

Provide an example and/or definition for each of the following vocabulary words.

- Ordered pair
- Axes
- Origin
- Quadrant
- Coordinates
- Slope
- Linear Equation
- Standard Form
- Point-Slope Form
- Slope-Intercept Form
- y-intercept
- x-intercept

What do you need to know about lines?

- **Slope** (p. 114 §3.3):

$$m = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}, \text{ given two points } (x_1, y_1) \text{ and } (x_2, y_2).$$

- **Intercepts** (p. 109 §3.2, Example 3):
x-intercept and y-intercept (this is where the line intercepts (or crosses) the x- and y-axes, if at all, and the *other coordinate is always going to be 0*).
- **Writing algebraic equations for lines** (p. 118 §3.4):

SLOPE-INTERCEPT $y = mx + b$

STANDARD $Ax + By = C$ (Slope short-cut for this form is $m = -\frac{A}{B}$.)

POINT-SLOPE $(y - y_1) = m(x - x_1)$ given a known point (x_1, y_1) .

- **Methods of Graphing:**
Plug-n-chug points in a t-chart (p. 108 §3.2, Example 2)
X- and Y-Intercept method + possible check point (p. 109 §3.2, Example 3)
Point - and - Slope method (p. 114 §3.3)
- **Horizontal and Vertical Lines and Their Slopes and Equations: The Special Cases!**
(p. 109 §3.2, Example 4, p. 112 §3.3 and p. 118 §3.4)

Horizontal lines pass through only the y-axis, therefore only a y value is in the equation of a horizontal line. It is flat, so it has a slope of zero.

Vertical lines pass through only the x-axis, therefore only an x value is in the equation of a vertical line. It is vertical, so it has no slope. It is not possible to have a slope for a vertical line.

NAVIG - NUMERICAL, ALGEBRAIC, VERBAL, GRAPHICAL

Ways of representing a mathematical problem or idea

Examples: WRITING EQUATIONS FOR LINES

Write an equation in slope-intercept form for the line through the two points given.

Step 1: Determine the slope of the line and one point on the line.

Step 2: Set-up a point-slope equation or a slope-intercept equation.

Step 3: Manipulate the equation into slope-intercept form or standard form, as directed.

1. $(3,1)$ and $(6,8)$; answer in slope intercept form.

⇒ What's the slope of the line?

⇒ What's a point on the line?

⇒ Are you going to use the Point-Slope method or the Slope-Intercept method?
Is one easier to use than the other?

⇒ What format should the answer be expressed in?

2. $(-1,2)$ and $(4,0)$; answer in standard form.

3. $(-3,7)$ and $(4,7)$; answer in standard form.

4. $(5,-1)$ and $(5,-6)$; answer in slope-intercept form.

5. $(-2,-1)$ and $(0,-8)$; answer in slope-intercept form