



Vocabulary: Point-Slope Form of a Line



Vocabulary

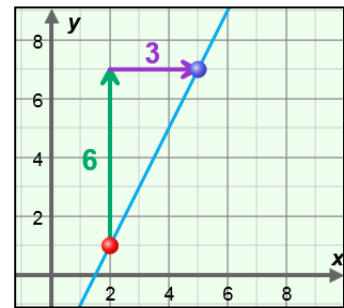
- **Point-slope form** – a linear equation of the form $y - y_1 = m(x - x_1)$, where m is the slope and (x_1, y_1) is a point on the line.
 - For example, the line with the equation $y - 3 = \frac{2}{3}(x + 5)$ has a slope of $\frac{2}{3}$ and $(-5, 3)$ is a point on the line.

- **Slope** – a measure of the steepness of a line.
 - For two points on a line, (x_1, y_1) and (x_2, y_2) , slope is defined as:

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}.$$

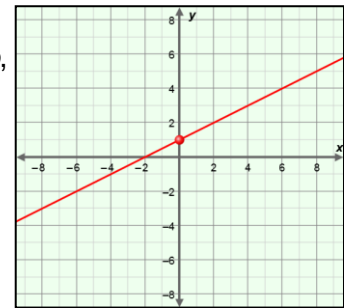
- For example, the slope of the line through the points $(2, 1)$ and $(5, 7)$ as shown to the right is:

$$\frac{7 - 1}{5 - 2} = \frac{6}{3} = 2.$$



- **Slope-intercept form** – a linear equation of the form $y = mx + b$, where m is the slope and b is the y -intercept.

- For example, the line with the equation $y = \frac{1}{2}x + 1$, shown to the right, has a slope of $\frac{1}{2}$ and a y -intercept of 1.



- **y -intercept** – the y -coordinate where a graph intersects the y -axis.
 - In the equation $y = mx + b$, b is the y -intercept.

