Keystone Practice #2 **Linear Equations and Inequalities**

Name: _____ **Date:** _____

1. What is the value of x in the equation $4(2x + 1) = 27 + 3(2x - 5)$?

   A. 21 B. 9 C. $7\frac{1}{2}$ D. 4

2. Solve for x: $15x - 3(3x + 4) = 6$

   A. 1 B. $-\frac{1}{2}$ C. 3 D. $\frac{1}{3}$

3. What is the value of x in the equation $\frac{3}{4}x + 2 = \frac{5}{4}x - 6$?

   A. -16 B. 16 C. -4 D. 4

4. What is the value of x in the equation $13x - 2(x + 4) = 8x + 1$?

   A. 1 B. 2 C. 3 D. 4

5. What is the value of m in the equation $2m - (m + 1) = 0$?

   A. 1 B. -1 C. 13 D. 0

6. What is the solution for the equation $x + 1 = x + 2$?

   A. -1

   B. $\frac{1}{2}$

   C. all real numbers

   D. There is no solution.

7. The solution set of $|x - 2| < 3$ is

   A. $\{x \mid x > 5\}$

   B. $\{x \mid x < -1\}$

   C. $\{x \mid -1 < x < 5\}$

   D. $\{x \mid x < -1 \text{ or } x > 5\}$

8. If $|2x + 3| < 1$, then the solution set contains

   A. only negative real numbers

   B. only positive real numbers

   C. both positive and negative real numbers

   D. no real numbers

9. What is the solution set of the inequality $|3 - 2x| \geq 4$?

   A. $\{x \mid \frac{7}{2} \leq x \leq -\frac{1}{2}\}$

   B. $\{x \mid -\frac{1}{2} \leq x \leq \frac{7}{2}\}$

   C. $\{x \mid x \leq -\frac{1}{2} \text{ or } x \geq \frac{7}{2}\}$

   D. $\{x \mid x \leq \frac{7}{2} \text{ or } x \geq -\frac{1}{2}\}$

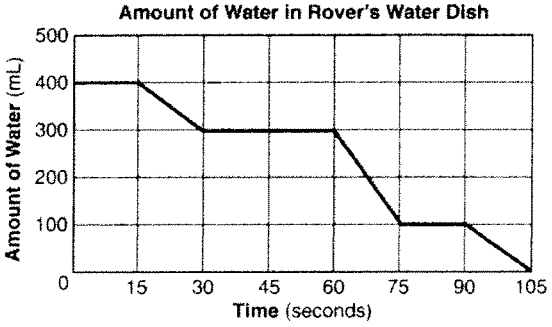
10. If x and y are defined as indicated by the accompanying table, which equation correctly represents the relationship between x and y?

x	y
2	1
3	3
5	7
7	11

   A. $y = x + 2$ B. $y = 2x + 2$

   C. $y = 2x + 3$ D. $y = 2x - 3$

11. The accompanying graph shows the amount of water left in Rover's water dish over a period of time.



How long did Rover wait from the end of his first drink to the start of his second drink of water?

A. 10 sec B. 30 sec

C. 60 sec D. 75 sec

12. Which linear equation represents the data in the accompanying table?

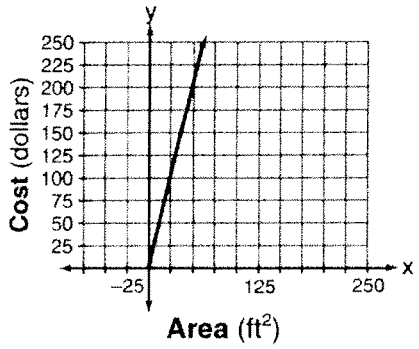
c	d
0	20.00
1	21.50
2	23.00
3	24.50

A. $d = 1.50c$ B. $d = 1.50c + 20.00$

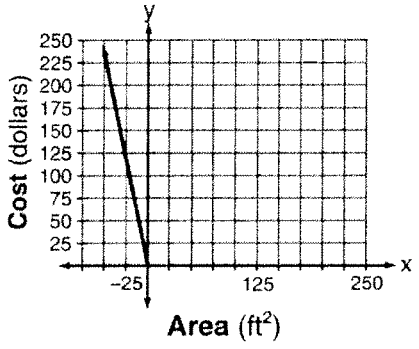
C. $d = 20.00c + 1.50$ D. $d = 21.50c$

13. Super Painters charges \$1.00 per square foot plus an additional fee of \$25.00 to paint a living room. If x represents the area of the walls of Francesca's living room, in square feet, and y represents the cost, in dollars, which graph best represents the cost of painting her living room?

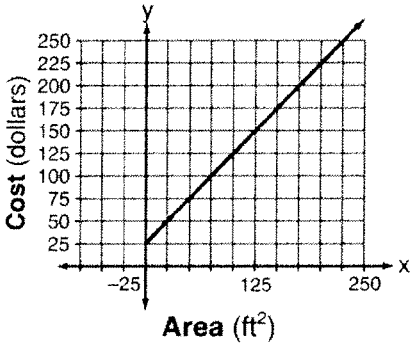
A.



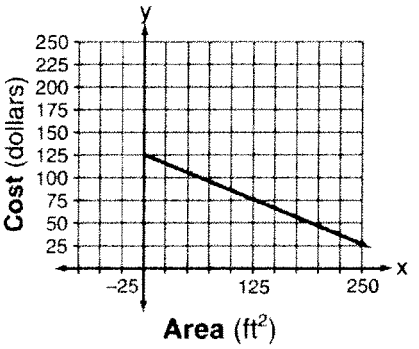
B.



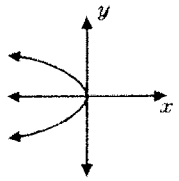
C.

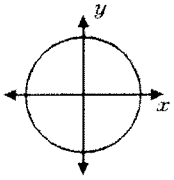


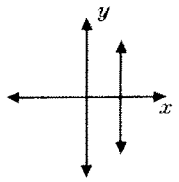
D.

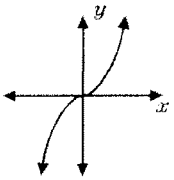


14. Which graph represents a function?

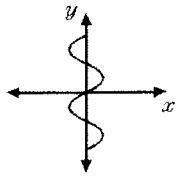
A. 

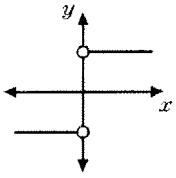
B. 

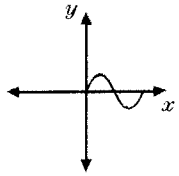
C. 

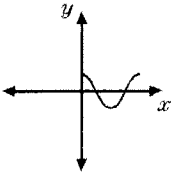
D. 

15. Which diagram shows a relation that is *not* a function?

A. 

B. 

C. 

D. 

16. What is the slope of the line whose equation is $y - 2x = 4$

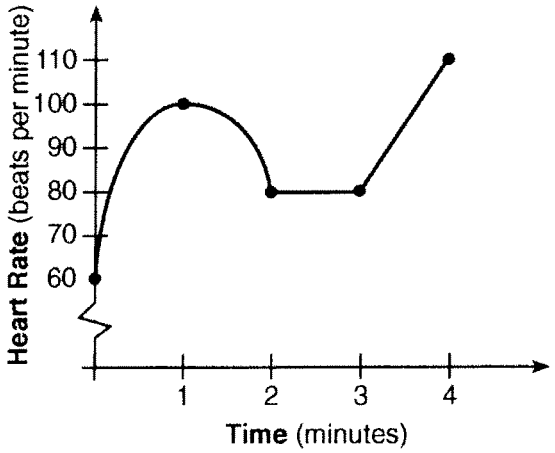
A. -2 B. 2 C. -4 D. 4

17. The slope of the graph of the equation $x = 3$ is

A. 1 B. 0

C. 3 D. undefined

18. The accompanying graph shows the heart rate, in beats per minute, of a jogger during a 4-minute interval.



What is the range of the jogger's heart rate during this interval?

A. 0–4 B. 1–4

C. 0–110 D. 60–110

19. The graph of which equation has a *negative* slope?

A. $y = 5x - 3$ B. $x + y = 5$

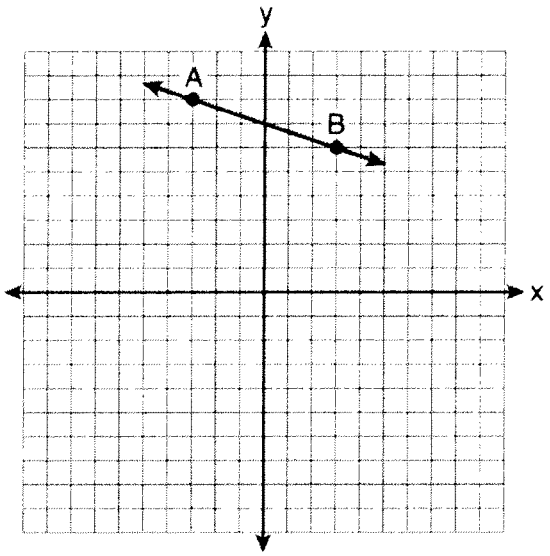
C. $y - 2 = 4x$ D. $y = 0$

20. Which is an equation of a line whose slope is equal to zero?

A. $y = 1$ B. $x = 2$

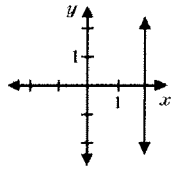
C. $x + y = 5$ D. $x - y = 3$

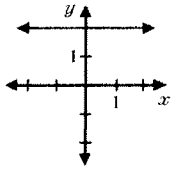
21. What is the slope of the line passing through the points A and B, as shown on the graph below?

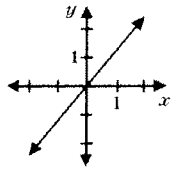


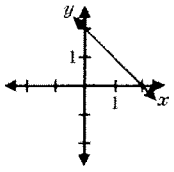
A. -3 B. $-\frac{1}{3}$ C. 3 D. $\frac{1}{3}$

22. Which is the graph of the equation $y = 2$?

A.


B.


C.


D.


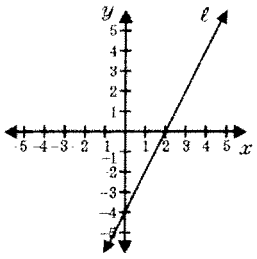
23. Which is an equation for line ℓ in the accompanying diagram?

A. $y = 2x + 2$

B. $y = 2x - 4$

C. $y = -2x - 4$

D. $y = -2x + 2$



24. What is the slope of a line perpendicular to the line whose equation is $y = 2x + 7$?

A. -2 B. 2 C. $-\frac{1}{2}$ D. $\frac{1}{2}$

25. What is the slope of a line perpendicular to the graph of the equation $5x - 3y = 2$?

A. $-\frac{3}{5}$ B. $-\frac{1}{5}$ C. $\frac{5}{3}$ D. 5

26. Which statement describes the lines whose equations are $y = \frac{1}{3}x + 12$ and $6y = 2x + 6$?

A. They are segments.

B. They are perpendicular to each other.

C. They intersect each other.

D. They are parallel to each other.

27. Which properties best describe the coordinate graph of two distinct parallel lines?

A. same slopes and same intercepts

B. same slopes and different intercepts

C. different slopes and same intercepts

D. different slopes and different intercepts

28. Which is an equation of the line that passes through the point $(5, -2)$ and has a slope of -3?

A. $y = -3x - 13$ B. $y = 3x - 13$

C. $y = -3x + 13$ D. $y = 3x + 13$

29. Which equation represents a line that has a slope of $\frac{3}{4}$ and passes through the point $(2, 1)$?

A. $3y = 4x - 5$ B. $3y = 4x + 2$

C. $4y = 3x - 2$ D. $4y = 3x + 5$

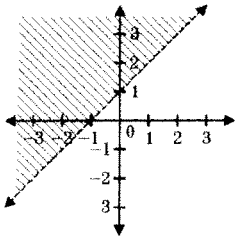
30. The accompanying diagram shows a graph of which inequality?

A. $y < x + 1$

B. $y > x + 1$

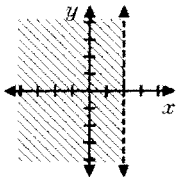
C. $y \leq x + 1$

D. $y \geq x + 1$

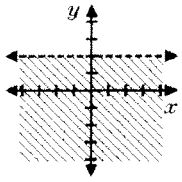


31. Which graph represents the inequality $x < 2$?

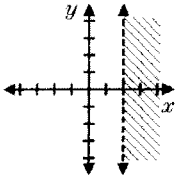
A.



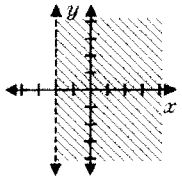
B.



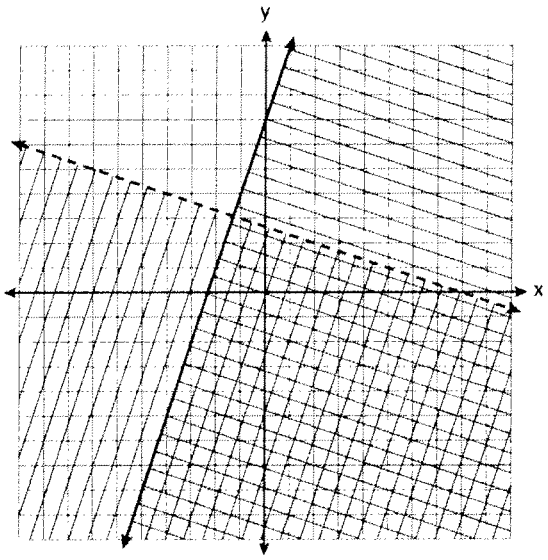
C.



D.



32. Which ordered pair is in the solution set of the system of linear inequalities graphed below?



A. $(1, -4)$

B. $(-5, 7)$

C. $(5, 3)$

D. $(-7, -2)$

33. Which quadrant will be completely shaded in the graph of the inequality $y \leq 2x$?

A. Quadrant I

B. Quadrant II

C. Quadrant III

D. Quadrant IV

34. Parking charges at Superior Parking Garage are \$5.00 for the first hour and \$1.50 for each additional 30 minutes. If Margo has \$12.50, what is the maximum amount of time she will be able to park her car at the garage?

A. $2\frac{1}{2}$ hours

B. $3\frac{1}{2}$ hours

C. 6 hours

D. $6\frac{1}{2}$ hours

35. A boy got 50% of the questions on a test correct. If he had 10 questions correct out of the first 12, and of the remaining questions correct, how many questions were on the test?

A. 16 B. 24 C. 26 D. 28

36. The length of a rectangle is 15 and its width is w. The perimeter of the rectangle is, *at most*, 50. Which inequality can be used to find the longest possible width?

A. $30 + 2w < 50$

B. $30 + 2w < 50$

C. $30 + 2w > 50$

D. $30 + 2w > 50$

37. Which equation could be used to solve the problem below?

> If three times a number is increased by 24, the result is 4 less than seven times the number.

A. $3(x + 24) = 7x - 4$

B. $3x + 24 = 4 - 7x$

C. $3x + 24 = 7x - 4$

D. $27x = 7x - 4$

38. Amy is performing a biology experiment. The table below shows a relationship between the temperature (t) and number of bacteria in an experiment (n).

t	n
4	10
8	12
12	14
16	16
20	18

Which equation describes the relationship?

A. $n = \frac{1}{4}t + 9$

B. $n = \frac{1}{2}t + 8$

C. $n = 2t + 2$

D. $n = 4t - 6$

39. What is the solution to the inequality below?

$$12x > 5(x - 2)$$

A. $x > -\frac{2}{7}$

B. $x < -\frac{2}{7}$

C. $x > -\frac{10}{7}$

D. $x < -\frac{10}{7}$

Linear Equations and Inequalities Keystone Practice #2 11/13/2013

1. Answer: D

2. Answer: C

3. Answer: B

4. Answer: C

5. Answer: A

6. Answer: D

7. Answer: C

8. Answer: A

9. Answer: C

10. Answer: D

11. Answer: B

12. Answer: B

13. Answer: C

14. Answer: D

15. Answer: A

16. Answer: B

17. Answer: D

18. Answer: D

19. Answer: B

20. Answer: A

21. Answer: B

22. Answer: B

23. Answer: B

24. Answer: C

25. Answer: A

26. Answer: D

27. Answer: B

28. Answer: C

29. Answer: C

30. Answer: B

31. Answer: A

32. Answer: A

33. Answer: D

34. Answer: B

35. Answer: D

36. Answer: B

37. Answer: C

38. Answer: B

39. Answer: C