

Slope-Intercept Sort

CA Content Standards:

- Grade 7 AF3.3 Graph linear functions, noting that the vertical change (change in y - value) per unit of horizontal change (change in x - value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.
- Algebra I 6.0 Students graph a linear equation and compute the x - and y -intercepts.

- Supplies: Set of Pages 2-3 game board and pieces for students to use in pairs
- One copy of Pages 2-3 for the key
- Student record sheets and discussion questions (Pages 4-5), one per student

From the copies of pages 2-3 that students will use in pairs, cut out the columns of the graphs and leave intact. Cut the rest of the sheet into game pieces to be matched to the column of graphs. Place pieces in a large envelope or binder clip the pieces to the intact columns out of order. Make one 1 set of supplies per pair.

Hand each pair of students an envelope/binder clip of game pieces.

Start by having students separate their pieces into 2 piles.

1 pile of equations in slope-intercept form and the 2nd with the y -intercept and slope pieces.

Remind students that we read graphs from left to right.

Next, have them sort their equation pieces into positive and negative slope piles.

Sort the positive slope pile into slopes greater than 1, equal to 1, and $0 < \text{Slope} < 1$.

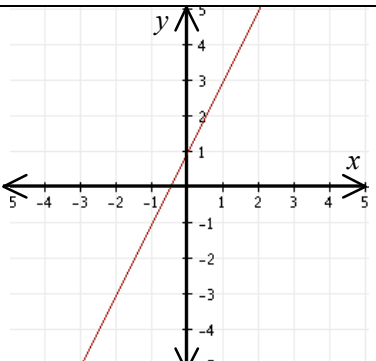
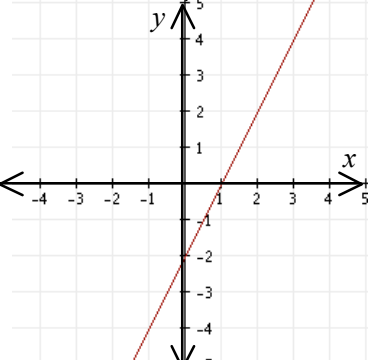
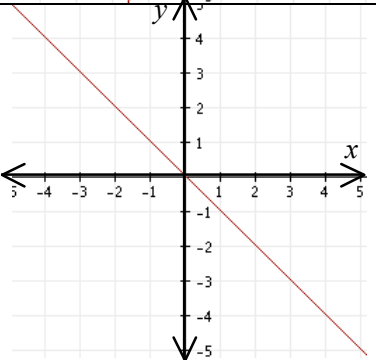
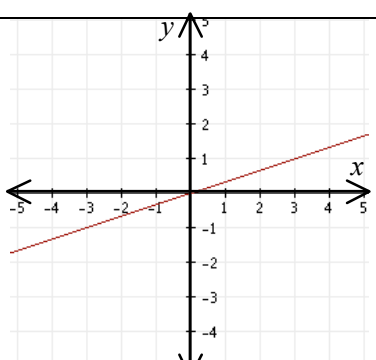
Sort the negative slope pile into slopes less than -1, equal to -1, and $-1 < \text{Slope} < 0$.

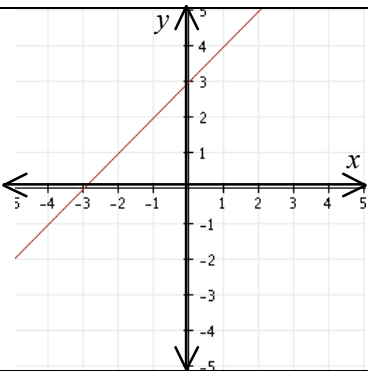
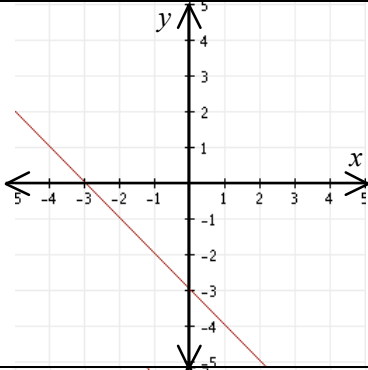
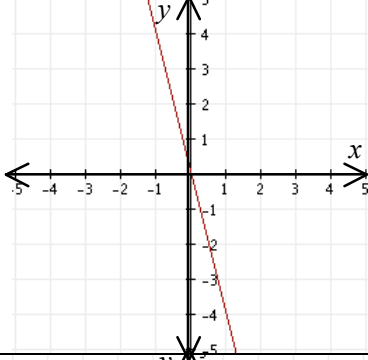
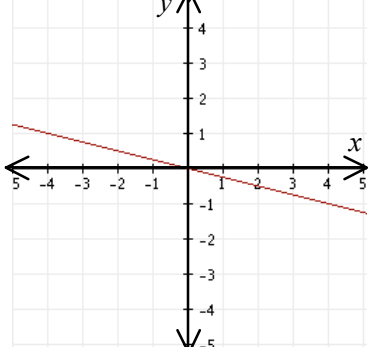
Discuss: "If the slope of your line is $-\frac{2}{3}$, why can it also be written or read as $-\frac{2}{3}$ or $\frac{2}{-3}$?"

When might these equivalent values be useful?" [When looking for another point to the right of any point on the graph, we would go down 2 and right 3 spaces. When looking for another point to the left of any point on the graph, we would go up 2 and to the left 3 spaces.]

Have students match the pieces to the graphs. Students who finish quickly can share their strategies for matching. After the matches have been checked for accuracy, hand out Pages 4-5 and have students record their answers and answer the question on the bottom of each page.

Graphing Lines Sort KEY/PIECES

	$y = 2x + 1$	<p>y-intercept: $(0,1)$</p> <p>Slope: $\frac{2}{1}$ $\frac{\Delta y}{\Delta x}$</p>
	$y = 2x - 2$	<p>y-intercept: $(0,-2)$</p> <p>Slope: $\frac{2}{1}$ $\frac{\Delta y}{\Delta x}$</p>
	$y = -x$	<p>y-intercept: $(0,0)$</p> <p>Slope: $\frac{-1}{1}$ $\frac{\Delta y}{\Delta x}$</p>
	$y = \frac{1}{3}x$	<p>y-intercept: $(0,0)$</p> <p>Slope: $\frac{1}{3}$ $\frac{\Delta y}{\Delta x}$</p>

Graph	Equation	Slope and y-intercept (0 , __)
	$y = x + 3$	y-intercept: (0,3) Slope: $\frac{1}{1}$ $\frac{\Delta y}{\Delta x}$
	$y = -x - 3$	y-intercept: (0,-3) Slope: $\frac{-1}{1}$ $\frac{\Delta y}{\Delta x}$
	$y = -4x$	y-intercept: (0,0) Slope: $\frac{-4}{1}$ $\frac{\Delta y}{\Delta x}$
	$y = -\frac{1}{4}x$	y-intercept: (0,0) Slope: $\frac{-1}{4}$ $\frac{\Delta y}{\Delta x}$

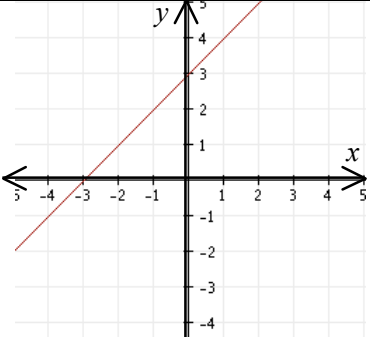
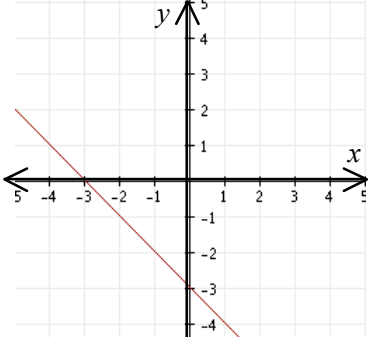
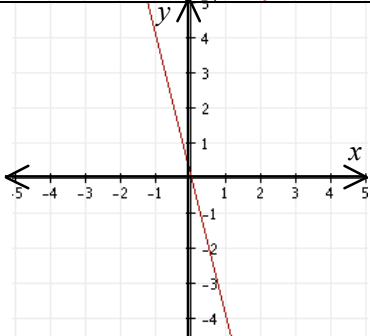
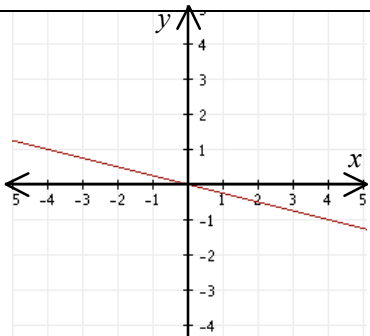
Graph	Equation	Slope and y-intercept (0 , __)
		<p>y-intercept: (0 , 1)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , -1)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , 1)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , -1)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>

How can you tell from the graph whether the slope is positive or negative? _____

Graph

Equation

Slope and y-intercept (0 , __)

		<p>y-intercept: (0 , 2)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , 3)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , 1)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>
		<p>y-intercept: (0 , 0.5)</p> <p>Slope: $\frac{\Delta y}{\Delta x}$</p>

Starting from the y-intercept, how do you use the slope to find additional points of the line? _____