



Vocabulary: Standard Form of a Line



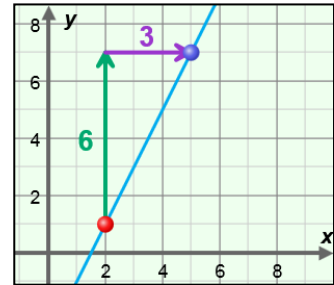
Vocabulary

- **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:

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

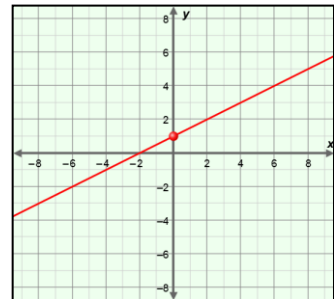
- For example, the slope of the line through the points $(2, 1)$ and $(5, 7)$ as shown to the right is:

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



- **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.



- **Standard form (of a linear equation)** – a linear equation of the form $Ax + By = C$, where A , B , and C are real numbers and A and B are not both zero.

- **x -intercept** – the x -coordinate where a graph intersects the x -axis.
 - The x -intercept of the line at the right is 5 because the line intersects the x -axis at the point $(5, 0)$.
- **y -intercept** – the y -coordinate where a graph intersects the y -axis.
 - The y -intercept of the line at the right is 3 because the line intersects the y -axis at the point $(0, 3)$.

