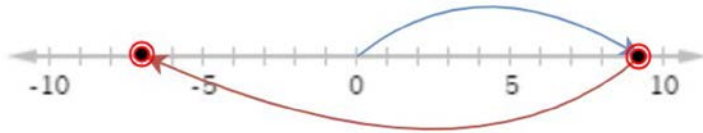


**Algebra 1 Semester 1 Practice Final 2018-2019**

Show all answers and work on lined paper neatly and clearly.

1. Select the expression that corresponds to the graph below.



- a  $-16 + 9$      b  $9 - 16$      c  $16 - 9$      d  $-9 + 16$

2. Select the expression that corresponds to the graph below.



- a  $4 - 4$      b  $-4 + 4$      c  $4 + 4$      d  $-4 + -4$

3. Simplify the expression below

$$3(2 - 4 + 7)$$

- a 15  
 b -15  
 c 27  
 d 9

4. Simplify the expression below.

$$(3)^2 - (2)^3$$

- a -17  
 b 1  
 c 17  
 d -1

5. Simplify the expression below.

$$2(18 \div 3 \cdot 2)$$

- a 48  
 b 36  
 c 6  
 d 24

6. Your mom wants you to build a rectangular planting bed in the garden. The width of the bed should be 12 inches shorter than the length. Select the expression that represents the perimeter of the frame.

- a  $4x - 24$   
 b  $3x - 12$   
 c  $6x + 24$   
 d  $2x - 12$

7. Select the choice that is not an equivalent form of the expression below.

$$-(3x + 5) + 2x$$

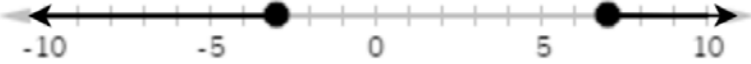
- a  $2x - (3x + 5)$   
 b  $5x - 5$   
 c  $-3x - 5 + 2x$   
 d  $-x - 5$

8. Your friend is simplifying an expression and performs the following steps:

$$\begin{aligned} & -2(x - 4) + 9 + 5x \\ 1) & -2x + 8 + 9 + 5x \\ 2) & -2x + 17 + 5x \\ 3) & \quad \quad 3x + 17 \end{aligned}$$

Select the property they used in Step 2.

- a Associative Property  
 b Commutative Property  
 c Combine Like Terms  
 d Distributive Property

<p>9. Evaluate the expression below for <math>x = 3</math>.</p> $2(4x - 1) - (x - 2)$ <p> <input type="radio"/> a 22  <input type="radio"/> b 21  <input type="radio"/> c -11  <input type="radio"/> d 17 </p>	<p>10. Select the appropriate first step when solving the following equation.</p> $\frac{3x + 4}{4} = -5$ <p> <input type="radio"/> a <math>3x + 4 = -1</math>  <input type="radio"/> b <math>3x + 4 = -20</math>  <input type="radio"/> c <math>3x + 1 = -5</math>  <input type="radio"/> d <math>3x + 4 = -9</math> </p>
<p>11. Select the correct description of the mistake made in solving the equation below, if any.</p> $-\frac{2}{3}(6x + 3) = -3$ $-4x - 2 = -3$ $-4x = -1$ $x = \frac{1}{4}$ <p> <input type="radio"/> a There is no error  <input type="radio"/> b Added 2 to both sides incorrectly  <input type="radio"/> c Incorrectly distributed <math>-2/3</math>  <input type="radio"/> d Incorrectly divided by 4 </p>	<p>12. Solve the equation below.</p> $4 2x - 3  = 20$ <p> <input type="radio"/> a -1, 4  <input type="radio"/> b -4  <input type="radio"/> c 1, -4  <input type="radio"/> d 4 </p>
<p>13. Select the option that is a valid solution to the inequality below.</p> $-3x - 5 \geq 13$ <p> <input type="radio"/> a <math>x \geq 2</math>  <input type="radio"/> b <math>x \leq -6</math>  <input type="radio"/> c <math>x \geq -8/3</math>  <input type="radio"/> d <math>x \geq -6</math> </p>	<p>15. Your English teacher has given you a 375 page novel to complete this quarter. You have read 45 pages so far and can read 15 pages per day. Select the equation below that would allow you to solve for how many days it will take for you to finish the book.</p> <p> <input type="radio"/> a <math>15x + 45 = 375</math>  <input type="radio"/> b <math>45x - 15 = 375</math>  <input type="radio"/> c <math>45x + 15 = 375</math>  <input type="radio"/> d <math>15x - 45 = 375</math> </p>
<p>14. Select the absolute value equation that corresponds to the solution set shown.</p>  <p> <input type="radio"/> a <math>3 2x - 1  &lt; 39</math>  <input type="radio"/> b <math> x - 2  \leq 5</math>  <input type="radio"/> c <math>2 x - 2  \geq 10</math>  <input type="radio"/> d <math>4 2x + 3  &gt; 44</math> </p>	

16. Evaluate the function  $f(x)$  below for  $f(4)$ .

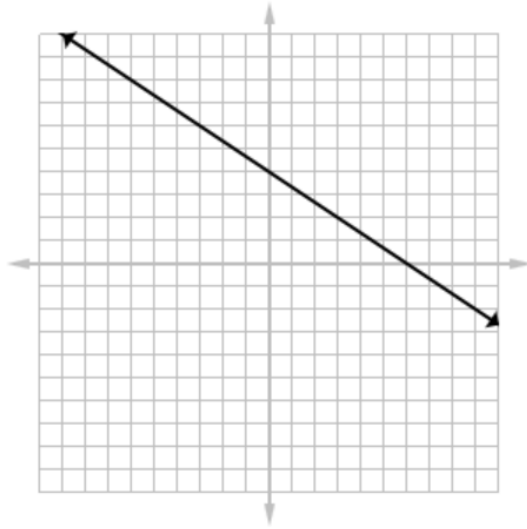
$$f(x) = \frac{2}{3}(x-7) - 3$$

- a 7
- b -2
- c 1
- d -5

17. Suppose a function relates the temperature of an oven ( $x$ ) to the time needed to roast a turkey ( $f(x)$ ). Select the choice which most accurately describes  $f(225)=129$ .

- a A temperature of 225 degrees would require 129 minutes in the oven.
- b Increasing the temperature by 225 degrees would decrease the time in the oven by 129 minutes.
- c A temperature of 129 degrees would require 225 minutes in the oven.
- d Increasing the temperature by 129 degrees would decrease the time in the oven by 225 minutes.

18 and 19 refer to this graph.



18. Select the correct description of the x-intercept(s) and y-intercept(s) for the function shown.

- a x-int: (0, 4), y-int: (0, 6)
- b x-int: (0, 6), y-int: (4, 0)
- c x-int: (4, 0), y-int: (6, 0)
- d x-int: (6, 0), y-int: (0, 4)

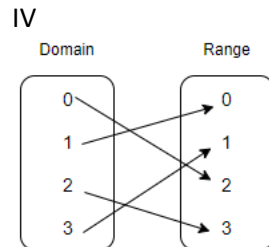
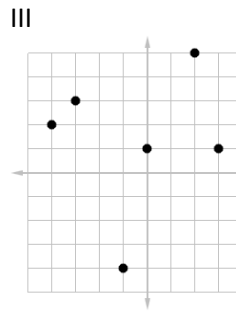
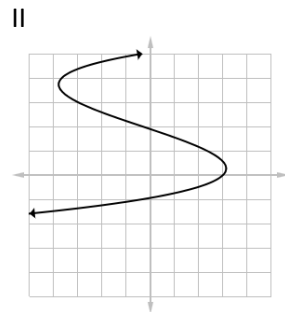
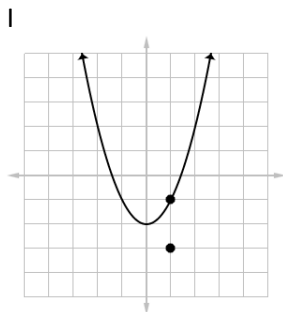
19. Select the interval for which the function below is negative.

- a (6, 0)
- b  $(-\infty, 6)$
- c  $(-\infty, \infty)$
- d  $(6, \infty)$

20. On your last shift at Doggy Day Care you noticed that when a group of 4 dogs arrived they brought with them 7 toys and later in the day when a group of 7 dogs arrived they had 13 toys. Select the correct average rate of change.

- a  $7/2$
- b 2
- c -2
- d  $7/3$

21. Select the option that correctly selects the two relations below that are **not** functions.



- a III and IV
- b I and III
- c I and II
- d II and III

<p>22. You have set up an Etsy storefront selling hand-painted paper mache Christmas ornaments. Each ornament sells for \$7. You charge \$3 shipping per order. Select the function which represents the cost, <math>C(x)</math>, where <math>x</math> represents the total number of ornaments ordered.</p> <p> <input type="radio"/> a <math>C(x) = (7 + 3)x</math>  <input type="radio"/> b <math>C(7) = 3</math>  <input type="radio"/> c <math>C(x) = 3x + 7</math>  <input type="radio"/> d <math>C(x) = 3 + 7x</math> </p>	<p>23. Select the real world situation that could be represented by the graph below.</p> <p> <input type="radio"/> a Fred starts off with \$90 and saves \$4 per day.  <input type="radio"/> b Francesca has \$90 in savings and plans to spend \$5 per day.  <input type="radio"/> c Faruk has \$90 in savings and plans to spend \$4 per day.  <input type="radio"/> d Floyd has \$4 in savings and plans to spend \$90 per day. </p>
<p>24. Select the element that appears to be the 6th in the sequence shown.</p> <p><b>-2, 6, -18, ...</b></p> <p> <input type="radio"/> a 486  <input type="radio"/> b -486  <input type="radio"/> c 54  <input type="radio"/> d -162 </p>	
<p>25. Select the appropriate type for the sequence below.</p> <p style="text-align: center;">1, 4, 9, 16, ...</p> <p> <input type="radio"/> a Geometric  <input type="radio"/> b Quadratic  <input type="radio"/> c Neither  <input type="radio"/> d Arithmetic </p>	<p>26. Select the appropriate type for the sequence below.</p> <p style="text-align: center;">-11, -4, 3, 10, ...</p> <p> <input type="radio"/> a Geometric  <input type="radio"/> b Quadratic  <input type="radio"/> c Neither  <input type="radio"/> d Arithmetic </p>
<p>27. Select the common ratio or common difference for the sequence below.</p> <p style="text-align: center;"><math>\frac{7}{3}, \frac{5}{3}, 1, \dots</math></p> <p> <input type="radio"/> a <math>-2/3</math>  <input type="radio"/> b <math>1/3</math>  <input type="radio"/> c <math>-1/3</math>  <input type="radio"/> d <math>-2</math> </p>	<p>28. Select the explicit formula for the sequence below.</p> <p style="text-align: center;">-12, -7, -2, ...</p> <p> <input type="radio"/> a <math>f(n) = -12 + 5n</math>  <input type="radio"/> b <math>f(n) = 12 - 5n</math>  <input type="radio"/> c <math>f(n) = -5n - 17</math>  <input type="radio"/> d <math>f(n) = 5n - 17</math> </p>
<p>29. Select the recursive formula for the sequence below.</p> <p style="text-align: center;">-4, 4, 12, ...</p> <p> <input type="radio"/> a <math>f(n) = f(n-1) + 8</math>  <input type="radio"/> b <math>f(1) = 8 ; f(n) = f(n-1) - 4</math>  <input type="radio"/> c <math>f(n) = f(n-1) - 4</math>  <input type="radio"/> d <math>f(1) = -4 ; f(n) = f(n-1) + 8</math> </p>	<p>30. Select the explicit formula for the sequence below.</p> <p style="text-align: center;">-2, 6, -18, 54, ...</p> <p> <input type="radio"/> a <math>f(n) = 3 (-2)^{n-1}</math>  <input type="radio"/> b <math>f(n) = -2 (-3)^{n-1}</math>  <input type="radio"/> c <math>f(n) = -2 + (3)^n</math>  <input type="radio"/> d <math>f(n) = -2 (3)^n</math> </p>

31. You win a contest where the prize is a supply of candy corn. On the first day you will receive 6 pieces of candy corn. Every day thereafter you will receive twice the number as the day before. The explicit formula for this situation is given below. Select the number of candy corn pieces you would receive on day 6.

$$f(n) = 6 \cdot 2^{n-1}$$

- a 384
- b 24576
- c 192
- d 36

32. You win a contest where the prize is a supply of candy corn. On the first day you will receive 6 pieces of candy corn. Every day thereafter you will receive twice the number as the day before. Select the correct recursive formula to represent this situation.

- a  $f(1) = 6 ; f(n) = 6(2)^{n-1}$
- b  $f(1) = 6 ; f(n) = f(n-1) \cdot 2$
- c  $f(n) = 2(6)^{n-1}$
- d  $f(n) = 6(2)^n$

33. Select the function which is equivalent to the function below.

$$3x + 2y = 11$$

- a  $y = -\frac{3}{2}x + \frac{11}{2}$
- b  $y = \frac{3}{2}x - 11$
- c  $y = \frac{2}{3}x + \frac{11}{3}$
- d  $-2y + 3x = 11$

34. Your group partner is trying to write a function in slope-intercept form given the point (3, -1) and slope 2. Their work is shown below. Select which mistake they made, if any.

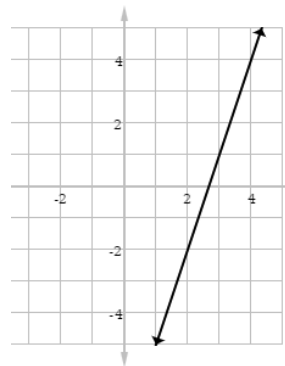
$$\begin{aligned} y + 1 &= 2(x - 3) \\ y + 1 &= 2x - 6 \\ y &= 2x - 5 \end{aligned}$$

- a There are no mistakes
- b Substituted the information incorrectly
- c Subtracted incorrectly
- d Distributed incorrectly

35. You are given two points and asked to write the equation in slope-intercept form. Select the appropriate strategy to find the function.

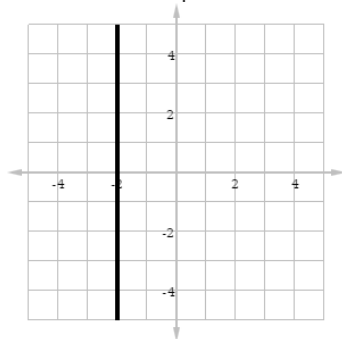
- a Use the point-point formula.
- b First calculate the average rate of change, then pick a point to plug into slope-intercept form and solve for **b**.
- c First decide if the situation is explicit or recursive.
- d First calculate the slope, then substitute a point into standard form and solve for **a**.

36. Select the slope of the function below.



- a -3
- b  $\frac{1}{3}$
- c  $\frac{2}{3}$
- d 3

37. Select the slope of the function below.



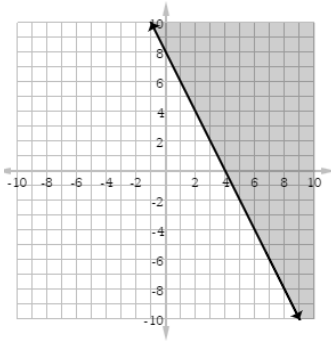
- a 1
- b undefined
- c -1
- d 0

38. Select the ordered pair that is a solution to the linear inequality below.

$$f(x) \leq 3x - 4$$

- a (-1, -10)
- b (10, 100)
- c (-1, -4)
- d (2, 12)

39. Select the linear inequality that matches the graph below.



- a  $y \leq 2x + 8$
- b  $y > -2x + 8$
- c  $y > 8x + 4$
- d  $y \geq -2x + 8$

40. Your trail mix recipe calls for raisins ( $x$ ) and cashews ( $y$ ). Raisins cost \$3 per pound and cashews cost \$7 per pound. Your mix can cost no more than \$12 per pound. Write the linear inequality that represents this situation.

- a  $7x + 3y > 12$
- b  $3x + 7y \leq 12$
- c  $3x + 7y \geq 12$
- d  $7x + 3y \leq 12$

41. Select the ordered pair that is the solution to the system of linear equations.

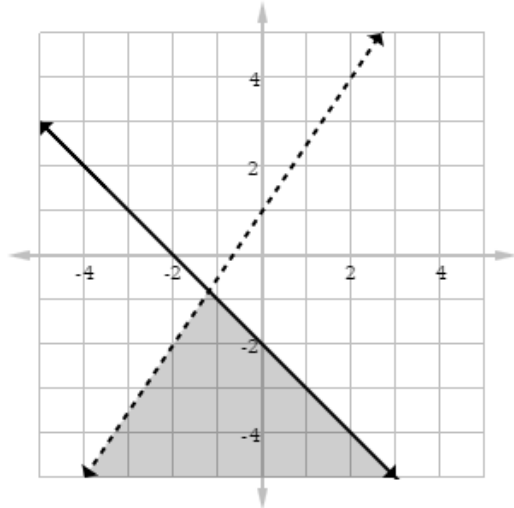
$$\begin{cases} y = 2x + 1 \\ 2x - 3y = 9 \end{cases}$$

- a (5, 3)
- b (3, -5)
- c (-3, -5)
- d (-3, 5)

42. You are having your brother's birthday party catered by either Los Locos or El Burro. Los Locos offers a taco bar for \$2 per taco and a \$25 setup fee. El Burro has tacos for \$2.25 and charges a \$15 setup fee. Select the system of equations that represents this situation *and* the ordered pair that represents this solution to the system.

- a  $f(x) = 2.25x + 25$   
 $g(x) = 2x + 15$   
(40, 65)
- b  $f(x) = 2x + 25$   
 $g(x) = 2.25x + 15$   
(10, 45)
- c  $f(x) = 25x + 2$   
 $g(x) = 15x + 2.25$   
(25, 26.25)
- d  $f(x) = 2x + 25$   
 $g(x) = 2.25x + 15$   
(40, 105)

43. Select the system of linear inequalities described by the graph below.



- a  $y < \frac{3}{2}x + 1$   
 $x + y \leq -2$
- b  $y > \frac{3}{2}x + 1$   
 $x + y \leq -2$
- c  $y \leq \frac{3}{2}x + 1$   
 $x + y < -2$
- d  $y < \frac{3}{2}x + 1$   
 $x + y \geq -2$

44. You have two weekend jobs trying to save up for a \$120 pair of cleats for the opening game of your season, mowing lawns ( $x$ ) and cleaning pools ( $y$ ). You earn \$12 for each lawn mowed and \$22 for each pool cleaned. It takes an hour and a half to mow a lawn and two and a half hours to clean a pool. You can work no more than 30 hours before the season starts. Select an ordered pair that represents a combination of lawns mowed and pools cleaned that will satisfy your constraints.

- a (4, 4)
- b (2, 4)
- c (7, 8)
- d (12, 5)