January 23, 2012

Is there anything that needs to be corrected?

1/23 - Writing an equation of a line through a point with a given slope

$$y = mx + b$$
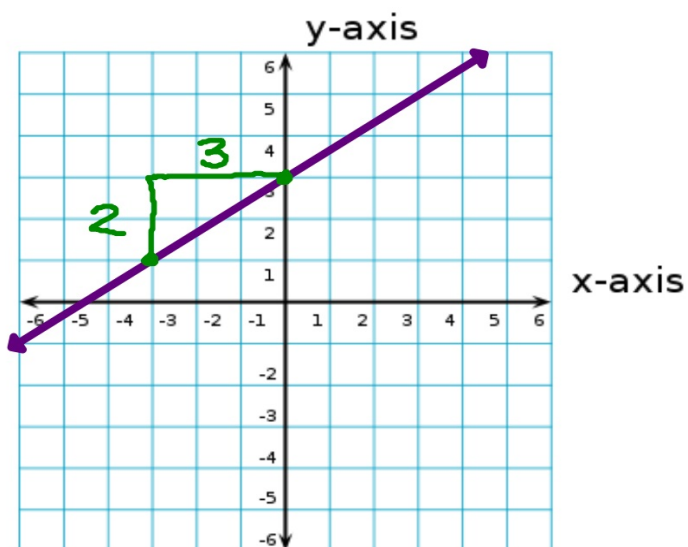
slope of the line   y-intercept
rise   where there line crosses the y-axis
run

$m = \dfrac{2}{3}$

$b = 3$

$y = mx + b$

$y = \dfrac{2}{3}x + 3$

y-axis

3

2

x-axis

Write the equation of the line that goes through the given point and has the given slope.

$$\left(5, -2\right) \quad m = 3$$
$$x \quad y$$

$$y = mx + b$$

$$-2 = 3 \cdot 5 + b \qquad \text{substitute}$$
$$-2 = 15 + b \qquad \text{solve for } b$$
$$\underline{-15 \quad -15}$$
$$-17 = b$$

$$y = mx + b$$

$$\boxed{y = 3x - 17}$$

1. Write the formula
2. Substitute x, y and m
3. Solve the equation for b
4. Write the formula
5. Substitute m and b

$$(-3, 4) \quad m = -2$$

$$y = mx + b$$
$$4 = -2 \cdot -3 + b$$
$$4 = 6 + b$$
$$-6 \quad -6$$
$$-2 = b$$
$$y = mx + b$$
$$y = -2x - 2$$

1. Write the formula
2. Substitute x, y and m
3. Solve the equation for b
4. Write the formula
5. Substitute m and b

$$(0,-4) \quad m=1$$

$$y = mx + b$$
$$-4 = 1 \cdot 0 + b$$
$$-4 = 0 + b$$
$$-4 = b$$
$$y = mx + b$$
$$y = 1x + {}^{-}4$$

$$\boxed{y = x - 4}$$

1. Write the formula
2. Substitute x, y and m
3. Solve the equation for b
4. Write the formula
5. Substitute m and b

$$(2,3) \quad m = \frac{1}{4}$$

$$y = mx + b$$

$$3 = \frac{1}{4} \cdot \frac{\overset{1}{2}}{\underset{2}{1}} + b$$

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

$$y = mx + b$$
$$\boxed{y = \frac{1}{4}x + 2\frac{1}{2}}$$

1. Write the formula
2. Substitute x, y and m
3. Solve the equation for b
4. Write the formula
5. Substitute m and b

$$(-5,1) \quad m = -\frac{2}{3}$$

$$y = mx + b$$

$$1 = -\frac{2}{3} \cdot \frac{-5}{1} + b$$

$$1 = \frac{10}{3} + b$$

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

$$-3\frac{1}{3} \quad -3\frac{1}{3}$$

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

$$y = mx + b$$

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

1. Write the formula
2. Substitute x, y and m
3. Solve the equation for b
4. Write the formula
5. Substitute m and b

$(-2, 4)$ $m = \dfrac{-3}{4}$

$y = mx + b$

$4 = \dfrac{-3}{4} \cdot \dfrac{-2}{1} + b$

$4 = \dfrac{3}{2} + b$

$4 = 1\tfrac{1}{2} + b$

$-1\tfrac{1}{2} \quad -1\tfrac{1}{2}$

$2\tfrac{1}{2} = b$

$y = mx + b$

$y = \dfrac{-3}{4}x + 2\tfrac{1}{2}$

HOMEWORK

Gold Worksheet 1

Due Tuesday