# 10/23/19 - Warm Up Problem

Find the slope of each line.

Line 1: (4,6) and (-3, -8)

$$\frac{-8-6}{-3-4} = \frac{-14}{-7} = \frac{2}{1}$$

$$slope = \frac{y_2 - y_1}{x_2 - x_1}$$

Line 2: (5,-1) and (3,0)

$$\frac{9--1}{3-5}=\frac{1}{2}=\frac{1}{2}$$

Are the lines parallel, perpendicular, or neither?

Perpendicular

### Section 3.7-3.8 - Writing Equations of Lines

Goal: Write equations of lines using point-slope form

Point-Slope Form

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

Slope-Intercept Form

$$y = mx + b$$

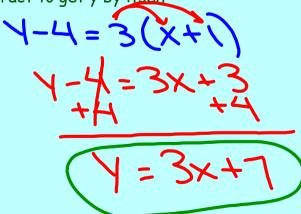
Write the equation of the line through point P(-14) with a slope of 3. Write your final answer in slope-intercept form.

Step 1: Fill in the numbers given for  $x_1$ ,  $y_1$ , and m

$$y - y_1 = m(x - x_1)$$
  
 $Y - 4 = 3(x + 1)$ 

Step 2: Change the equation into slope-intercept form

- distribute to get rid of the parenthesis
- add or subtract to get y by itself



# Point-Slope Form

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

# Using Parallel or Perpendicular Lines

Write the equation of the line that is parallel to  $y = -\frac{1}{2}x + \frac{1}{2}x$  and contains point P(2,-6).

Write the equation of the line perpendicular to  $y = -\frac{1}{2}x + 8$  and contains point P(2,-6).

## Do the last example in your notes.

**EXAMPLE 2:** Write the equation of a line that is parallel to y = -3x + 2 and contains point P(-6, 5).

$$y-y_{1} = m(x-x_{1})$$

$$y-5 = -3(x+6)$$

$$y-5 = -3x - 18$$

$$y-5 = -3x - 18$$

$$y-5 = -3x - 18$$

### Assignment:

Concept 8 Worksheet - due Friday 10/25 (#20-28)

$$\lambda - \lambda' = \omega(x - x')$$

#### WRITING LINEAR EQUATIONS

Write an equation for the line that contains the given point and has the given slope. Your final answer should be in slope-intercept form.

20. 
$$P(2,3)$$
, slope = 2  
 $Y-3=2(X-2)$ 
 $Y+1=-3(X-4)$ 
 $Y=2X-1$ 
 $Y=-3X+1$ 
 $Y=2X-1$ 
 $Y=-3X+1$ 

Write the equation of a line that fits each description. Your final answer should be in slope-intercept form.

- **23.** Through (-1,5) parallel to y = -2x + 7
- **24.** Through (6.-4) perpendicular to y = 3x 1

**25.** Through (4,10) perpendicular to  $y = \frac{2}{3}x - 6$  **26.** Through (12,8) parallel to  $y = \frac{3}{4}x + 22$ 

**27.** Through (-2,-1) perpendicular to y = -2x + 7 **28.** Through (5,4) parallel to y = -2x