1. Which sequence has a common difference of seven?

    A. 6, 13, 21, 29, ...   C. 30, 36, 216, 1296, ...

    B. 6, 13, 20, 27, ...   D. 30, 23, 16, 9, ...

2. The table displays the hourly rental cost for a bicycle.

Hours	1	2	3	4
Cost	$6.00	$9.00	$12.00	$15.00

Let n represent the number of hours the bicycle is rented. Which expression models the rental cost after n hours?

    A. $6 + 3(n + 1)$ C. $4 + 3(n - 1)$

   B. $6 + 3(n - 1)$ D. $4 + 3(n + 1)$

3. The variable n represents the number of oranges in a box. The weight of the box in pounds, including oranges, can be modeled using the expressions $8 + 2(n - 1)$. How much will the box weigh with 100 oranges in it?

    A. 100   B. 206   C. 221   D. 423

4. The graph shows the number of push-ups done on a given day.

Which set of numbers shows the number of push-ups on the second, third, fourth, and fifth days?

    A. {10, 20, 30, 40}
    B. {10, 15, 30, 35}
    C. {25, 30, 35, 40}
    D. {20, 30, 40, 50}
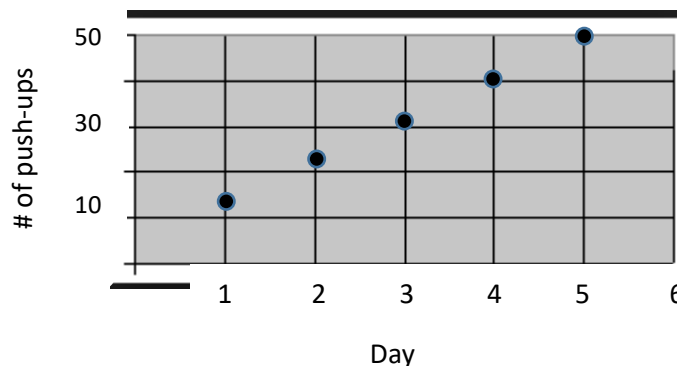
5. Cayden owns a small pizza business. He charges $8.00 for each pizza. It costs him $2.50 to make each pizza plus $33 a day for kitchen space. Which equation can be used to determine how many pizzas, p, Cayden needs to sell each day in order to break even?

    A.) $2.50p + 8p = 33$ C.) $8p = 2.50p + 33$

    B.) $8p = 35.50p$ D.) $10.50p = 33p$

6. Collyns wants to join a gym. She finds two gyms near her that offer memberships at different monthly rates.

She sets up the equation $35m + 100 = 50m + 70$ to find out after how many months, m, the gyms will cost the same amount. What is the difference in the per-month costs for the two gyms?

    A.) $15 per month   C.) $30 per month

    B.) $20 per month   D.) $50 per month

7. Two home construction companies are competing for a home remodeling contract. Lou's Home Remodeling charges a $175 consulting fee plus $45 per hour labor charge. Excel Home Improvement charges $85 consulting fee plus $75 per hour for labor. For how many hours of work will the two companies charge the same amount?

    A.) 0.33 hours   C.) 4 hours

    B.) 12 hours   D.) 3 hours

8. Which equation has infinitely many solutions?

    A.) $2(x - 5) = 4x - 2(x - 5)$ C.) $2(x - 5) = (x - 3) - 3(x - 5)$

    B.) $2(x - 5) = -2(x - 1) + 4(x - 3)$ D.) $2(x - 5) = 2(x - 3) + 2x - 7$

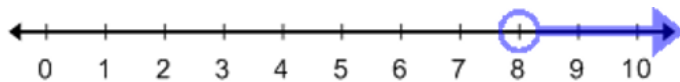9. Solve $2a + 4b = 12$ for b

    A.) $b = 3 - \frac{1}{2}a$ C.) $b = 3 + \frac{1}{2}a$

    B.) $b = 3 - 2a$ D.) $b = 2 - 3a$

10. Which is a solution of the inequality $7 \leq -2x + 3$?

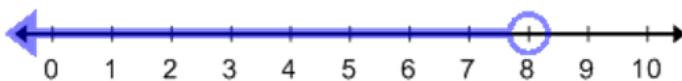   A.) 1   C.) -2

    B.) 2   D.) -1

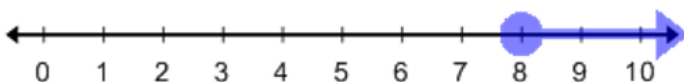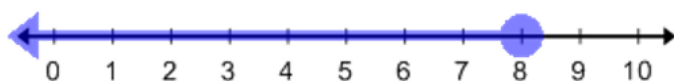11. Which graph shows the solutions for the inequality $8 \geq x$?

A.)

B.)

C.)

D.)

12. Two rival taxi companies are competing for customers. Green Taxi charges $1.50 per mile call plus $4 fuel surcharge, and Speedy Taxi charges $2.75 per mile. Laura wants to know how many miles she could ride so that Speedy Taxi is more expensive than Green Taxi. Set up an inequality showing Speedy Taxi is more expensive than Green Taxi.

A.) $1.5x + 4 > 2.75x$ C.) $4x + 1.5 > 2.75x$

B.) $1.5x + 4 < 2.75x$ D.) $4x + 1.5 < 2.75x$

13. Which set of ordered pairs represents a function?

A. {(3,3), (3, 2), (3,1), (3,0)}
B. {(1,2), (7,9), (5,8), (1,7)}
C. {(5,4), (6,3), (7,2), (8,1)}
D. {(7,8), (8,7), (7,9), (9,7)}

14. The function that describes a sequence is $f(x) = 5.5 + 2.7x$. What is $f(9)$?

A. 24.4   C. 37.9
B. 29.8   D. 40.6

15. An office has a juice machine that employees drink from throughout the work day, from 9:00am-5:00pm. The graph shows the amount of juice in the juice machine throughout one particular day.

What conclusion can be drawn from information in the graph?

A. More juice was added to the machine when 3 liters remained.
B. The maximum amount of juice the machine holds is 8 liters.
C. The machine was refilled at 5pm.
D. The juice machine was empty before more juice was added.
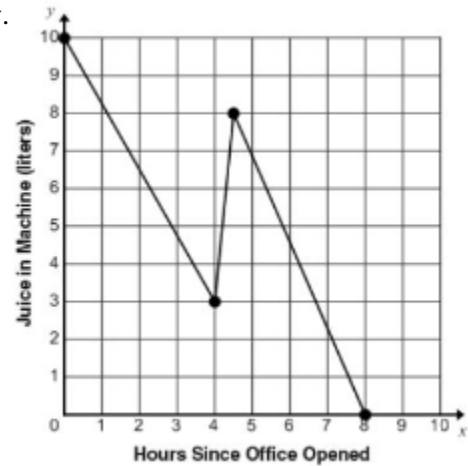
16. Use a graphing calculator to graph the function $y = x^2 + 4x - 2$. What is the minimum value of the function?

A. 6   C. -5
B. 0   D. -6

17. Jim runs a coffee delivery service. His income can be measured using the function $f(x) = 27 + 3x$, where y is his income and x is the number of cups of coffee he delivers. What is the reasonable domain and range?

A. Domain: {all real numbers}; range: {all real numbers}
B. Domain: {all real numbers}; range: {27, 30, 33, …}
C. Domain: {all whole numbers}; range: {27, 30, 33, …}
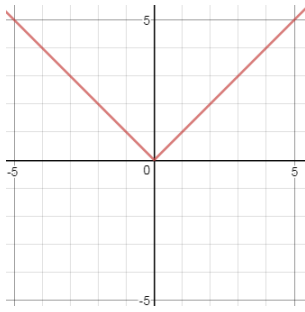D. Domain: {all whole numbers}; range: {all whole numbers}

18. The function $h(t) = -4.9x^2 + 20x + 2$ represents the height of a ball thrown in the air from an initial height.
Approximately what height did the ball reach?
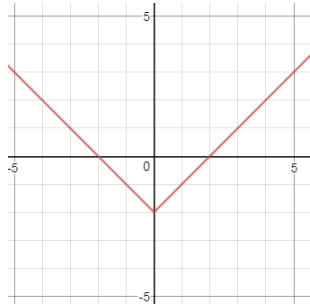A. 22
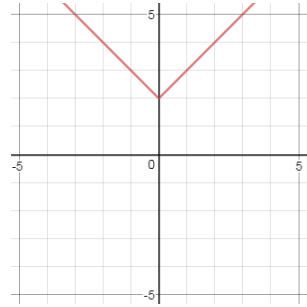B. 25
C. 2
D. 4.2
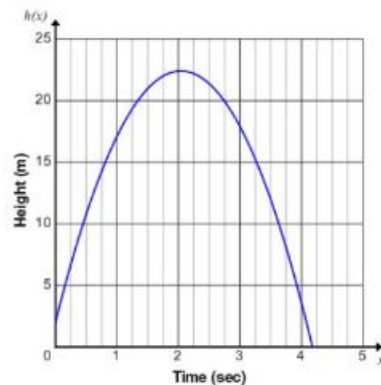
19. This is the graph of $f(x) = |x|$.
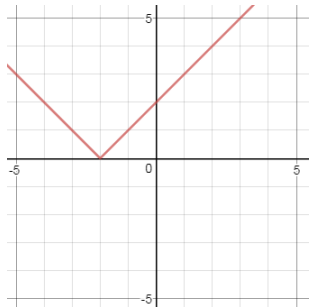

Which is the graph of $g(x) = |x| - 2$

A.

B.

C.

D.
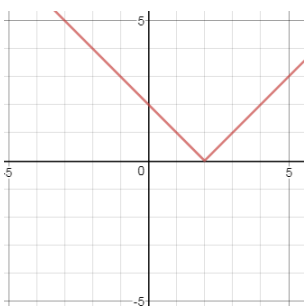
20. The table represents a linear function.

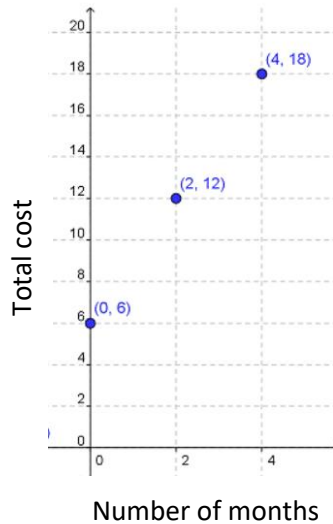What is the value of a?
    A. 1
    B. 0
    C. -1
    D. -4

x	y
1	17
3	11
6	2
8	a

21. The graph of a direct variation function passes through the point (4, 30). What is the constant of variation for this function.
    A. 4
    B. 7.5
    C. 15
    D. 30

22. The graph shows the cost per month for streaming movies.
How much will it cost for 3 months?

A. $6
B. $12
C. $15
D. $18

Total cost

(4, 18)

(2, 12)

(0, 6)

Number of months

23. $|x + 7| = 28$
   A. $x = -35$
   B. $x = 21$
   C. $x = -35 \ and \ x = 21$
   D. $x = 35 \ and \ x = -21$
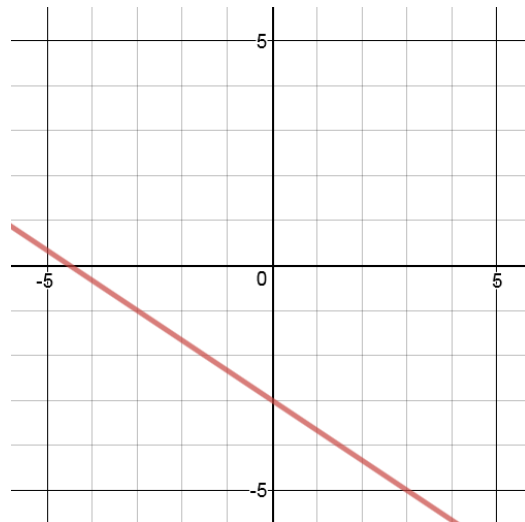
24. This is an arithmetic sequence.

$8, 7.4, 6.8, 6.2, 5.6, ...$

Which function describes the sequence?
   A. $f(x) = 0.6x + 8$
   B. $f(x) = 0.6x + 8.6$
   C. $f(x) = -0.6x + 8$
   D. $f(x) = -0.6x + 8.6$

25. Which is the equation, in slope-intercept form,

of the line graphed?

A. $y = \frac{2}{3}x + 3$

B. $y = -\frac{2}{3}x - 3$

C. $y = -\frac{3}{2}x - 3$

D. $y = 3x - \frac{5}{2}$

26. Which is the equation of the line, in point-slope form, with a slope of 5 that passes through $(1, -3)$?

A. $y = 5x - 3$

B. $y = -5x + 1$

C. $y + 3 = 5(x - 1)$

D. $y - 3 = 5(x + 1)$

27. Line a passes through the points $(-5, -2)$ and $(-5, -5)$, while line b passes through $(0, 4)$ and $(5, 4)$. Which statement **best** describes the relationship between lines a and b?

A. a and b are intersecting.

B. a and b are parallel.

C. a and b are collinear.

D. a and b are perpendicular.

28. Enter the following data into a graphing calculator. (5, 3) (7, 7) (12, 11) (-2, -3) (-1, 0) (5, 6) (-7, -2) (0, -2)

What is the equation of the line of best fit? Round your answer to the nearest hundredth.

A. $y = 0.79x + 0.63$

B. $y = 0.79x - 0.63$

C. $y = 0.63x + 0.79$
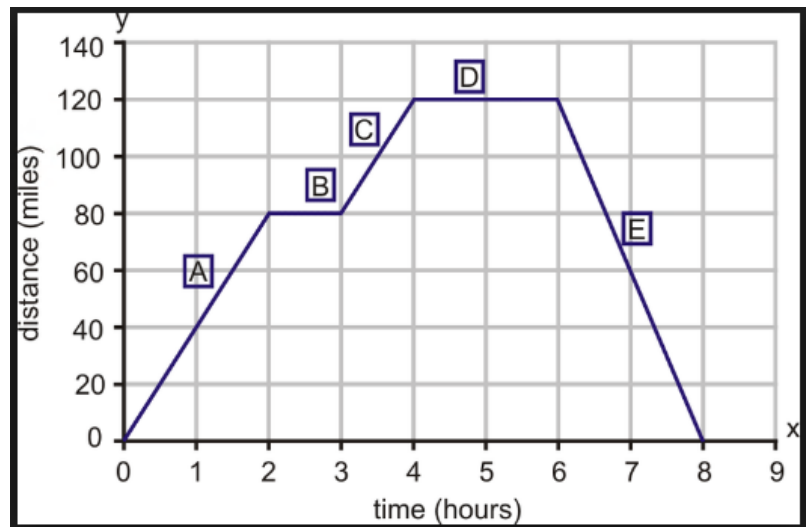
D. $y = 0.63x - 0.79$

29. What is the slope of the segment with the greatest rate of change?

A. 40

B. 0

C. -60

D. undefined

30. Joseph has two ways to earn money: caddying at $15 an hour and working at the movie theatre at $10 an hour. If he wants to earn at least $250 a week, which algebraic sentence expresses her earning capabilities if c represents hours of caddying and m represents hours of working at the movie theatre?
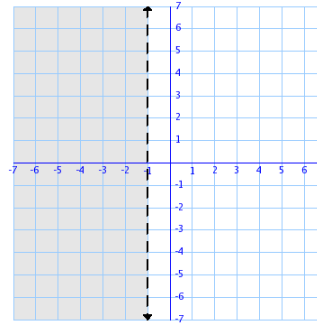
A. $15c + 10m = 250$

B. $15c + 10m \geq 250$

C. $15c + 10m \leq 250$

D. $15c + 10m < 25$

31. Which linear inequality best represents the graph shown?

    A. $x < -1$
    B. $x \leq -1$
    C. $x > 1$
    D. $x \geq 1$

32. Larry wants to eat more vegetables, so he buys peppers and cucumbers at the farmers' market. He bought 20 pounds of vegetables and paid $22.80. Each pound of peppers cost $1.29 and each pound of cucumbers cost $0.99. If x represents the pounds of peppers and y represents the pounds of cucumbers, which system of equations best represents the kinds of vegetable and the cost of the vegetables Larry bought?

A. x + y = 2280
    1.29x + 0.99y = 20

B. x + y = 20
    1.29x + 0.99y = 22.80

C. x + y = 20
    129x + 99y = 22.80

D. x + y = 22.80
    1.29x + 0.99y = 200

33. Which system of equations has no solution?

A. $3x-2y=4$
    $2x-y=3$

B. $3x-2y=4$
    $6x-4y=12$

C. $2x-y=8$
    $2x-y=8$

D. $3x-2y=6$
    $6x-4y=12$

34. A yellow cab has an initial cost of $2 and a blue can has an initial cost of $5. The cabs both start at driving at from the same location. The graph shows the cost as a function of the miles driven.

How many miles until they cost the same amount of money? Is the system of equations for the situation independent or dependent? Is the system of equations for the situation consistent or inconsistent?

    A. 3 miles; independent; inconsistent

    B. 3 miles; independent; consistent

    C. 8 miles; independent; inconsistent

    D. 8 miles; dependent; consistent
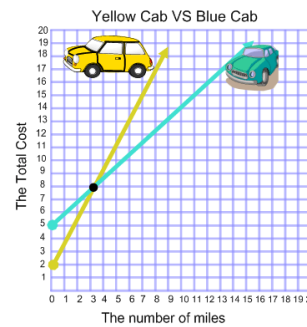
35. Which ordered pair is a solution for this system of linear inequalities?

$$2x+3y<12$$

$$3x-2y\geq 18$$

A. (5,0)   B. (3,−1)

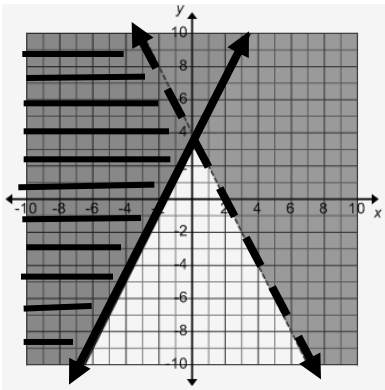C. (−1,3)   D. (4,−9)

36. Which graph shows the solution for the system of linear inequalities?

$$2x - y \geq -3$$

$$y < -2x + 4$$
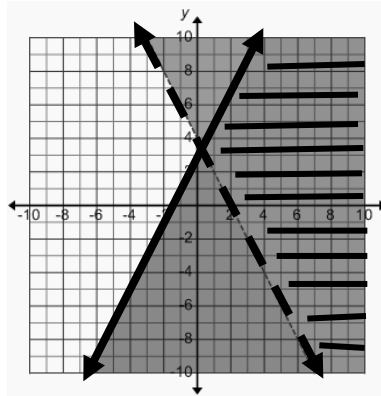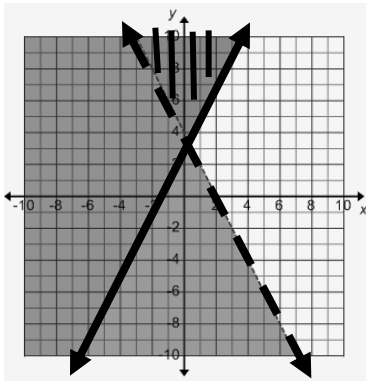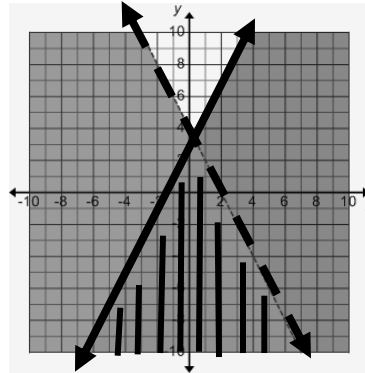
A.

B.

C.

D.

ANSWER KEY

1. B
2. B
3. B
4. D
5. C
6. A
7. D
8. B
9. A
10. C
11. D
12. B
13. C
14. B
15. A
16. D
17. C
18. A
19. A
20. D
21. B
22. C
23. C
24. D
25. B
26. C
27. D
28. A
29. C
30. B
31. A
32. B
33. B
34. B
35. D
36. D

1.	B	6.	A	12.	B	19.	A	22.	C	27.	D	32.	B
2.	B	7.	D	13.	C	20.	D	23.	C	28.	A	33.	B
3.	B	8.	B	14.	B	21.	B	24.	D	29.	C	34.	B
4.	D	9.	A	15.	A			25.	B	30.	B	35.	D
5.	C	10.	C	16.	D			26.	C	31.	A	36.	D
		11.	D	17.	C								
				18.	A								