

5-7-18

Aim: SWBAT find the slope of a line given two points.

HW: WS

Quizzes Thursday

1. Linear Equations

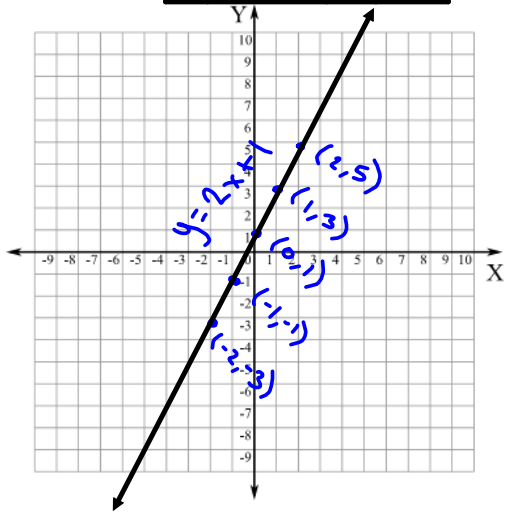
2. Parallel Lines

Do Now: Check HW

Homework Answers

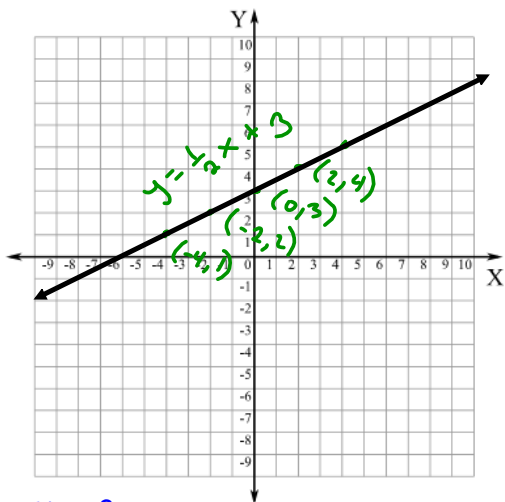
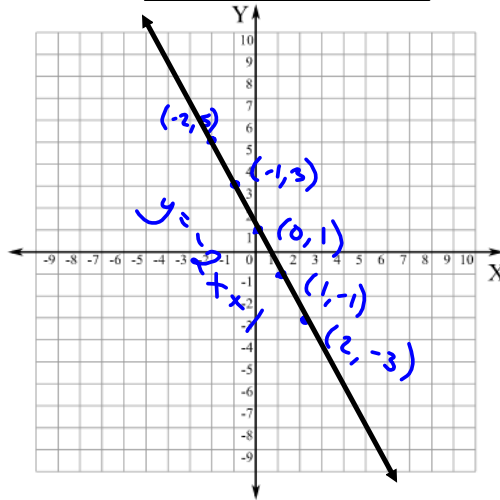
1. $y = 2x + 1$

x	$2x + 1$	y	(x, y)
-2	$2(-2) + 1$	-3	(-2, -3)
-1	$2(-1) + 1$	-1	(-1, -1)
0	$2(0) + 1$	1	(0, 1)
1	$2(1) + 1$	3	(1, 3)
2	$2(2) + 1$	5	(2, 5)



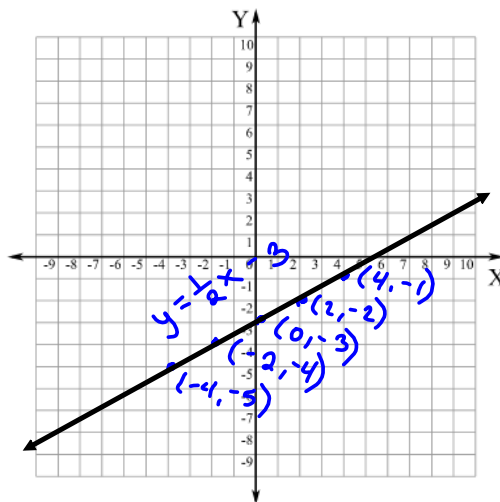
2. $y = -2x + 1$

x	$-2x + 1$	y	(x, y)
-2	$-2(-2) + 1$	5	(-2, 5)
-1	$-2(-1) + 1$	3	(-1, 3)
0	$-2(0) + 1$	1	(0, 1)
1	$-2(1) + 1$	-1	(1, -1)
2	$-2(2) + 1$	-3	(2, -3)



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

x	$\frac{1}{2}x + 3$	y	(x, y)
-4	$\frac{1}{2}(-4) + 3$	1	(-4, 1)
-2	$\frac{1}{2}(-2) + 3$	2	(-2, 2)
0	$\frac{1}{2}(0) + 3$	3	(0, 3)
2	$\frac{1}{2}(2) + 3$	4	(2, 4)
4	$\frac{1}{2}(4) + 3$	5	(4, 5)



4. $y = \frac{1}{2}x - 3$

x	$\frac{1}{2}x - 3$	y	(x, y)
-4	$\frac{1}{2}(-4) - 3$	-5	(-4, -5)
-2	$\frac{1}{2}(-2) - 3$	-4	(-2, -4)
0	$\frac{1}{2}(0) - 3$	-3	(0, -3)
2	$\frac{1}{2}(2) - 3$	-2	(2, -2)
4	$\frac{1}{2}(4) - 3$	-1	(4, -1)

Linear Equations

- line
- every point on the line is part of the solution set
any ordered pair (x,y)
satisfies the equation
- infinite number of solutions
because there are an infinite
number of points on the line

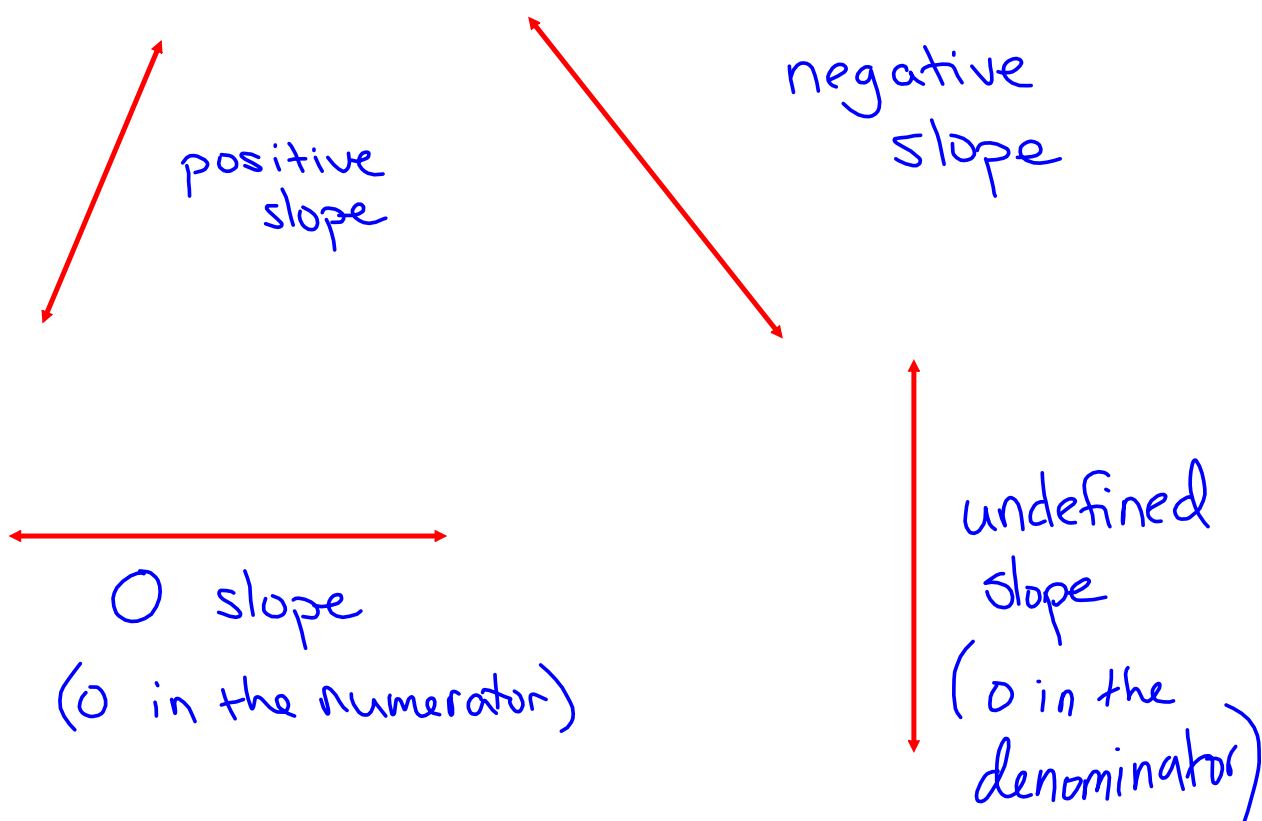
Linear Equations

- graph as straight lines because the function represents a constant rate of change

Characteristics of the Equation

- have two variables in separate terms
- each variable is raised to the first power
(sometimes x or y are raised to the zero power)

$$y = x - 1$$
$$3p + 5q = 16$$
$$s = 0.2t$$



Slope: the ratio of vertical change to horizontal change between any two points

$$y = mx + b$$

$$m = \frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{\text{the change in } y}{\text{the change in } x}$$

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

Find the slope between the two points.

A(3, 1); B (5, 6)

x_1, y_1 x_2, y_2

x_2, y_2 x_1, y_1

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

$$m = \frac{6 - 1}{5 - 3}$$

$$m = \frac{5}{2}$$

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

$$m = \frac{1 - 6}{3 - 5}$$

$$m = \frac{-5}{-2}$$

$$m = \frac{5}{2}$$

Find the slope between the two points.

$$A(4, -3); B(-1, 0)$$

$$x_1, y_1 \quad x_2, y_2$$

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

$$m = \frac{0 - (-3)}{-1 - 4}$$

$$m = \frac{3}{-5}$$

$$\cancel{0/3}$$

$$\frac{3}{-5} = \frac{-3}{5} = -\frac{3}{5}$$

Final Answer Details

$$m = \frac{4}{2}$$

$$m = 2$$

$$m = \frac{2}{4}$$

$$m = \frac{1}{2}$$

$$m = \frac{0}{5}$$

$$m = 0$$

$$m = \frac{5}{0}$$

$$m = \text{undefined}$$

$$m = \frac{0}{0}$$

$$m = \frac{0}{0}$$

$$\frac{-1}{2} = \frac{1}{-2} = -\frac{1}{2}$$

Find the unknown value.

$$m = \frac{7}{4}; \quad \begin{matrix} (x, -7) & , & (16, 0) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

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

$$\frac{7}{4} = \frac{0 - (-7)}{16 - x}$$

~~$$\frac{7}{4} = \frac{7}{16 - x}$$~~

$$28 = 7(16 - x)$$

$$28 = 112 - 7x$$

$$-112 \quad -112$$

$$-84 = -7x$$

$$\frac{-84}{-7} = \frac{-7x}{-7}$$

$$12 = x$$

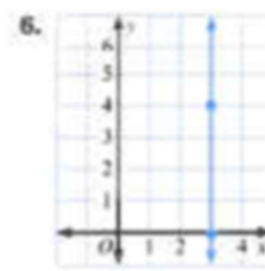
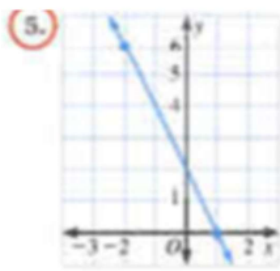
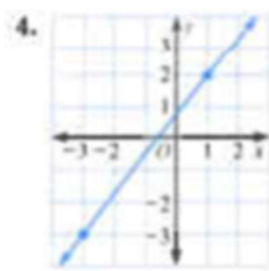
$$m = 0; \quad (0, 7), (3, y)$$

HW: Pg. 614 # 1-11, 16 - 20, 30

Complete the statement.

1. Between two points, the change in the y-coordinate is called the _____.
2. Between two points, the change in the x-coordinate is called the _____.
3. The ratio of vertical change to horizontal change between any two points on a line is the _____ of the line.

Write the coordinates of the two given points on the line. Then find the slope of the line.



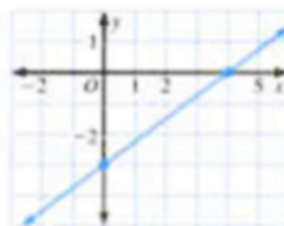
Find the slope of the line through the points.

7. $(-4, 8), (6, 6)$	8. $(1, 4), (1, -7)$	9. $(-5, 4), (3, 4)$
----------------------	----------------------	----------------------

10. $(-2, -4), (4, 2)$ 11. $(-3, 1), (-3, -2)$

16. Describe and correct the error made in finding the slope of the line shown.

$$\times \text{ slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 0}{0 - (-3)} = \frac{4}{3}$$



Sketch a line with the given type of slope.

17. negative

18. undefined

19. positive

20. Zero

30. A line contains the points (p, q) and $(p + 2, q + 2)$. Find the slope of the line.