

Name: _____

Date: _____

Algebra 2: Linear Equations Notes

Big Ideas:

- A **linear equation** forms a line when it is graphed.
- There are three types of lines that can result from a linear equation: **horizontal, slant, and vertical**.
- The **slope** of a line is the measurement of its steepness. A horizontal line has a slope of zero. A slant line can have either a positive or negative slope. The slope of a vertical line is undefined.
- Linear equations can be written in different forms that will graph the same line.
- **Horizontal and slant lines are functions**. Vertical lines are NOT functions.

Vocabulary & Notation:

Slope is calculated by measuring the change in y-coordinates (“rise”) over the change in x-coordinates (“run”). We usually use the letter ***m*** to denote slope.

Positive slope means that the line slants up from left to right.

Negative slope means that the line slants down from left to right.

Zero slope means that the line is horizontal. That is, every point on the line has the same y-coordinate.

Undefined slope means that the line is vertical. That is, every point on the line has the same x-coordinate.

A **y-intercept** is a point that is on the y-axis. The x-coordinate for a y-intercept is always zero. (0,y)

An **x-intercept** is a point that is on the x-axis. The y-coordinate for an x-intercept is always zero. (x,0)

Rules:

The **slope *m*** of a line is calculated using any two points, or ordered pairs (x_1, y_1) and (x_2, y_2) by the slope formula

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

The **slope-intercept form** of a linear equation is:

$$y = mx + b$$

or equivalently: $y = b + mx$

Where ***m*** is the slope and ***b*** is the y-coordinate of the y-intercept.