

Agenda

Homework:

- Linear Equations (Graphs) WS
- AM

Materials:

- **MATH** Notebook
- Ruler

Do Now:

1. Take out double bubble maps
2. **Set up Cornell Notes:**
(See TV for Topic and EQ)



Set up Cornell Notes

- **Topic:** Linear Functions - Graph
- **EQ:** What is slope-intercept form? How do you construct a linear function in slope-intercept form given a graph?

Linear Functions - Vocabulary

- **Domain** – the set of all possible x-values
- **Range** – the set of all possible y-values
- **Slope** – rate of change
- **y-intercept** (b) – point at which the function crosses the y-axis $(0, b)$
- **x-intercept** – point at which the function crosses the x-axis $(x_1, 0)$

How do you calculate the slope of a function?

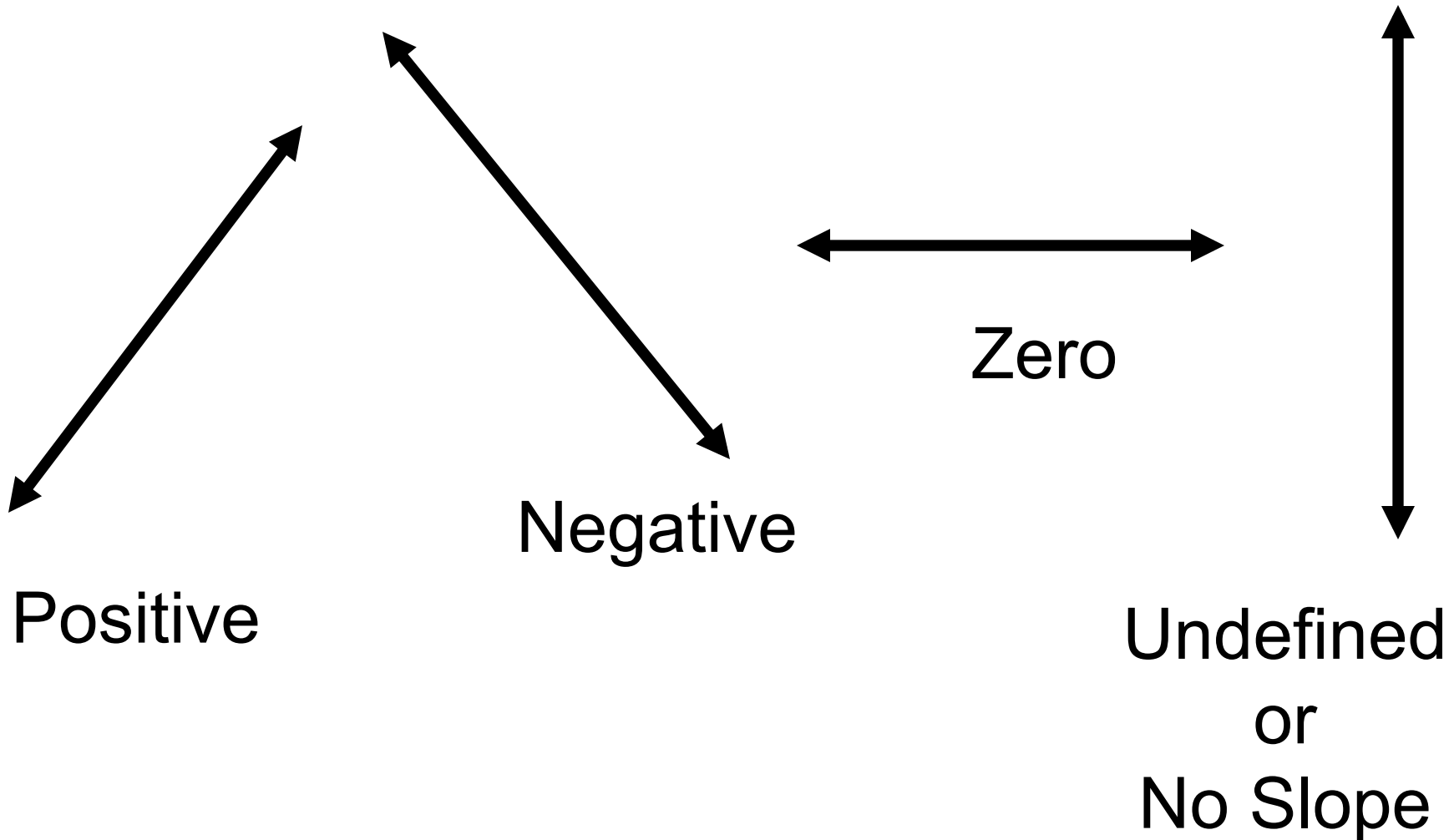
- $\frac{\text{Change in } y}{\text{Change in } x}$
- $\frac{\text{Rise}}{\text{Run}}$
- $\frac{y_2 - y_1}{x_2 - x_1}$

What does the slope mean?



Slope is the steepness of a line.

Types of Slope



How are rate of change and slope related?

They are the same thing!

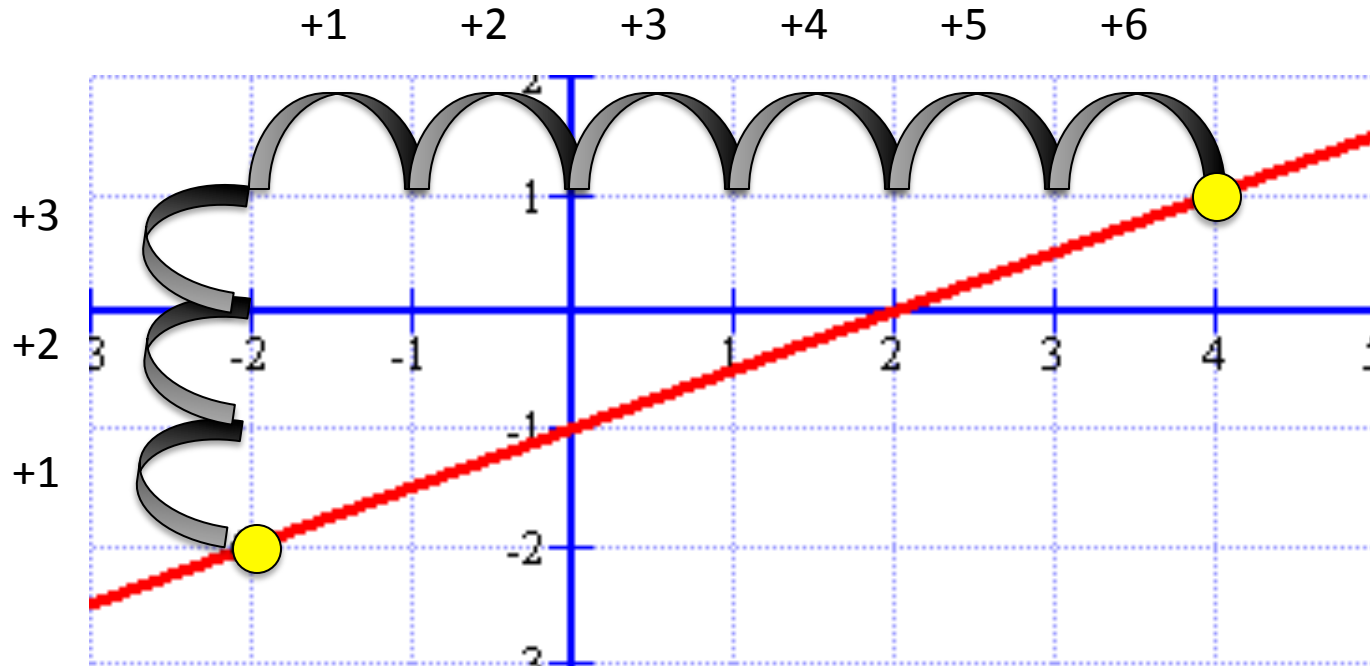
$$SLOPE = m = \frac{\text{change in } y}{\text{change in } x} = \frac{\textit{rise}}{\textit{run}}$$

Variable
for slope

Rate of
Change

Slope of
a graph

How do you find the slope when given a graph?



$$\frac{\textit{rise}}{\textit{run}} = \frac{+3}{+6} = \frac{\boxed{1}}{\boxed{2}}$$

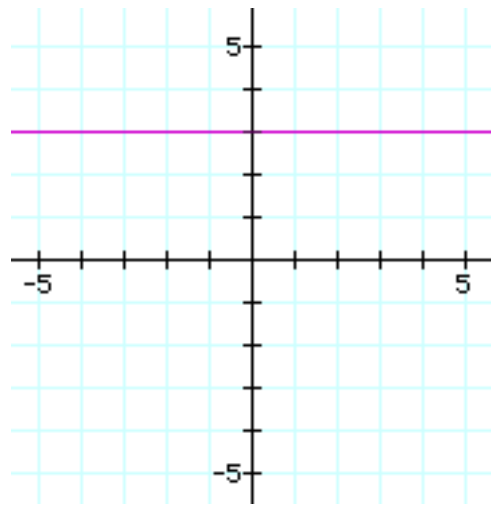
How do you determine if rise/run is positive or negative?



$$m = \frac{\text{rise}}{\text{run}} = \frac{3}{-2} = \frac{\text{move up } 3}{\text{move left } 2}$$

	Positive	Negative
RISE	Move UP	Move DOWN
RUN	Move RIGHT	Move LEFT

What is the slope of a horizontal line?

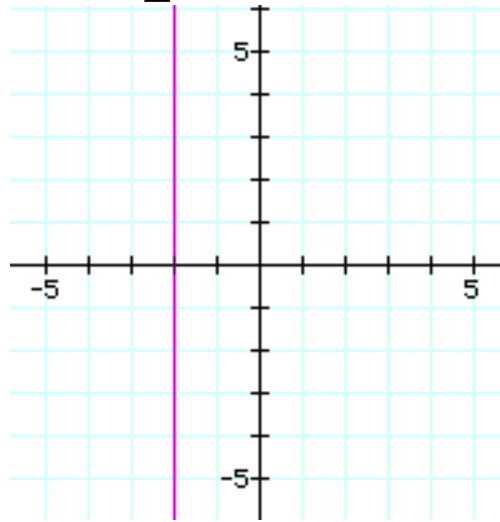


The line doesn't rise!

$$m = \frac{0}{\text{number}} = 0$$

All horizontal lines have a slope of 0.

What is the slope of a vertical line? 



The line doesn't run!

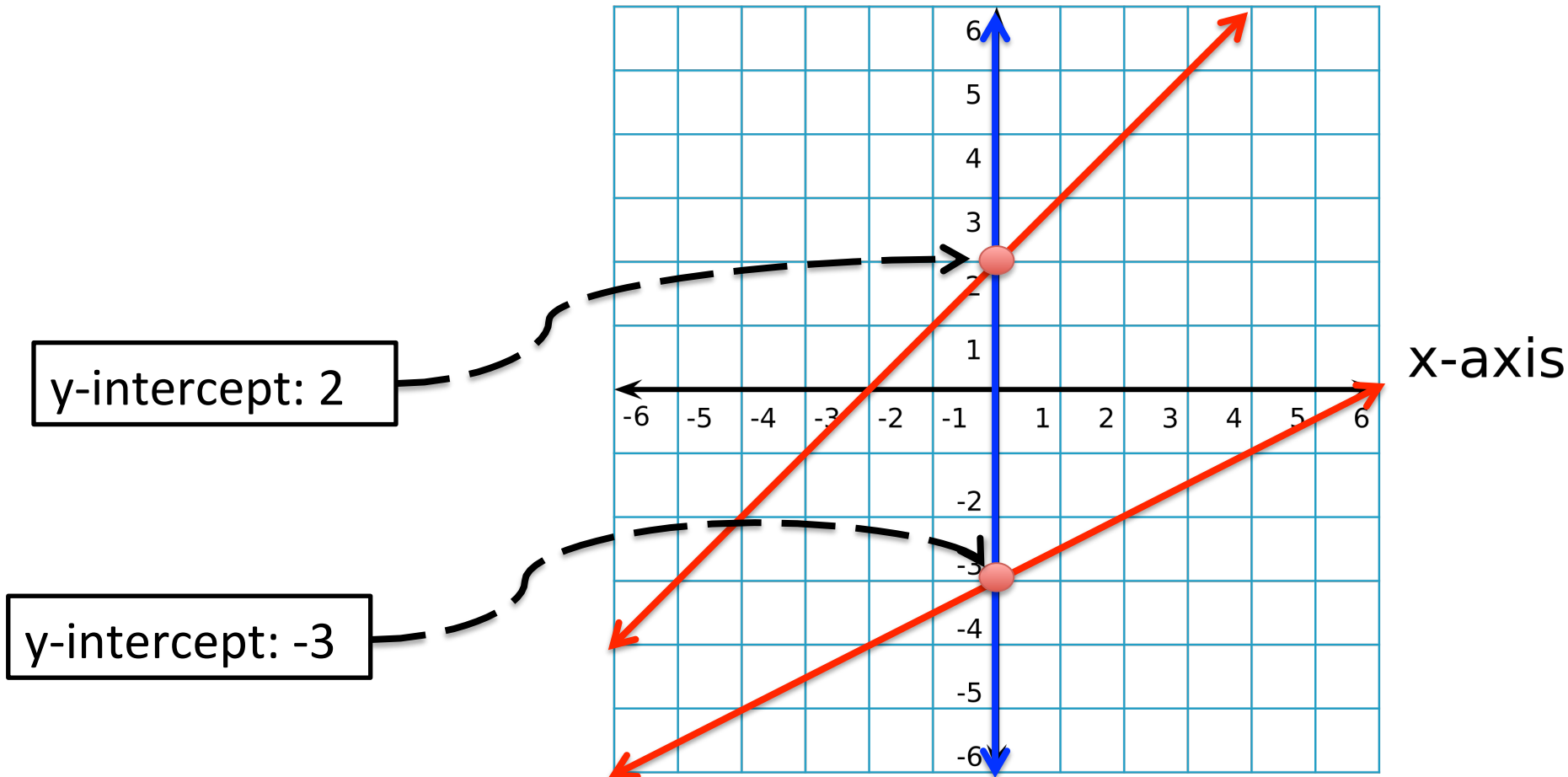
$$m = \frac{\textit{number}}{0} = \textit{undefined}$$

All vertical lines have an undefined slope.

What is a y-intercept?



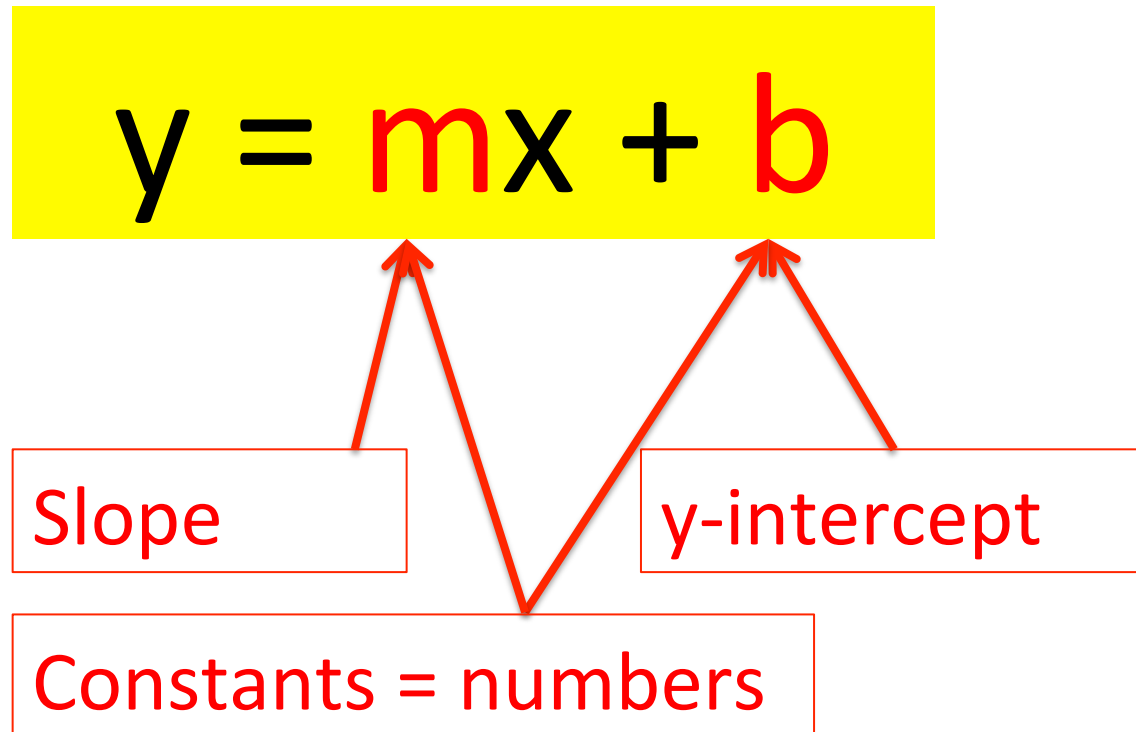
- y-intercept: The y-coordinate of the point that crosses the y-axis; $f(0)$



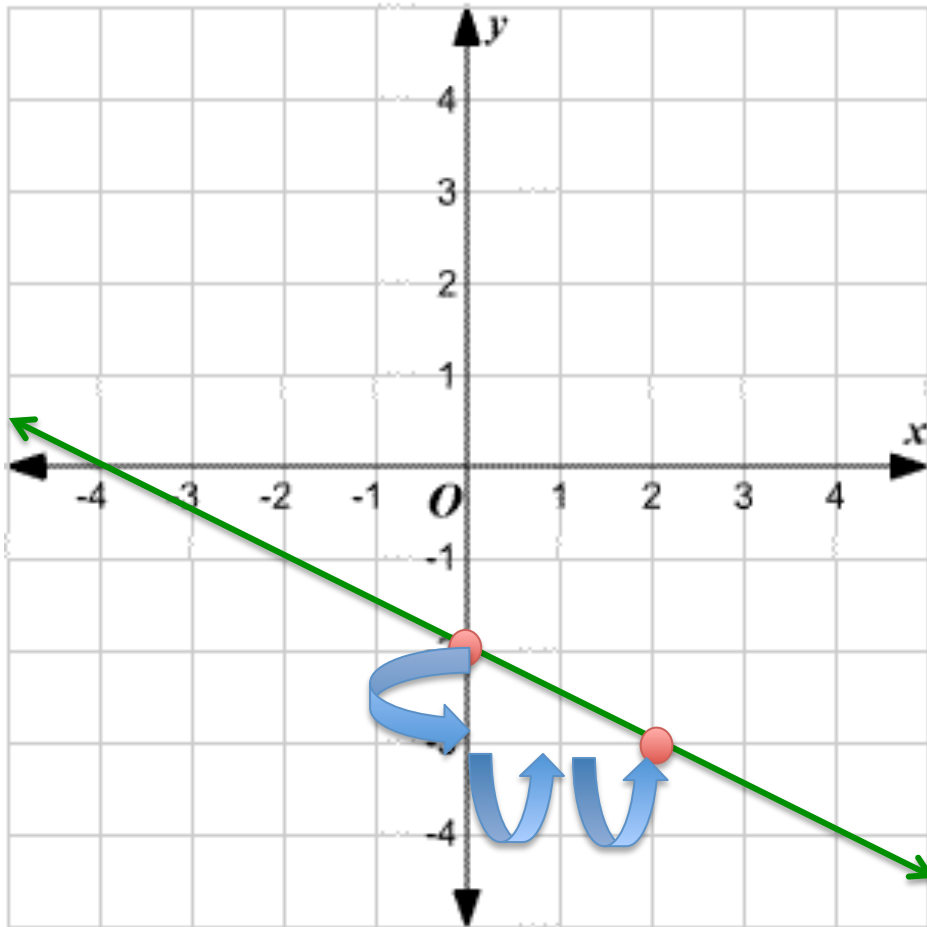


What is slope-intercept form?

- Linear equation that identifies the SLOPE & Y-INTERCEPT



Find the equation of the following graph? 



1. Locate the y-intercept (b)

$$b = -2$$

2. Calculate the slope (m)

$$\frac{\text{rise}}{\text{run}} = \frac{-1}{+2} = m = -\frac{1}{2}$$

3. Plug in m & b into the $y = mx + b$ form

$$y = mx + b$$