

Your Name  
Mrs. Thru  
8/25/21  
Notes

# Writing Linear Functions

Given a  
Table or  
Graph

Problem #	Table of values (x,y)	Equation (y = mx + b form)	Graph												
1.)	<table border="1"> <tr><th>x</th><th>y</th></tr> <tr><td>-2</td><td>-3</td></tr> <tr><td>-1</td><td>-1</td></tr> <tr><td>0</td><td>1</td></tr> <tr><td>1</td><td>3</td></tr> <tr><td>2</td><td>5</td></tr> </table>	x	y	-2	-3	-1	-1	0	1	1	3	2	5	$y = 2x + 1$ $m = \frac{2}{1} = 2$ $b = 1$	
x	y														
-2	-3														
-1	-1														
0	1														
1	3														
2	5														
2.)	<table border="1"> <tr><th>x</th><th>y</th></tr> <tr><td>-3</td><td>-6</td></tr> <tr><td>0</td><td>-4</td></tr> <tr><td>3</td><td>-2</td></tr> <tr><td>6</td><td>0</td></tr> </table>	x	y	-3	-6	0	-4	3	-2	6	0	$y = \frac{2}{3}x - 4$ $m = \frac{2}{3} = \frac{-2}{-3}$ $b = -4$			
x	y														
-3	-6														
0	-4														
3	-2														
6	0														
3.)	<table border="1"> <tr><th>x</th><th>y</th></tr> <tr><td>-4</td><td>4</td></tr> <tr><td>0</td><td>3</td></tr> <tr><td>4</td><td>2</td></tr> </table>	x	y	-4	4	0	3	4	2	$y = mx + b$ $y = -\frac{1}{4}x + 3$ $m = \frac{1}{-4} = -\frac{1}{4}$ $b = 3$					
x	y														
-4	4														
0	3														
4	2														

Problem #	Table of values (x,y)	Equation (y = mx + b form)	Graph												
4.)	<table border="1"> <tr><td>x</td><td>y</td></tr> <tr><td>-5</td><td>4</td></tr> <tr><td>0</td><td>0</td></tr> <tr><td>5</td><td>-4</td></tr> </table>	x	y	-5	4	0	0	5	-4	$y = -4/5x + 0$ $m = \frac{-4}{5} = -\frac{4}{5}$					
x	y														
-5	4														
0	0														
5	-4														
5.)	<table border="1"> <tr><td>x</td><td>y</td></tr> <tr><td>6</td><td>1</td></tr> <tr><td>4</td><td>-1</td></tr> <tr><td>0</td><td>-5</td></tr> <tr><td>1</td><td>-4</td></tr> <tr><td>2</td><td>-3</td></tr> </table>	x	y	6	1	4	-1	0	-5	1	-4	2	-3	$f(x) = 1x + -5$ $m = \frac{2}{2} = 1$	
x	y														
6	1														
4	-1														
0	-5														
1	-4														
2	-3														
6.)	<table border="1"> <tr><td>x</td><td>y</td></tr> <tr><td>-10</td><td>5</td></tr> <tr><td>-4</td><td>5</td></tr> <tr><td>0</td><td>5</td></tr> <tr><td>2</td><td>5</td></tr> <tr><td>7</td><td>5</td></tr> </table>	x	y	-10	5	-4	5	0	5	2	5	7	5	$y = 5$ $y = 0x + 5$ $m = 0 = \frac{0}{5} = 0$	
x	y														
-10	5														
-4	5														
0	5														
2	5														
7	5														

Given two Points

Slope Formula

1.) Find the equation of the line that passes through the two points  $A(-3, 1)$  and  $B(3, -5)$ . Write your answer in slope-intercept form  $y = mx + b$ .

Goal:  $y = -1x + -2$

1st Find slope  $m = ?$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - (-5)}{-3 - 3} = \frac{1 + 5}{-3 - 3} = \frac{6}{-6} = -1$$

2nd Find y-intercept  $b = ?$

plug in one of the given points and solve for b

$A(-3, 1)$   
 $y = -1x + b$   
 $(1) = -1(-3) + b$

$y = -1x - 2$

$$1 = 3 + b$$

$$\begin{array}{r} 1 \\ -3 \\ \hline -2 = b \end{array}$$

$(0, -2)$

2.) Find the equation of the line that passes through the two points F(8,-2) and G(-6,4). Write your answer in slope-intercept form  $y = mx + b$ .

Goal:  $y = mx + b$

1st  
 $m = \frac{(-2) - (4)}{(8) - (-6)} = \frac{-6}{14} \div 2$   
 $\frac{4 - (-2)}{-6 - 8} = \frac{6}{-14} \div 2 = -\frac{3}{7}$

2nd  $b = ?$

F(8, -2)  
 $x \quad y$   
 $y = -\frac{3}{7}x + b$   
 $-2 = -\frac{3}{7}(8) + b$

$-\frac{2}{1} = -\frac{24}{7} + b$

$-\frac{14}{7} + \frac{24}{7} = b$

$\frac{10}{7} = b$

$y = -\frac{3}{7}x + \frac{10}{7}$