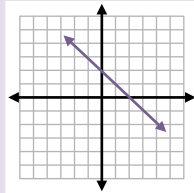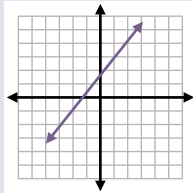## Packet 2: Slope and Slope-Intercept Form of a Line

Dear Parents/Guardians,
Functions: Packet 2 formally introduces the slope formula and the slope-intercept form of a linear equation. In Lesson 1, students use counting and then the formula to find the slope of a line. Lesson 2 explores the meaning of the y-intercept. In Lesson 3, slope-intercept form is formalized.

Slope of a Line
Roughly speaking, the <u>slope of a line (m)</u> is the slant of a line.

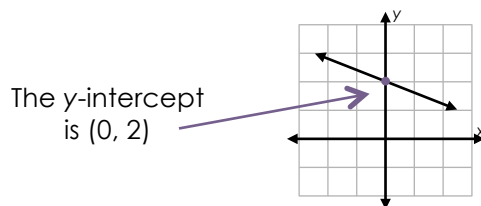The line is going up from left to right. It has a positive slope.

The line is going down from left to right. It has a negative slope.

There are two ways students determine the slope of a line.

The Counting Method	Calculating Slope
Students count (from one point to another point on the line) the vertical and horizontal change to find the slope.	Students find the coordinates of two points on the line and use this data to calculate the slope.
The slope (m) of this line is $\frac{2}{3}$.	Point A: (-2, 3) Point B: (1, 1) For the vertical change, subtract the y-coordinates: $1 - 3 = -2$ For the horizontal change, subtract the x-coordinates: $1 - (-2) = 3$ Slope (m) of $\overrightarrow{AB}$: $-\frac{2}{3}$ You could also subtract $\frac{3-1}{-2-1} = -\frac{2}{3}$.

The y-Intercept
The <u>y-intercept</u> is the value of y where the graph intersects the y-axis. It is located at the point (0, y).
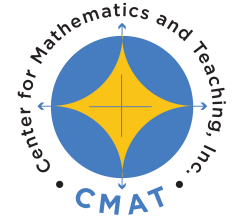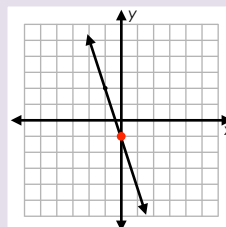
The y-intercept is (0, 2)

Slope-Intercept Form
Students represent the graph of a line as an equation in slope-intercept form.

Slope-Intercept Form
$$y = mx + b$$
slope   y-intercept

slope (m): $\frac{6}{2} = 3$

y-intercept (b): -1

Equation of the line:
$$y = 3x - 1$$

FUNCTIONS PACKET 2

By the end of the packet, your student should know…

- What the slope of a line represents and how to find the slope of a line Lessons 2.1, 2.2 and 2.3
- How to identify and determine the y-intercept in a table of numbers, a graph, and an equation Lesson 2.2
- How to write the equation of a line in slope-intercept form Lessons 2.2 and 2.3

Additional Resources

- For definitions and additional notes please refer to section 2.5.

- Tutorial for counting method to find slope: https://youtu.be/R948Tsyq4vA

- Tutorial for slope formula: http://youtu.be/B6lP_RzXSZs