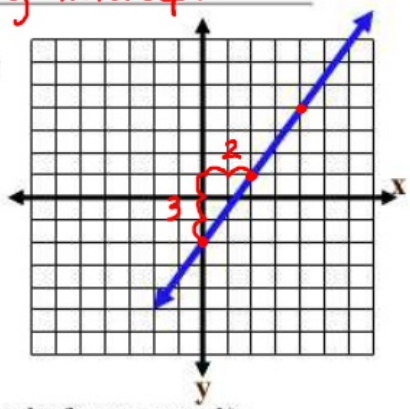
Algebra II
Writing Linear Eqns.-Notes

Name _____
Date _____

Slope-Intercept Form of an Equation

$y = mx + b$ m is slope b is y-intercept

1) Write the Equation of the line based on the graph:



Y-intercept (b-value)? $-2 = b$

Slope (m-value)? $m = \frac{3}{2}$

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

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

Write the equation given the slope and y-intercept (use the form: $y=mx+b$):

2) $m = -3,\ b = 1$ $y = mx + b$

$y = -3x + 1$

3) $m = -\frac{2}{5},\ b = -4$

$y = -\frac{2}{5}x - 4$

Write the equation given the slope and a point on the graph:

4) Given: $m = -1$, (2,1) (x,y)

Steps: 1) Calculate the b-value by substituting the slope and the coordinates into $y=mx+b$.

$y = mx + b$

$1 = (-1)(2) + b$

$1 = -2 + b$

$+2 \quad +2$

$3 = b$

2) Plug the *m* and *b* values back in:

$y = -x + 3$

Write the equation given only 2 points on the graph:

5) Given (-1, 3) and (2, 1)

Steps: 1) Calculate slope (*m*) using: $m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{1-3}{2-(-1)} = \frac{-2}{3}$

2) Calculate *b* by substituting the slope (*m*) and one of the coordinates into $y=mx+b$

3) Plug the *m* and *b* values back in:

$y = -\frac{2}{3}x + 7/3$

you may use either point using (2,1)

$y = mx + b$

$1 = -\frac{2}{3}(2) + b$

$3 = -2(2) + 3b$

$3 = -4 + 3b$

$+4 \quad +4$

$3b = 7$

$b = 7/3$

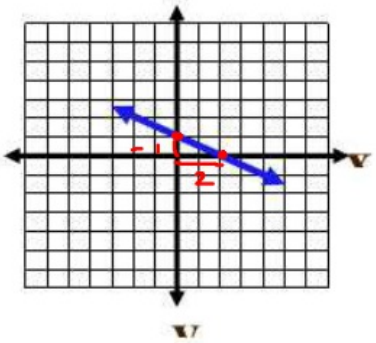
You try!

1) Write the Equation of the line:

Y-intercept (b-value)? $b = 1$

Slope (m-value)? $m = \frac{-1}{2}$

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



Write the slope-intercept form of a line with the given information:

1. $m = 14,\ b = -5$

$y = mx + b$

$y = 14x - 5$

2. $m = -\frac{4}{7},\ b = 0$

$y = mx + b$

$y = -\frac{4}{7}x$

Write the equation of the line in slope-intercept form with the given information:

3. $m = \frac{1}{4}$, (8,5)

$y = mx + b$

$5 = \frac{1}{4}(8) + b$

$5 = 2 + b$

$b = 3$

$y = \frac{1}{4}x + 3$

4. $m = \frac{5}{3}$, (−6,2)

$y = mx + b$

$2 = \frac{5}{3}(-6) + b$

$2 = -10 + b$

$b = 12$

$y = \frac{5}{3}x + 12$

5. (3, 1) and (9, 5)

Δy over Δx

$m = \frac{5-1}{9-3} = \frac{4}{3}$

$y = mx + b$

using (3, 1)

$1 = \frac{4}{3} \cdot 3 + b$

$1 = 4 + b$

$b = -3$

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

6. (1, 1) and (-2, 7)

$m = \frac{7-1}{-2-1} = \frac{6}{-3} = -2$

$y = mx + b$

using (1, 1)

$1 = -2(1) + b$

$1 = -2 + b$

$+2 \quad +2$

$3 = b$

$y = -2x + 3$