

Warm Up

October 29, 2018

Identify the slope and y-intercept of the equations below:

$$\begin{aligned}
 1.) \quad & 4x - 8y = 3 \\
 & \underline{-4x} \qquad \qquad \qquad \underline{-4x} \\
 \hline
 & -8y = -4x + 3 \\
 & \underline{-8} \qquad \qquad \qquad \underline{-8} \qquad \underline{-8} \\
 & y = \frac{1}{2}x - \frac{3}{8} \\
 & m = \frac{1}{2} \qquad b = -\frac{3}{8}
 \end{aligned}$$

$$\begin{aligned}
 2.) \quad & y = 5 \\
 & m = 0 \qquad b = 5
 \end{aligned}$$

- 3.) The admission fee to the state fair is \$8.00. Each ride costs an additional \$4.00. Karen only has \$30. Write an inequality to determine, x , the number of rides Karen can go on.
- $\leq \quad 4x + 8 \leq 30$
- one time

$$\textcircled{\#1} \quad \begin{array}{rcl} 3x + 4y & = & 12 \\ -3x & & \\ \hline 4y & = & -3x + 12 \\ & & \frac{4}{4} \end{array}$$
$$y = -\frac{3}{4}x + 3$$

$$\textcircled{\#2} \quad \begin{array}{rcl} 2x + 6y & = & 18 \\ -2x & & \\ \hline 6y & = & -2x + 18 \\ & & \frac{6}{6} \end{array}$$
$$y = -\frac{1}{3}x + 3$$

$$\textcircled{\#3} \quad \begin{array}{rcl} 2x - y & = & 8 \\ -2x & & \\ \hline -y & = & -2x + 8 \\ & & \frac{-1}{-1} \end{array}$$
$$y = 2x - 8$$

Writing Linear Equations

$$\hookrightarrow y = mx + b$$

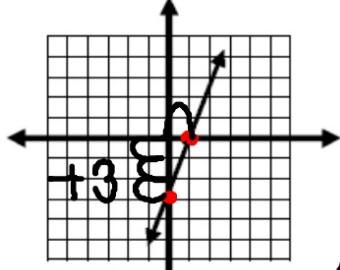
GIVEN A GRAPH

✓ Step 1: Identify the slope and y-intercept

✓ Step 2: Write the equation in slope-intercept form: $y = mx + b$

Some Examples...

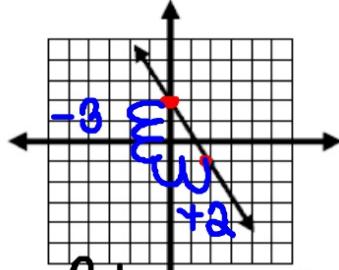
1



$$m = \underline{3} \quad b = \underline{-3}$$

Equation: $y = 3x - 3$

2



$$m = \underline{-\frac{3}{2}} \quad b = \underline{2}$$

Equation: $y = -\frac{3}{2}x + 2$

3

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

Equation: $y = \frac{2}{5}x + 2$

The graph shows a line on a coordinate plane with a grid. The line passes through the y-axis at (0, 2) and has a positive slope. Handwritten annotations show a right triangle with a vertical leg of 2 and a horizontal leg of 5, labeled '+2' and '+5' respectively, with the hypotenuse labeled 'm'. The equation $y = \frac{2}{5}x + 2$ is written below the graph.

4

$$m = -3$$
$$b = 1$$

Equation: $y = -3x + 1$

The graph shows a line on a coordinate plane with a grid. The line passes through the y-axis at (0, 1) and has a negative slope. Handwritten annotations show a right triangle with a vertical leg of -3 and a horizontal leg of 1, labeled '-3' and '1' respectively, with the hypotenuse labeled 'm'. The equation $y = -3x + 1$ is written below the graph.

5

$$m = \frac{3}{2}$$
$$b = 3$$

Equation: $y = \frac{3}{2}x + 3$

The graph shows a line on a coordinate plane with a grid. The line passes through the y-axis at (0, 3) and has a positive slope. Handwritten annotations show a right triangle with a vertical leg of 3 and a horizontal leg of 2, labeled '+3' and '+2' respectively, with the hypotenuse labeled 'm'. The equation $y = \frac{3}{2}x + 3$ is written below the graph.

6

The graph shows a line on a coordinate plane with a grid. The line passes through the y-axis at (0, -2) and has a negative slope. Handwritten annotations show a right triangle with a vertical leg of -2 and a horizontal leg of 3, labeled '-2' and '3' respectively, with the hypotenuse labeled 'm'. The equation $y = -\frac{2}{3}x - 2$ is written below the graph.

$$m = -\frac{2}{3}$$
$$b = -2$$

Equation: $y = -\frac{2}{3}x - 2$

Writing Linear Equations Given a Table

x	y
-2	3
-1	5
0	7
1	9
2	11

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

$$\text{Equation: } y = 2x + 7$$

x	y
0	3
1	5.5
2	8
3	10.5
4	13

$$m = 2.5$$

$$\text{Equation: } y = 2.5x + 3$$

Just like writing an equation from a graph, you need to *identify the slope and the y-intercept*.

How do you find the y-intercept from a table?

Writing an Equation from a Table WITHOUT $x=0$

https://www.youtube.com/watch?v=Qo1_xkv2w_M

x	y
-6	-4
-5	-9
-4	-14
-3	-19
-2	-24
-1	-29
0	-34

+1 +1 +1 +1 +1

m = -5 b = -34

Equation: $y = -5x - 34$

Practice:

Write the equations using the tables provided.

x	y
-1	1
1	2
3	3
5	4
7	5

$$\begin{array}{r} -1 \\ 0 \\ 1 \end{array} \quad \begin{array}{r} 1 \\ 1.5 \\ 2 \end{array}$$

$$m = \frac{1/2}{3/2}$$

Equation:

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

x	y
-5	10
-3	6
-1	2
0	0
1	-2
3	-6

$$m = -2$$

$$b = 0$$

Equation:

$$y = -2x$$