Warmup 10/(Baker's Dozen)

Created by Mr. Lischwe

1. On your piece of paper, write a <u>new</u> goal for math for this 9 weeks. Think carefully about how the first 9 weeks went so that you set a good goal. You do not need to put your name on it. Give your goal to our volunteer, who will tape it into the #goals door.

2. Rewrite your goal on your warmup page so I know what your personal goal is.

Average Rate of Change

- $y = \frac{1}{2}x^2 - 3$
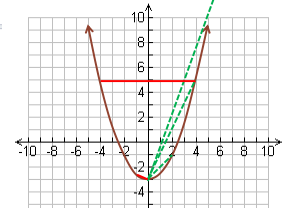
1. Find the average rate of change from x = 0 to x = 2

2. Find the average rate of change from x = 0 to x = 4

3. PREDICT the average rate of change from x = 0 to x = 6. Then find it.

4. Predict, then find the average rate of change from x = -1 to x = 0

5. Predict, then find the average rate of change from x = -4 to x = 4

Posters...

- Points have been added to LiveSchool
- You can still turn one in!!!

Check Homework

REVIEW:
Write the equation that describes each line in slope-intercept form.

1. slope = -½ , y-intercept = -4

2. slope = 5 , (-3, -1) is on the line

3.

Time (hr)	Distance
1	60
3	180
4	240
5.5	330

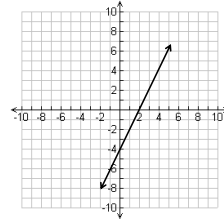## Table of Contents

Reminder

- Slope Intercept Form

$$y = mx + b$$
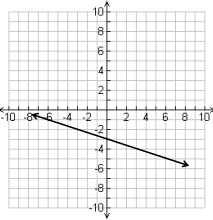
- Standard Form

  - $Ax + By = C$

Write an equation of the line:
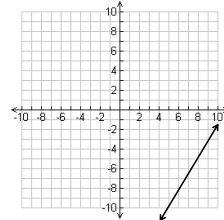
$$y = 2x - 4$$

Write an equation of the line:

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

Write an equation of the line:

???

If you know the slope and any point on the line, you can write an equation of the line by using the slope formula. For example, suppose a line has a slope of 3 and contains (2, 1). Let (x, y) be any other point on the line.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \longrightarrow 3 = \frac{y - 1}{x - 2}$$ Substitute into the slope formula.

Slope formula

$$3(x - 2) = \left(\frac{y - 1}{x - 2}\right)(x - 2)$$ Multiply both sides by (x − 2).

$$3(x - 2) = y - 1$$

$$y - 1 = 3(x - 2)$$ Simplify.

Point Slope Form

The line with slope m that contains the point (x_1, y_1) can be described by the equation $y - y_1 = m(x - x_1)$

Write an equation in point-slope form for the line with the given slope that contains the given point.

A. $\text{slope} = \dfrac{1}{6}; (5, 1)$

$y - y_1 = m(x - x_1)$

$y - 1 = \dfrac{1}{6}(x - 5)$

B. $\text{slope} = 1; (-1, -4)$

$y - y_1 = m(x - x_1)$

$y - (-4) = 1[x - (-1)]$

$y + 4 = 1(x + 1)$

Write an equation in point-slope form for the line with the given slope that contains the given point.

A $\text{slope} = 2; \left(\dfrac{1}{2}, 1\right)$

$y - y_1 = m(x - x_1)$

$y - 1 = 2\left(x - \dfrac{1}{2}\right)$

B. $\text{slope} = 0; (3, -4)$

$y - y_1 = m(x - x_1)$

$y - (-4) = 0(x - 3)$

$y + 4 = 0(x - 3)$

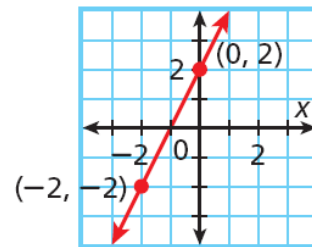## What is the point we know? What is the slope?

A. $y + 2 = 6(x - 1)$

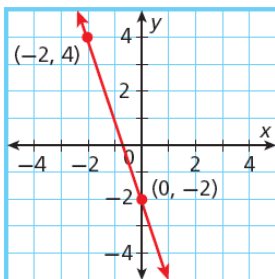Point: (1, -2)   Slope: 6

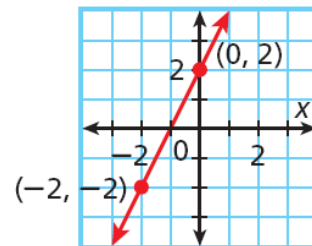B. $y - 2 = 6(x + 1)$

Point: (-1, 2)   Slope: 6

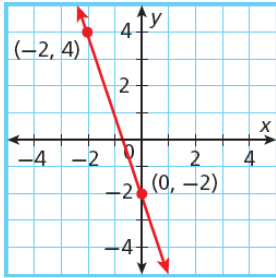Write the equation of the line in point slope and slope intercept form.

Write the equation of the line in point slope and slope intercept form.

Write the equation of the line in point slope and slope intercept form.

3

Write the equation of the line in point slope and slope intercept form.
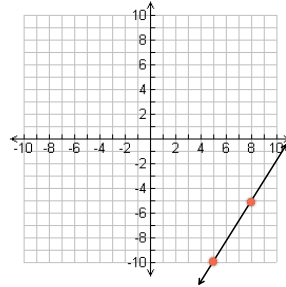
(−2, 4)

(0, −2)

Write an equation of the line:
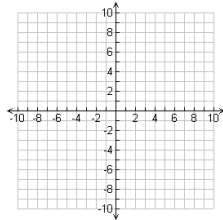
? ? ?

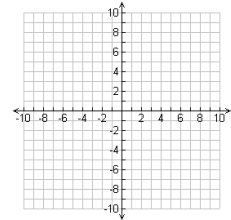## Graphing from Point Slope

• Graph the following:

$$y + 1 = 3(x − 2)$$

Graphing from Point Slope

• Graph the following:

$$y − 2 = 4(x + 1)$$

Write an equation in slope-intercept form for the line through the two points.

(2, −3) and (4, 1)

Step 1 Find the slope.

$$m = \frac{y_2 − y_1}{x_2 − x_1} = \frac{1 − (−3)}{4 − 2} = \frac{4}{2} = 2$$

Step 2 Substitute the slope and one of the points into the point-slope form.

$$y − y_1 = m(x − x_1)$$

$$y − (−3) = 2(x − 2) \quad \text{Choose (2, −3).}$$

Write an equation in slope-intercept form for the line through the two points.

(2, −3) and (4, 1)

Step 3 Write the equation in slope-intercept form.

$$y + 3 = 2(x − 2)$$
$$y + 3 = 2x − 4$$
$$\underline{−3 \qquad −3}$$
$$y = 2x − 7$$

4

Homework

½ Sheet