

Lesson 15 – Point-Slope Form

Goal:

- Can graph equations in point-slope form
- Can build an equation for a linear function in point-slope form
- Can use point-slope form to model applications

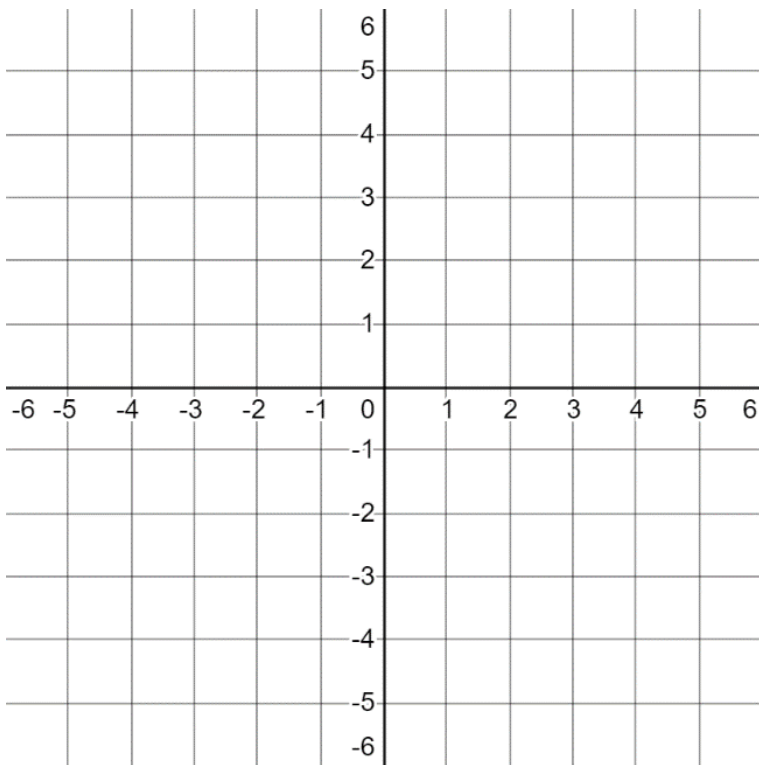
New Terminology:

- Point-slope form

Discuss: Graph the lines

$$y - 3 = -4(x + 2)$$

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

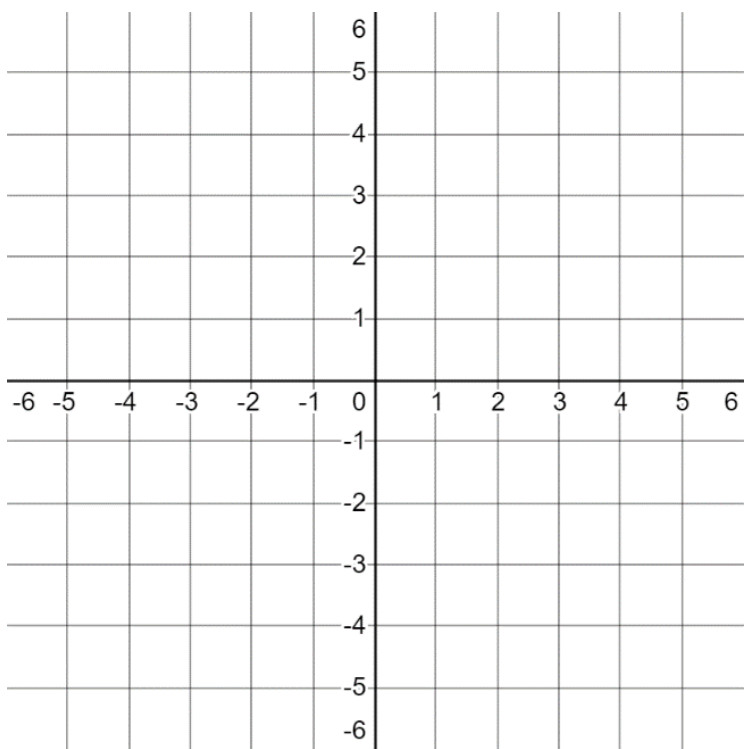


What relationship do you notice about the equations and the graphs?

The form these equations are written in is called **POINT-SLOPE FORM**, although this should really be called *slope form* as it is the definition of the slope.

Example: Graph the following equation by identifying the point and slope.

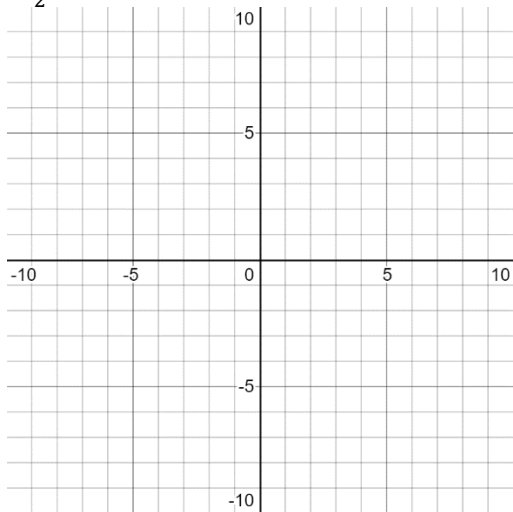
$$y + 4 = -\frac{3}{2}(x - 3)$$



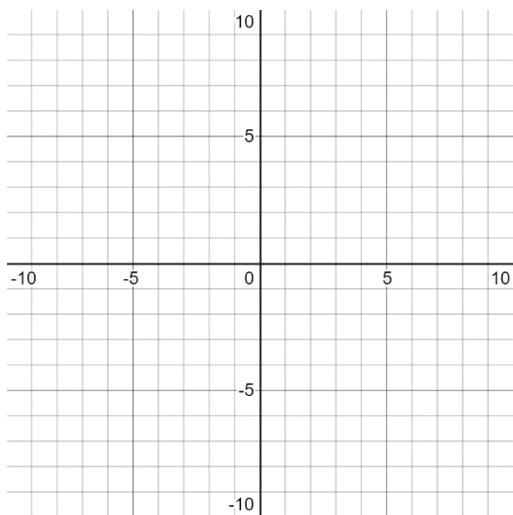
Practice: Graph the following equation above and label the line.

$$y + 2 = \frac{5}{3}(x + 4)$$

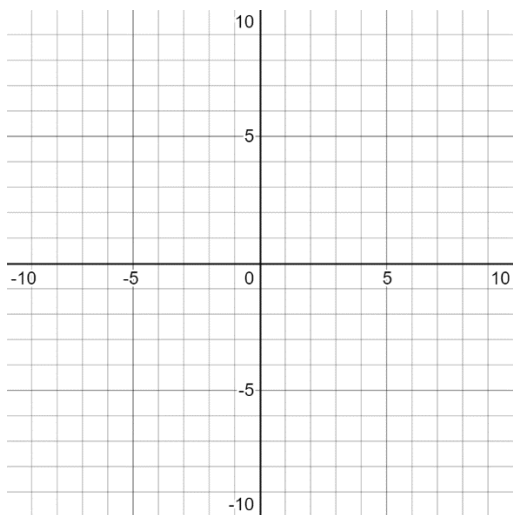
Example: Determine the equation in point-slope form of the line that passes through the point $(-3, -7)$ and has slope $-\frac{1}{2}$.



Practice: Determine the equation in point-slope form of the line that passes through the points $(8, -3)$ and $(-5, 10)$.



Practice: Determine the equation in point-slope form of the line that has an x -intercept of 9 and y -intercept of -4 .



To determine the equation of a line we need 2 pieces of information:

1. 1 Point and Slope \Rightarrow

2. 2 Points \Rightarrow

We've looked at 3 ways to model linear equations. Each has advantages and disadvantages to be used. **Discuss** the pros and cons of each.

Form	Advantages	Disadvantages
<p>Slope-Intercept</p> $y = mx + b$		
<p>General</p> $Ax + Bx + C = 0$ $A \geq 0$		
<p>Point-Slope</p> $y - y_0 = m(x - x_0)$		

Assigned Problems: 7.3 page 377 – 369 # 1-9, 11, 12, 14-17, 19, 22



18, 21

Key Ideas on page 376