

## Unit 5 – Linear Functions Test

1. Determine whether the rate of change is constant for the data set. If yes, identify the rate of change both numerically and in words.

Distance Covered

Hours	Distance
1	50
2	150
3	80

2. Find the slope of the line given below.



3. Find the slope of the line passing through the points (8,-4) and (-6,-3).

## Unit 5 – Linear Functions Test

4. Determine whether the given below equation represents a direct variation or not. If it does, find the constant of variation.

$$3y = 4x$$

5. Assume that  $y$  varies directly with  $x$ . Write an equation relating  $x$  and  $y$ . Also find the value of  $y$  when  $x$  is 18.

$$y = 6 \text{ when } x = 18$$

6. If  $(x_1, y_1)$  is a point on the graph of a direct variation relation, the constant  $k$  is found as:

- a.  $k = \frac{y_1}{x_1}$
- b.  $k = \frac{x_1}{y_1}$
- c.  $k = x_2 \cdot x_1$
- d. None of these

7. Find the slope and  $y$ -intercept of the linear equation  $y = 1000x - 9003$ .

## Unit 5 – Linear Functions Test

8. Write an equation of a line with the given slope  $m$  and y-intercept  $b$ .

$$m = -0.01, b = -100$$

9. Write an equation in slope-intercept form of the line that passes through the points  $(0, -1)$  and  $(5, 6)$ .

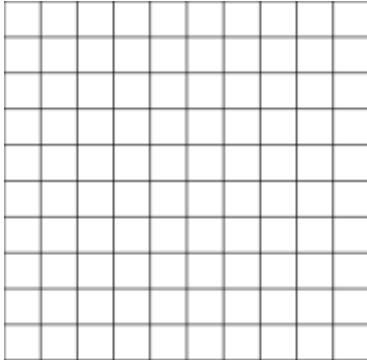
10. Write an equation in point-slope form of the line passing through the point given below and having slope  $m$ .

$$(-2, 1); m = \frac{-2}{3}$$

11. Write an equation in slope-intercept form of the line passing through  $(4, 0)$  and  $(-2, 1)$ .

## Unit 5 – Linear Functions Test

12. Graph the equation  $y - 2 = -\frac{1}{2}(x + 1)$ .

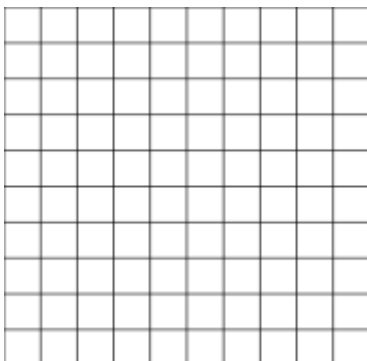


13. Find the  $x$ - and  $y$ - intercepts of the graph of the equation given below.

$$8x + 2y = -16$$

14. For the equation  $x = 0$ , tell whether its graph is a horizontal or vertical line. Give reason for your answer.

15. Graph the equation  $3x - y = 3$  using  $x$ - and  $y$ -intercepts.



## Unit 5 – Linear Functions Test

16. Write an equation in slope-intercept form of the line that passes through the given point and is parallel to the graph of the given equation.

$$(5, 5); y = \frac{3}{5}x - 15$$

17. Write an equation in slope-intercept form of the line that passes through the given point and is perpendicular to the graph of the given equation.

$$(-2, 1); y = \frac{1}{4}x - 5$$

18. A trend line is a line drawn near the points on the:

- a. Line Plot
- b. Graph
- c. Scatter Plot
- d. None of these

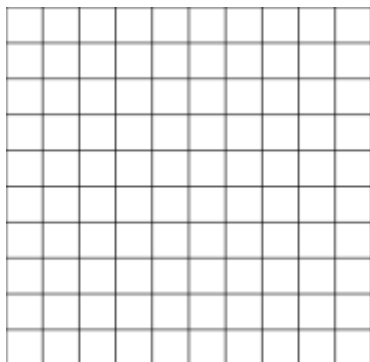
19. The graph of  $y = -|x|$  is:

- a. Translated left
- b. Translated up
- c. Reflected down
- d. None of these

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

## Unit 5 – Linear Functions Test

20. Graph the equation  $y = |x + 4|$  by translating the function  $y = |x|$ .



## Unit 5 – Linear Functions Test

1. Determine whether the rate of change is constant for the data set. If yes, identify the rate of change both numerically and in words.

Distance Covered

Hours	Distance
1	50
2	150
3	80

Rate of change is not constant.

2. Find the slope of the line given below.



$$\text{Slope} = \frac{\text{rise}}{\text{run}}$$

$$\text{rise} = 1, \text{run} = 0$$

$$\text{Slope} = \frac{1}{0} = \text{undefined}$$

3. Find the slope of the line passing through the points (8,-4) and (-6,-3).

$$\text{Slope } m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{Slope } m = \frac{-3 - (-4)}{-6 - 8}$$

$$\text{Slope } m = -\frac{1}{14}$$

**Unit 5 – Linear Functions** Test

4. Determine whether the given below equation represents a direct variation or not. If it does, find the constant of variation.

$$3y = 4x$$

$$y = \frac{4}{3}x$$

**Yes it represents a direct variation.**

$$k = \frac{4}{3}$$

5. Assume that  $y$  varies directly with  $x$ . Write an equation relating  $x$  and  $y$ . Also find the value of  $y$  when  $x$  is 18.

$$y = 6 \text{ when } x = 18$$

$$k = \frac{y}{x} = \frac{6}{18} = \frac{1}{3}$$

$$y = \frac{1}{3}x$$

**When  $x = 18$**

$$y = \frac{1}{3}(18) = 6$$

6. If  $(x_1, y_1)$  is a point on the graph of a direct variation relation, the constant  $k$  is found as:

a.  $k = \frac{y_1}{x_1}$

b.  $k = \frac{x_1}{y_1}$

c.  $k = x_2 \cdot x_1$

d. None of these

7. Find the slope and  $y$ -intercept of the linear equation  $y = 1000x - 9003$ .

$$\text{Slope } m = 1000$$

$$y\text{-intercept} = -9003$$



**Unit 5 – Linear Functions** Test

8. Write an equation of a line with the given slope
- $m$
- and y-intercept
- $b$
- .

$$m = -0.01, b = -100$$

$$y = mx + b$$

$$y = -0.01x - 100$$

9. Write an equation in slope-intercept form of the line that passes through the points
- $(0, -1)$
- and
- $(5, 6)$
- .

$$\text{Slope } m = \frac{6 - (-1)}{5 - 0} = \frac{7}{5}$$

$$y = mx + b \rightarrow 6 = \frac{7}{5}(5) + b$$

$$b = -1$$

$$y = \frac{7}{5}x - 1$$

10. Write an equation in point-slope form of the line passing through the point given below and having slope
- $m$
- .

$$(-2, 1); m = \frac{-2}{3}$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = \frac{-2}{3}(x - (-2))$$

$$y - 1 = \frac{-2}{3}(x + 2)$$

11. Write an equation in slope-intercept form of the line passing through
- $(4, 0)$
- and
- $(-2, 1)$
- .

$$\text{Slope } m = \frac{1 - 0}{-2 - 4} = -\frac{1}{6}$$

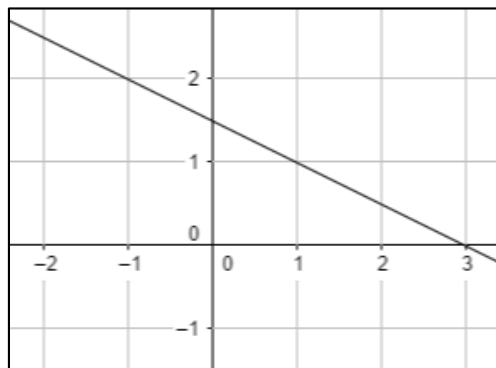
$$\text{Put } (4, 0) \text{ in } y - y_1 = m(x - x_1):$$

$$y - 0 = -\frac{1}{6}(x - 4)$$

$$y = -\frac{1}{6}x + \frac{2}{3}$$

**Unit 5 – Linear Functions** Test

12. Graph the equation  $y - 2 = -\frac{1}{2}(x + 1)$ .



13. Find the  $x$ - and  $y$ - intercepts of the graph of the equation given below.

$$8x + 2y = -16$$

For  $x$ -intercept, put  $y = 0$

$$8x + 2(0) = -16 \rightarrow x = -\frac{16}{8} = -2$$

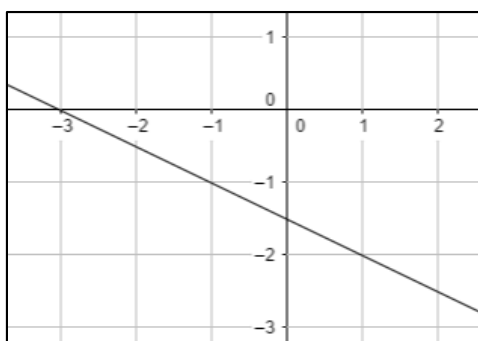
For  $y$ -intercept, put  $x = 0$

$$8(0) + 2(y) = -16 \rightarrow y = -\frac{16}{2} = -8$$

14. For the equation  $x = 0$ , tell whether its graph is a horizontal or vertical line. Give reason for your answer.

The equation has no  $y$ -intercept. So, the equation represents a vertical line.

15. Graph the equation  $3x - y = 3$  using  $x$ - and  $y$ -intercepts.



**Unit 5 – Linear Functions** Test

16. Write an equation in slope-intercept form of the line that passes through the given point and is parallel to the graph of the given equation.

$$(5, 5); y = \frac{3}{5}x - 15$$

$$\text{Slope of the parallel line } m = \frac{3}{5}$$

$$y - y_1 = m(x - x_1)$$

$$y - 5 = \frac{3}{5}(x - 5)$$

$$y = \frac{3}{5}x + 2$$

17. Write an equation in slope-intercept form of the line that passes through the given point and is perpendicular to the graph of the given equation.

$$(-2, 1); y = \frac{1}{4}x - 5$$

$$\text{Slope of the perpendicular line } m = -4$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = -4(x - (-2))$$

$$y = -4x - 7$$

18. A trend line is a line drawn near the points on the :

- a. Line Plot
- b. Graph
- c. Scatter Plot
- d. None of these

19. The graph of  $y = -|x|$  is:

- a. Translated left
- b. Translated up
- c. Reflected down
- d. None of these

## Unit 5 – Linear Functions Test

20. Graph the equation  $y = |x + 4|$  by translating the function  $y = |x|$ .

