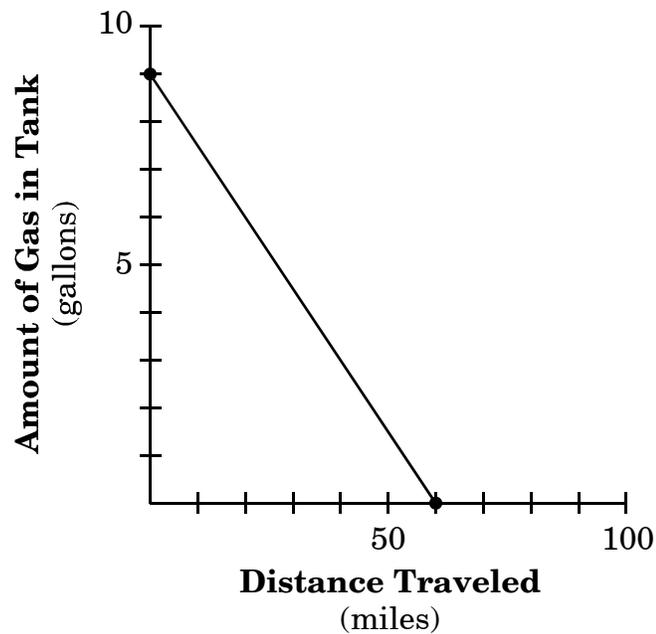


1. Denisha bought a car for \$15,000 and its value depreciated linearly. After 3 years the value was \$11,250. What is the amount of yearly depreciation?
- A \$2,000
B \$1,500
C \$1,250
D \$750
2. In 1977, the price of a scientific calculator was \$175. In 2004, the price was \$15. Assuming the change in price was linear, what was the **approximate** price of a scientific calculator in 1998?
- A \$23.00
B \$27.00
C \$51.00
D \$60.00
3. The attendance on the first day of a carnival was 425 people. The attendance on the third day was 575 people. Assuming attendance will increase linearly each day, how many people will attend the carnival on the sixth day?
- A 650
B 725
C 800
D 875
4. Jim is selling hot dogs at a ball game. It cost Jim \$250 to purchase everything to make the hot dogs. Jim sells hot dogs for \$2.00 each. If he sells h hot dogs, which equation models his profit (P)?
- A $P = 2h + 250$
B $P = 2h - 250$
C $P = 250h + 2$
D $P = 250h - 2$

5. According to the graph, which statement *best* describes the slope?

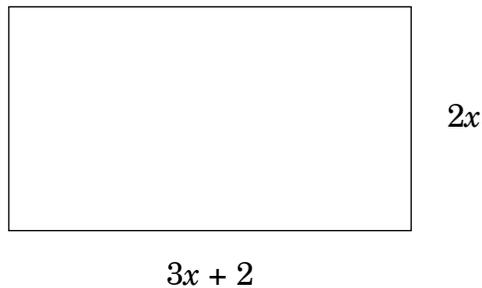


- A As the distance traveled increases by 20, the amount of gas in the tank decreases by 3.
- B As the distance traveled decreases by 3, the amount of gas in the tank increases by 20.
- C As the distance traveled increases by 30, the amount of gas in the tank increases by 2.
- D As the distance traveled decreases by 20, the amount of gas in the tank decreases by 3.

6. If the graph of a line has a positive slope and a negative y -intercept, what happens to the x -intercept if the slope and the y -intercept are doubled?
- A The x -intercept becomes four times larger.
 - B The x -intercept becomes twice as large.
 - C The x -intercept becomes one-fourth as large.
 - D The x -intercept remains the same.
7. Nancy earns \$200 per week plus 15% commission on the value of her sales. In the linear function representing Nancy's weekly earnings, x represents the value of her sales, and y represents her total earnings for the week. What does the y -intercept of the function represent?
- A the amount of commission earned for one week
 - B the rate of commission on the value of her sales
 - C the total earnings for one week when she makes \$0 in sales
 - D the value of her sales for one week when she makes \$0 in total earnings
8. In 1994, the average price of a new domestic car was \$16,930. In 2002, the average price was \$19,126. Based on a linear model, what would be the **approximate** predicted average price for 2008?
- A \$23,000
 - B \$21,300
 - C \$20,800
 - D \$18,600
9. The cost of renting a van for one day includes a flat rental fee plus a charge for each mile the van is driven while it is rented. A van that is driven 107 miles costs \$97.15. A van that is driven 127 miles costs \$106.15. What is the flat rental fee?
- A \$19.00
 - B \$20.00
 - C \$45.00
 - D \$49.00

10. An object is blasted upward at an initial velocity, v_0 , of 240 ft/s. The height, $h(t)$, of the object is a function of time, t (in seconds), and is given by the formula $h(t) = v_0t - 16t^2$. How long will it take the object to hit the ground after takeoff?
- A 16 seconds
- B 15 seconds
- C 7.5 seconds
- D 4 seconds
-

11. The area of the rectangle shown in the diagram below is 170 ft^2 .



What is the perimeter of the rectangle?

- A 27 ft
- B 40 ft
- C 54 ft
- D 68 ft

12. Given $f(x) = -3x^2 + 5$, what is the range of the function?
- A all real numbers less than or equal to 5
- B all integers less than or equal to 5
- C all nonnegative real numbers
- D all nonnegative integers
13. What are the roots of $0 = 9x^2 - 49$?
- A ± 7
- B ± 3
- C $\pm \frac{49}{9}$
- D $\pm \frac{7}{3}$
14. Tim kicks a ball off the ground. After t seconds, its height, h (in feet), is given by the formula $h = -16t^2 + 64t$. What is the maximum height reached by the ball?
- A 80 feet
- B 64 feet
- C 48 feet
- D 16 feet
15. What are the **approximate** solutions of the equation $x^2 + 4x = -2$?
- A $\{-4.45, 0.45\}$
- B $\{-3.41, 0.45\}$
- C $\{-0.59, -4.45\}$
- D $\{-0.59, -3.41\}$
16. A store received \$823 from the sale of 5 tape recorders and 7 radios. If the receipts from the tape recorders exceeded the receipts from the radios by \$137, what was the cost of a tape recorder?
- A \$49
- B \$68
- C \$84
- D \$96

17. A region is defined by this system:

$$\begin{aligned}y &> 2x + 1 \\y &\leq -x - 2\end{aligned}$$

In which quadrants of the coordinate plane is the region located?

- A I, II, III only
- B II, III only
- C III, IV only
- D I, II, III, IV

18. Given:

$$\begin{aligned}6x - 3y &= 42 \\4x + 2y &= -4\end{aligned}$$

What is $x + y$?

- A -6
- B -5
- C 4
- D 9

19. Given the system of equations below:

$$\begin{aligned}3x - 2y &= 12 \\4x - y &= 11\end{aligned}$$

What is the value of y in the solution?

- A -3
- B -2
- C 2
- D 3

20. A local kennel has twice as many cats (c) as dogs (d). When full, the kennel has a total of 30 cats and dogs. Which system of equations could be used to find the number of cats in the kennel when it is full?

- A $c = 2d$
 $c + d = 30$
- B $d = 2c$
 $c + d = 30$
- C $c + d = 30$
 $c = d + 2$
- D $c = d - 2$
 $c + d = 30$

21. The junior class sold 120 turkey dinner plates and 200 chicken dinner plates for a total of \$2,150. The senior class sold 100 turkey plates and 300 chicken plates, raising \$2,625. What was the cost of each turkey dinner plate?
- A \$6
B \$6.25
C \$7
D \$7.50
22. A city's population, P (in thousands), can be modeled by the equation $P = 130(1.03)^x$, where x is the number of years after January 1, 2000. For what value of x does the model predict that the population of the city will be **approximately** 170,000?
- A 8
B 9
C 10
D 11
23. A new automobile is purchased for \$20,000. If $V = 20,000(0.8)^x$ gives the car's value after x years, **about** how long will it take for the car to be worth half its purchase price?
- A 3 years
B 4 years
C 5 years
D 6 years
24. The value of Mr. Dulaney's car x years after its purchase is given by the function $V(x) = 15,000(0.87)^x$. **Approximately**, what was the value of Mr. Dulaney's car 5 years after its purchase?
- A \$7,500
B \$8,600
C \$9,900
D \$13,100

25. Three years ago, Andy invested \$5,000 in an account that earns 5% interest compounded annually. The equation $y = 5,000(1.05)^t$ describes the balance in the account, where t is time in years. Andy made no additional deposits and no withdrawals. How much is in the account now?

- A \$5,788.13
- B \$5,750.00
- C \$5,470.19
- D \$5,250.26

26. The function $y = 58.7(1.03)^t$ gives a country's population, y (in millions), where t is the number of years since January 1994. According to this function, what was the **approximate** population of the country in January 2002?

- A 68 million
- B 70 million
- C 72 million
- D 74 million

27. When Robert was born, his grandfather invested \$1,000 for Robert's college education. At an interest rate of 4.5%, compounded annually, **approximately** how much would Robert have at age 18?

(use the formula $A = P(1 + r)^t$,

where P is the principal, r is the interest rate, and t is the time in years)

- A \$1,810
- B \$2,200
- C \$3,680
- D \$18,810

End of Goal 4 Sample Items

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