Agenda

- Homework:
  - Linear Equations with 2 points WS
  - AM

- Materials:
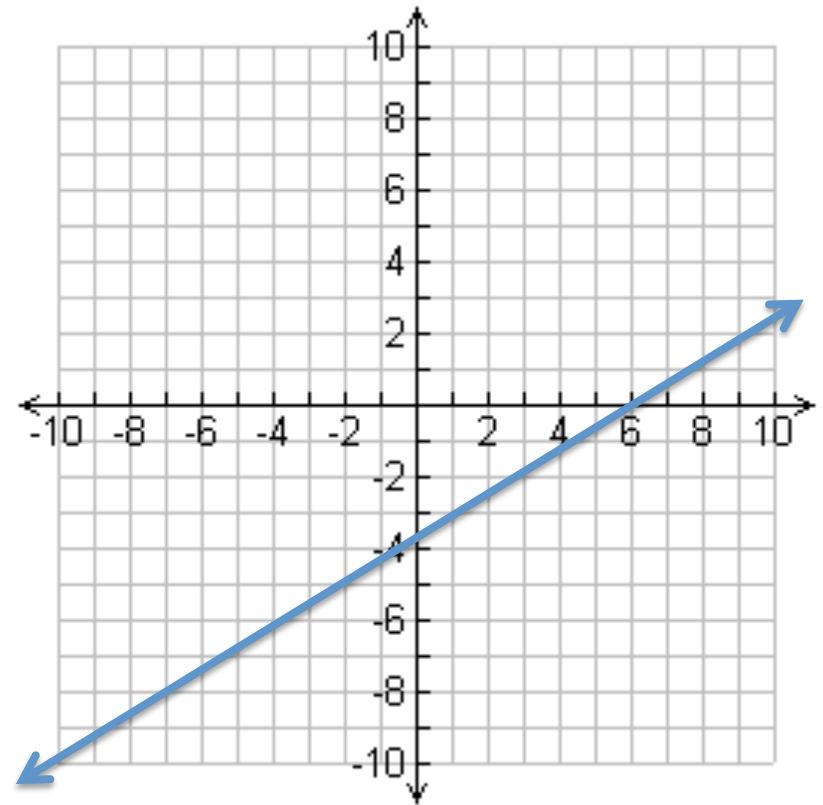 - Notebook

- DO NOW:
  ① Take out homework
  ② Set up Cornell Notes: **Topic:** Linear Functions – Given 2 points
  - **EQ:** How can we generate a linear function given TWO POINTS on a line?

Recap: Translating between the four representations of a function
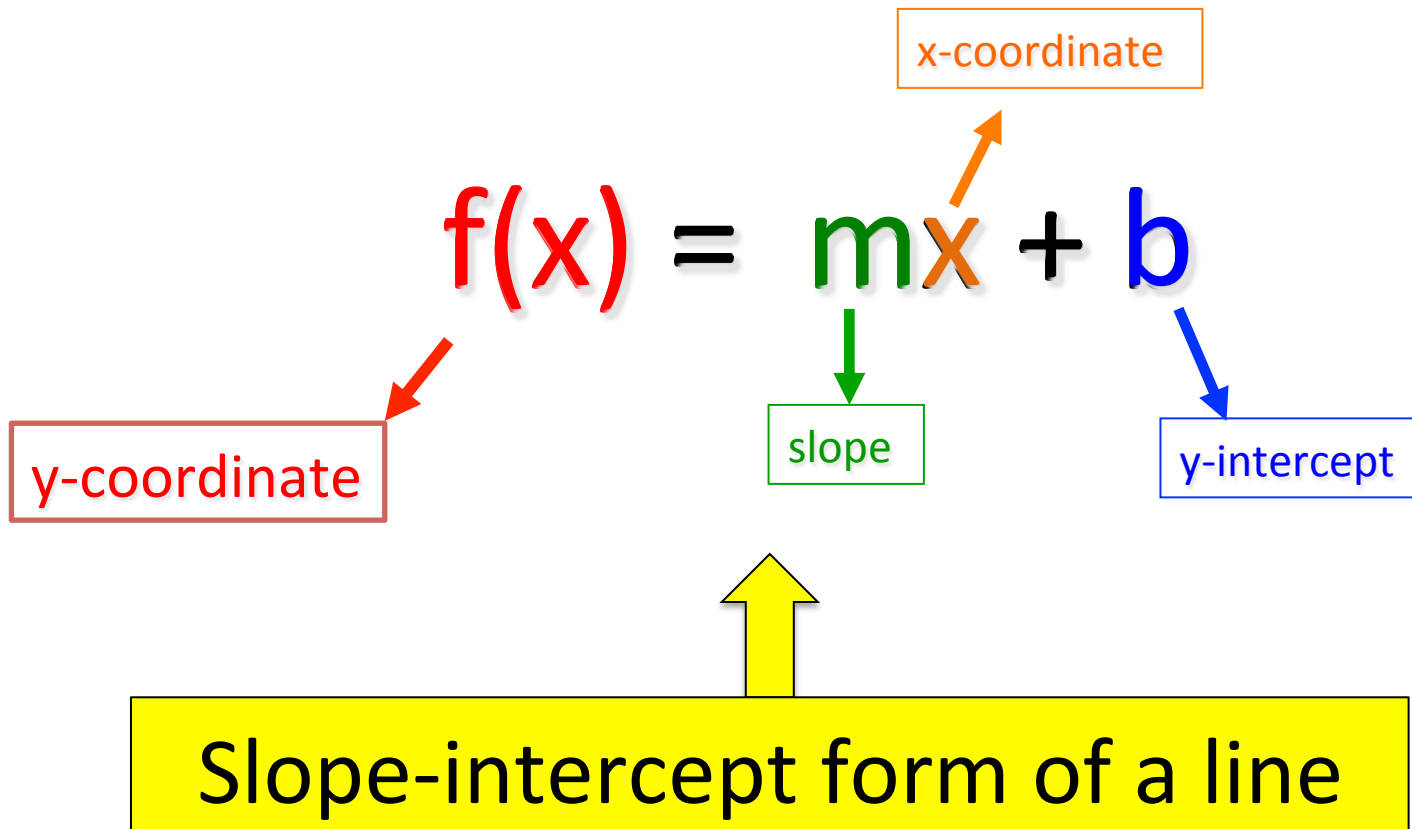
- Graph
- Table
- Symbolic
- In Context

$y = mx + b$

x	y

Scenario:

What do we already know about linear equations?

$$f(x) = mx + b$$

x-coordinate

y-coordinate

slope

y-intercept

Slope-intercept form of a line

How have we found slope so far?

$$\frac{rise}{run} = \frac{the\ change\ in\ the\ y's}{the\ change\ in\ the\ x's}$$
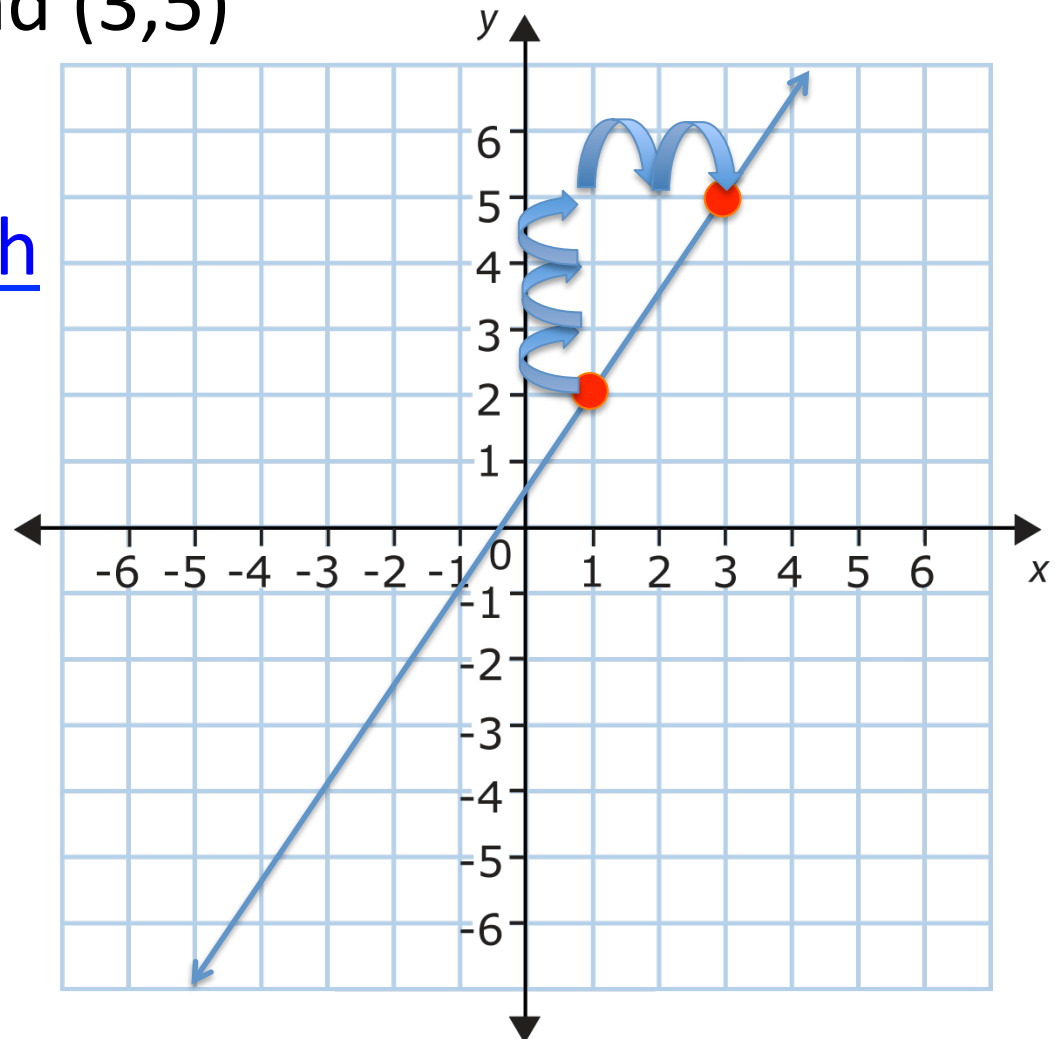
For GRAPHS

For TABLES

How do you find slope given 2 points on a line?

- Example: (1, 2) and (3,5)

We *could* use a graph

1) Plot the points
2) Use rise/run

$$\frac{rise}{run} = \frac{+3}{+2}$$

How do you find slope given 2 points on a line?

- **Example: (1, 2) and (3,5)**

We *could* use a table

1) Fill in the table
2) Use change in y/change in x

x	y
1	2
3	5

+2 ⟳   ⟳ +3

$$\frac{\text{the change in the Y's}}{\text{the change in the X's}} = \frac{+3}{+2}$$

How do you find slope given 2 points on a line?

- Let's use what we know about finding slope from tables to create an equation:
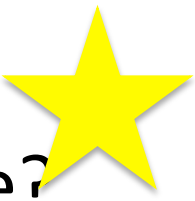
$$\frac{y_2 - y_1}{x_2 - x_1}$$

x	y
1	2
3	5

x_1 y_1
+2 +3
x_2 y_2

NEW METHOD

How do you find slope given 2 points on a line?

$$(1, 2) \text{ and } (3, 5)$$

x_1 y_1 x_2 y_2

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{3}{2}$$

When should you use $\dfrac{y_2 - y_1}{x_2 - x_1}$?

- When given two points

- Example: Find the slope between the points (-3, 4.3) and (21, 16.3)

  x_1 y_1 x_2 y_2

$$\frac{16.3 - 4.3}{21 + 3} = \frac{12}{24} = \frac{1}{2}$$

How can you use 2 points on a line to find the symbolic representation of the function?

Point₁ (-2 4)
Point₂ (3 19)

$f(x) = mx + b$

$4 = 3(-2) + b$

$4 = -6 + b$

$+6 \quad\quad +6$

$10 = b$

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = 3$

$f(x) = mx + b$