

## Warm Up

October 29, 2018

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

$$\begin{array}{r} 1.) \quad 4x - 8y = 3 \\ \underline{-4x} \quad \downarrow \quad \underline{-4x} \\ -8y = -4x + 3 \\ \underline{-8} \quad \quad \underline{-8} \quad \underline{-8} \\ y = \frac{1}{2}x - \frac{3}{8} \\ m = \frac{1}{2} \quad b = -\frac{3}{8} \end{array}$$

$$\begin{array}{r} 2.) \quad y = 5 \\ m = 0 \quad b = 5 \end{array}$$

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.

$$\leq 4x + 8 \leq 30$$

OTW time

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

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

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

## Writing Linear Equations

GIVEN A GRAPH

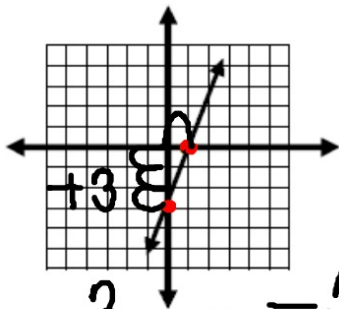
↳  $y = mx + b$

✓ **Step 1:** Identify the slope and y-intercept

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

### Some Examples...

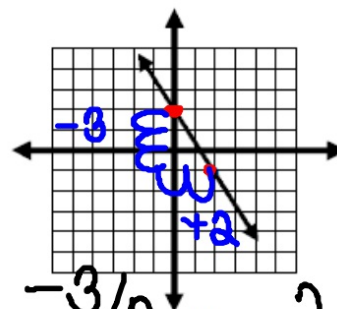
1



$m = 3$        $b = -3$

Equation:  $y = 3x - 3$

2

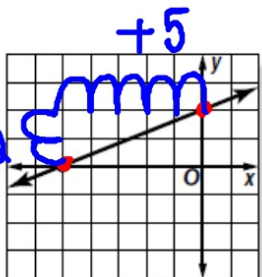


$m = -3/2$        $b = 2$

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

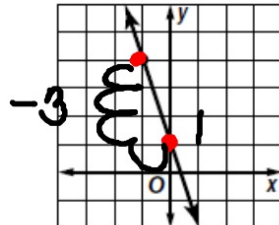
3

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



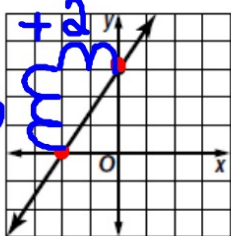
4

$m = -3$   
 $b = 1$   
 Equation:  $y = -3x + 1$



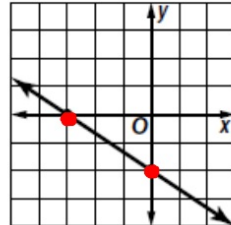
5

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



6

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

+ | (-2 3) +2  
 + | (-1 5) +2  
 + | (0 7) +2  
 + | (1 9) +2  
 + | (2 11) +2

$m = \underline{2}$   $b = \underline{7}$

Equation:  $y = 2x + 7$

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

+ | (0 3) +2.5  
 + | (1 5.5) +2.5  
 + | (2 8) +2.5  
 + | (3 10.5) +2.5  
 + | (4 13) +2.5

$m = \underline{2.5}$   $b = \underline{3}$

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

x	y
-6	-4
-5	-9
-4	-14
-3	-19
-2	-24

$-1$        $-29$   
 $0$          $-34$

$$m = \underline{-5} \quad b = \underline{-34}$$

$$\text{Equation: } \underline{y = -5x - 34}$$

Practice:

Write the equations using the tables provided.

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

$\frac{1}{2}$   
 $-\frac{1}{2}$   
 $1.5$   
 $2.5$

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

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

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

$m = -2$   
 $b = 0$

Equation:  
 $y = -2x$