift
 - B The total amount of money the manager has at the end of a shift
 - C The amount of money each cashier has at the beginning of a shift
 - D The amount of money each cashier has at the end of a shift

- 14 Students at a school will sell hats to raise money. There are some hats left over from last year, and 20 boxes of hats will be ordered this year. When the order arrives, the total number of hats the students will have can be determined using the function $f(x) = 48x + 37$, where x represents the number of boxes ordered. If the number of hats per box changes so that the situation is modeled by the function $h(x) = 24x + 37$, then how many fewer hats will the students have available to sell if they still order 20 boxes?

Record your answer and fill in the bubbles on your answer document.

- 54 If the graph of $y = 9x + 4$ is translated 4 units up, which equation describes the new graph?
- F $y = 9x + 8$
 - G $y = 13x + 4$
 - H $y = 13x + 8$
 - J $y = 4x + 4$

Equations

45 An architect is designing an office building with n floors that will have an FM radio antenna 15.85 m tall on its roof. Each floor of the building will be 3.9 m high. Which function can be used to find the total height of the building in meters, including the FM antenna?

A $h(n) = 15.85n + 3.9$

B $h(n) = 3.9n + 15.85$

C $h(n) = 3.9n - 15.85$

D $h(n) = 19.75n$

16 A painter charges \$35 per hour for labor plus \$40 for a ladder rental when he paints a house. The customer provides the paint. The total charge to paint a customer's house was \$950. How many hours did the painter spend painting this house?

F $12\frac{2}{3}$ h

G 28 h

H 23 h

J Not here

Equations

- 23** The sophomore class needs a combined total of 216 medium and large T-shirts for field day. The number of medium T-shirts needed is three times the number of large T-shirts needed. Based on this information, would it be reasonable for the sophomore class to order 72 large T-shirts and 144 medium T-shirts?
- A** No, because the number of medium T-shirts is not 3 times the number of large T-shirts
 - B** No, because the number of large T-shirts is not 3 times the number of medium T-shirts
 - C** Yes, because the total number of T-shirts is 216
 - D** Yes, because the number of large T-shirts is $\frac{1}{3}$ of the total number of T-shirts
- 37** The average annual rainfall for a particular city is 33.2 inches. In the first 30 weeks of this year, the city received a total of 9.7 inches of rain. If it is expected to rain between 1.5 and 2.1 inches per week through the end of the year, what is a reasonable number of additional weeks needed for this city to reach its average annual rainfall?
- A** 23 weeks
 - B** 13 weeks
 - C** 9 weeks
 - D** 16 weeks
- 18** A scientist needs to print a research report on her computer's printer. If she prints in black ink only, $b(t) = 152 - 33t$ describes the number of pages left to print after t minutes. If she prints in colored ink, $c(t) = 152 - 30t$ describes the number of pages left to print after t minutes. Based on this information, which statement is true?
- F** The printer prints 3 more pages per minute in colored ink than in black ink.
 - G** The printer prints 3 fewer pages per minute in colored ink than in black ink.
 - H** The printer prints the same number of pages per minute in either type of ink.
 - J** The printer prints the entire research report in 152 minutes.

Equations

- 26** The average blue whale gains weight at a constant rate each day during its first six months of life. The relationship between the average blue whale's weight in tons, w , and its age in days, d , for the first six months of its life can be modeled by the function $w = 0.1d + 3$. Based on this relationship, which statement is not true for the average blue whale?
- F** The average blue whale weighs 3 tons at birth.
 - G** When the average blue whale is 5 days old, it weighs 20 tons.
 - H** The average blue whale gains 0.1 ton per day during its first six months of life.
 - J** When the average blue whale weighs 18 tons, it is 150 days old.
- 28** A customer pays an annual membership fee of \$85 to a neighborhood car wash. Each time he takes his car to the car wash, he pays only \$7. The total amount of money he spends at the car wash in one year in dollars can be found using the function $y = 7x + 85$. What does the variable x represent in this function?
- F** The total amount of money the customer spends each month at the car wash
 - G** The number of months the customer has been a member at the car wash
 - H** The number of times the customer takes his car to the car wash in one year
 - J** The cost each time the customer takes his car to the car wash
- 4** The function $y = 6 + 1.25x$ can be used to find the cost of joining an online music club and buying x songs from the website. Based on this information, which statement about the graph of this situation is true?
- F** The y -intercept of the graph represents the cost of each song.
 - G** The y -intercept of the graph represents the cost of joining the music club.
 - H** The slope of the graph represents the total number of songs bought by members of the club.
 - J** The slope of the graph represents the number of songs each member buys when visiting the website.

Equations

43 Two functions are given below.

$$p(x) = \frac{5}{8}x - \frac{3}{11}$$

$$q(x) = \frac{8}{5}x - \frac{3}{11}$$

How does the graph of p compare with the graph of q ?

- A** The graph of p has a different y -intercept than the graph of q .
- B** The graph of p is less steep than the graph of q .
- C** The graph of p is steeper than the graph of q .
- D** The graph of p is parallel to the graph of q .

42 The cost of parking in the garage at the airport is \$16 per day. A separate parking facility outside the airport charges 25% less per day to park. What would be the savings in dollars and cents of parking for 6 days in the facility outside the airport instead of in the airport garage?

Record your answer and fill in the bubbles on your answer document.

Equations

41 What is the zero of $r(x) = \frac{8}{3}x - 16$?

A -16

B -6

C 6

D 16

52 If $y = -\frac{4}{5}x - 2$, what is the value of x when $y = -9$?

F $-\frac{35}{4}$

G $-\frac{55}{4}$

H $\frac{35}{4}$

J $\frac{55}{4}$