

Student: _____
Date: _____

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Course: MATH 115-51 Summer 2018

Assignment: HW 2B

1. Determine the slope of the line through the given points.

(–10, –2) and (–5, –4)

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The slope is _____ . (Type an integer or a simplified fraction.)
 B. The slope is undefined.

2. Find the slope, if it exists, of the line containing the points (1, –3) and (1, –10).

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $m =$ _____ (Type an integer or a simplified fraction.)
 B. The slope is undefined.

3. Determine the slope, if it exists, of the graph of the linear equation.

$$y = 3.8x - 3$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The slope is _____ .
(Type an integer or a decimal.)
 B. The slope is undefined.

4. Determine the slope, if it exists, of the graph of the given linear equation.

$$f(x) = \frac{5}{6}x + 9$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The slope is _____ .
(Type an integer or a simplified fraction.)
 B. The slope is undefined.

5. Determine the slope, if it exists, of the graph of the linear equation.

$$y = 2 - 6x$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The slope is _____ . (Type an integer or a decimal.)
 B. The slope is undefined.

6. Determine the slope, if it exists, of the graph of the linear equation.

$$y = 1.3$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The slope is _____ . (Type an integer or a decimal.)
 B. The slope is undefined.

7. In 2003, 540,000 acres of farmland in a region were devoted to growing nuts. By 2012, the number of acres used to grow nuts had increased to 850,000. Find the average rate of change in the number of acres in a region used to grow nuts from 2003 to 2012.

The average rate of change was about _____ acres per year.
(Round to the nearest integer as needed.)

8. The number of crimes that occurred in a certain city per 1000 people had decreased from 46.7 in 1920 to 46.1 in 1950. Find the average rate of change in the number of crimes per 1000 people that occurred from 1920 to 1950.

The average rate of change was _____ (1) _____
(Round to the nearest hundredth as needed.)

- (1) crimes per 1000 people. years per thousands of people. years per city.
 cities per year. crimes per 1000 people per year. cities.
 years. thousands of people per year.
 thousands of people. years per crimes per 1000 people.

9. Find the slope and the y-intercept of the line with the following equation.

$$y = \frac{6}{7}x - 9$$

Find the slope of the line. Select the correct choice below and, if necessary, fill in the answer box.

- A. The slope is _____ .
(Type an integer or a simplified fraction.)
 B. The slope is undefined.

Find the y-intercept of the line. Select the correct choice below and, if necessary, fill in the answer box.

- A. The y-intercept is _____ .
(Type an ordered pair.)
 B. There is no y-intercept.

10. Find the slope and the y-intercept of the line with the given equation.

$$3x + 5y = 7$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The slope of the line is _____. (Simplify your answer.)
 B. The slope is undefined.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The y-intercept is _____.
(Type an ordered pair. Simplify your answer.)
 B. There is no y-intercept.

11. Find the slope and the y-intercept of the line with the equation $4y - 2x + 3 = 0$.

Select the correct choice below and fill in any answer boxes within your choice.

- A. The slope is _____. (Type an integer or a simplified fraction.)
 B. The slope is undefined.

Select the correct choice below and fill in any answer boxes within your choice.

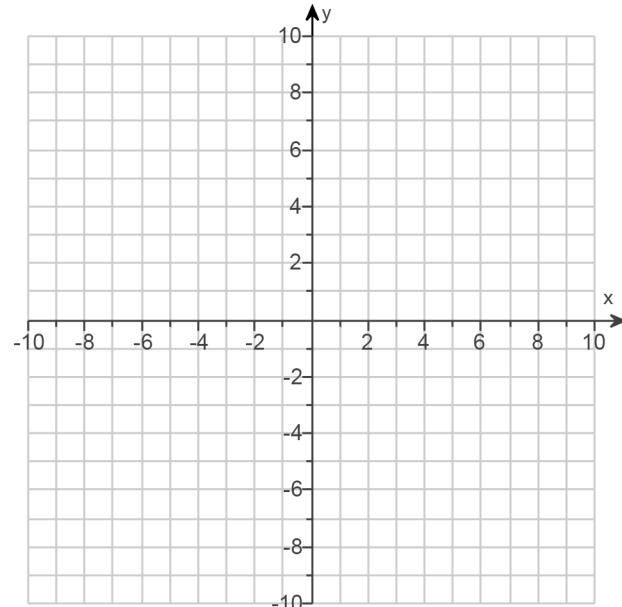
- A. The y-intercept is _____.
(Type an integer or a simplified fraction. Type an ordered pair.)
 B. There is no y intercept.

12. List the slope and y-intercept. Then, graph.
 $f(x) = 3x - 5$

The slope is . (Simplify your answer.)

The y-intercept is .
(Type an ordered pair. Simplify your answer.)

Use the graphing tool on the right to graph the equation.
Use the slope and y-intercept when drawing the line.



13. Suppose that while driving a car, the driver suddenly sees an animal standing in the road. The driver's brain registers the information and sends a signal to the driver's foot to hit the brake. The car travels a distance D , in feet, during this time, where D is a function of the speed r , in miles per hour, of the car when the driver sees the animal. That reaction distance is a linear function given by $D(r) = \frac{23}{20}r + \frac{3}{4}$. Complete parts a through c below.

a) Find the slope of this line and interpret its meaning in this application. Select the correct choice below and, if necessary, fill in the answer boxes to complete your choice.

- A. The slope m is _____ . For each mile per hour faster that the car travels, it takes _____ feet longer to stop.
- B. The slope is not defined. For each mile per hour faster that the car travels, it takes 0 foot longer to stop.

b) Find $D(5)$, $D(20)$, $D(25)$, $D(60)$, and $D(70)$. $D(r) = \frac{23}{20}r + \frac{3}{4}$

$$D(5) = \boxed{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$D(20) = \boxed{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$D(25) = \boxed{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$D(60) = \boxed{\hspace{2cm}} \text{ (Simplify your answer.)}$$

$$D(70) = \boxed{\hspace{2cm}} \text{ (Simplify your answer.)}$$

c) What is the domain of this function? Explain. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The domain is _____ . If r is allowed to be 0, the function says that a stopped car has a reaction distance of $\frac{3}{4}$ feet. (Type your answer in interval notation.)
- B. The domain is _____ . If r is allowed to be 0, the function says that a stopped car has a reaction distance of 0 feet. (Type your answer in interval notation.)

14. Find the slope-intercept equation of the line that has the given characteristics.

Slope $-\frac{7}{3}$ and y-intercept $(0, -9)$

The slope-intercept equation is $\boxed{\hspace{2cm}}$.

(Type an equation. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation. Simplify your answer.)

15. Find the slope-intercept equation of the line that has the given characteristics.

Slope 8 and y-intercept $(0, 7)$

The slope-intercept equation is $\boxed{\hspace{2cm}}$.

(Type an equation. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation. Simplify your answer.)

16. Write a slope-intercept equation for a line with the given characteristics.

$m = 0$, passes through $(5, 4)$

Choose the correct answer below.

- A. $y = 4$
- B. $y + 4 = 5$
- C. $x + y = 9$
- D. $x = 5$

17. Write a slope-intercept equation for a line that passes through $(-1, 1)$ and $(3, -7)$.

The slope-intercept equation for the line is .

(Simplify your answer. Type an integer or a simplified fraction. Type an equation.)

18. Write a slope-intercept equation for a line that passes through $(7, 0)$ and $(-5, 9)$.

The slope-intercept equation for the line is .

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

19. Write a slope-intercept equation for a line that passes through $(0, -6)$ and $(4, -3)$.

The slope-intercept equation for the line is .

(Use integers or fractions for any numbers in the equation.)

20. Write equations of the horizontal and the vertical lines that pass through the point $(-2, -1)$.

What is the equation of the horizontal line?

- A. $x = -2$
- B. $y = -2$
- C. $x = -1$
- D. $y = -1$

What is the equation of the vertical line?

- A. $x = -2$
- B. $y = -1$
- C. $x = -1$
- D. $y = -2$

21. Write equations of the horizontal and the vertical lines that pass through the point $(3, -1)$.

What is the equation of the horizontal line?

- A. $x = 3$
- B. $y = 3$
- C. $y = -1$
- D. $x = -1$

What is the equation of the vertical line?

- A. $y = 3$
- B. $x = -1$
- C. $y = -1$
- D. $x = 3$

22. Find a linear function h , given $h(8) = -12$ and $h(-1) = 6$. Then find $h(6)$.

$$h(x) = \boxed{\quad}$$

(Type an expression using x as the variable. Simplify your answer.)

$$h(6) = \boxed{\quad} \text{ (Simplify your answer.)}$$

23. Determine whether the pair of lines is parallel, perpendicular, or neither.

$$y = \frac{4}{5}x - 3,$$

$$y = -\frac{4}{5}x + 3$$

Choose the correct answer below.

- neither parallel nor perpendicular
- perpendicular
- parallel

24. Decide whether the pair of lines is parallel, perpendicular, or neither.

$$5x + 2y = 1$$

$$5x + 2y = 3$$

The lines are (1)

- (1) parallel.
 neither parallel nor perpendicular.
 perpendicular.

25. Determine whether the pair of lines is parallel, perpendicular, or neither.

$$y = 6x - 4$$

$$5y = 2 - x$$

Are the graphs of the pair of lines parallel, perpendicular, or neither?

- Neither
- Perpendicular
- Parallel

26. Write a slope-intercept equation for a line passing through the point $(8, 10)$ that is parallel to $y = \frac{1}{2}x + 13$. Then write a second equation for a line passing through the given point that is perpendicular to the given line.

Which answer below is correct?

- A. parallel: $y = \frac{1}{2}x + 10$ perpendicular: $y = -2x + 10$
- B. parallel: $y = \frac{1}{2}x + 6$ perpendicular: $y = -2x + 26$
- C. parallel: $y = \frac{1}{2}x + 6$ perpendicular: $y = 2x + 26$

27. Write a slope-intercept equation for a line passing through the point $(8, -8)$ that is parallel to the line $x = -6$. Then write a second equation for a line passing through the point $(8, -8)$ that is perpendicular to the line $x = -6$.

The equation of the parallel line is .

(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the expression.)

The equation of the perpendicular line is .

(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the expression.)

28. Determine whether the statement is true or false.

The lines $x = 3$ and $y = -5$ are perpendicular.

Is the statement true or false?

- True
 False

29. Solve the following equation.

$$3x + 8 = 20$$

Select the correct choice below and, if necessary, fill in the answer box.

- A. The solution is
(Type an integer or a simplified fraction.)
- B. The solution set is $(-\infty, \infty)$.
- C. There is no solution.

30. Solve the following equation.

$$2x - 4 = 0$$

Select the correct choice below and, if necessary, fill in the answer box.

- A. The solution is
(Type an integer or a simplified fraction.)
- B. The solution set is $(-\infty, \infty)$.
- C. There is no solution.

31. Solve.

$$6 - \frac{1}{6}x = \frac{16}{3}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is _____ . (Type an integer or a simplified fraction.)
 B. The solution set is $(-\infty, \infty)$.
 C. There is no solution.

32. Solve.

$$\frac{6}{7} - 6x = -6x + \frac{3}{7}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is _____ . (Type an integer or a simplified fraction.)
 B. The solution set is $(-\infty, \infty)$.
 C. There is no solution.

33. Solve the equation.

$$7t - 7 = 4t - 1$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is _____ .
(Type an integer or a simplified fraction.)
 B. The solution set is $(-\infty, \infty)$.
 C. The equation has no solution.

34. Solve.

$$4(x - 4) = 9 - 5(4x + 1)$$

Select the correct choice below and, if necessary, fill in the answer box.

- A. The solution is _____ .
(Type an integer or a simplified fraction.)
 B. The solution set is $(-\infty, \infty)$.
 C. There is no solution.

35. Money is borrowed at 15% simple interest. After one year, \$967.15 pays off the loan. How much was originally borrowed?

The amount of the original loan was \$ _____ .

36. A trimaran boat, with a top speed of 60 knots, won the tournament cup in 2010. Its top speed is 4 knots more than 3.5 times the top speed of the winner monohull in the 2007 tournament. Find the top speed of the monohull in the 2007 tournament.

The top speed of the monohull in the 2007 tournament was knots.
(Type an integer or a decimal.)

37. A truck enters a highway driving 60 mph. A car enters the highway at the same place 7 minutes later and drives 74 mph in the same direction. From the time the car enters the highway, how long will it take the car to pass the truck?

The car will pass the truck in minutes.
(Round to the nearest minute.)

38. The height of a building is 977 feet, which is about 440 feet higher than another building. What is the height of the second building?

The second building has a height of feet.

39. To finance her community college education, Sarah takes out a loan for \$2300. After a year Sarah decides to pay off the interest, which is 6% of \$2300. How much will she pay?

Sarah will pay \$.

1. A. The slope is . (Type an integer or a simplified fraction.)

2. B. The slope is undefined.

3. A. The slope is .(Type an integer or a decimal.)

4. A. The slope is .(Type an integer or a simplified fraction.)

5. A. The slope is . (Type an integer or a decimal.)

6. A. The slope is . (Type an integer or a decimal.)

7. 34,444

8. - 0.02

(1) crimes per 1000 people per year.

9. A. The slope is .(Type an integer or a simplified fraction.)

A. The y-intercept is .(Type an ordered pair.)

10. A. The slope of the line is . (Simplify your answer.)

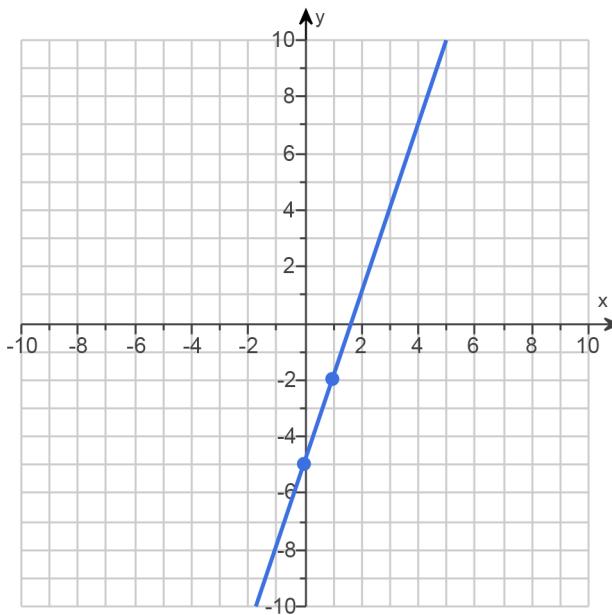
A. The y-intercept is .(Type an ordered pair. Simplify your answer.)

11. A. The slope is . (Type an integer or a simplified fraction.)

A. The y-intercept is .(Type an integer or a simplified fraction. Type an ordered pair.)

12. 3

(0, -5)



13. A.

The slope m is $\frac{23}{20}$. For each mile per hour faster that the car travels, it takes $\frac{23}{20}$ feet longer to stop.

6.5

23.75

29.5

69.75

81.25

A.

The domain is $(0, \infty)$. If r is allowed to be 0, the function says that a stopped car has a reaction distance of $\frac{3}{4}$ feet. (Type your answer in interval notation.)

14. $y = -\frac{7}{3}x - 9$

15. $y = 8x + 7$

16. A. $y = 4$

17. $y = -2x - 1$

18. $y = -\frac{3}{4}x + \frac{21}{4}$

19. $y = \frac{3}{4}x - 6$

20. D. $y = -1$

A. $x = -2$

21. C. $y = -1$

D. $x = 3$

22. $-2x + 4$

-8

23. neither parallel nor perpendicular

24. (1) parallel.

25. Neither

26. B. parallel: $y = \frac{1}{2}x + 6$ perpendicular: $y = -2x + 26$

27. $x = 8$

$y = -8$

28. True

29. A. The solution is .(Type an integer or a simplified fraction.)

30. A. The solution is .(Type an integer or a simplified fraction.)

31. A. The solution is .(Type an integer or a simplified fraction.)

32. C. There is no solution.

33. A. The solution is .(Type an integer or a simplified fraction.)

34. A. The solution is .(Type an integer or a simplified fraction.)

35. 841

36. 16

37. 30

38. 537

39. 138.00
