

Lines in the Coordinate Plane

Lesson Objective

Algebra 1 Review

In Algebra 1, you learned how to find the slope of a line in the coordinate plane.

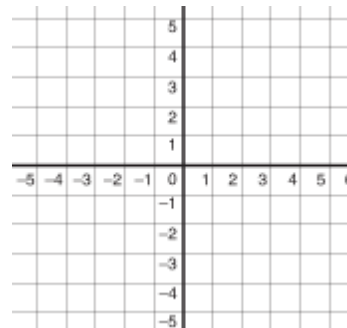
Slope: The slope of a line is a number that describes the _____ of the line.

→ ANY two points can be used to determine the slope of a line or line segment.

The _____ is the difference in the y-values

The _____ is the difference in the x-values

The _____ is the _____ of the _____ to the _____.



Examples:

- Use the slope formula to determine the slope of \overline{GH} if $G(2, 3)$ and $H(7, 5)$.

Summary: Slope of a Line			
Positive Slope	Negative Slope	Zero Slope	Undefined Slope

More Algebra 1 Review

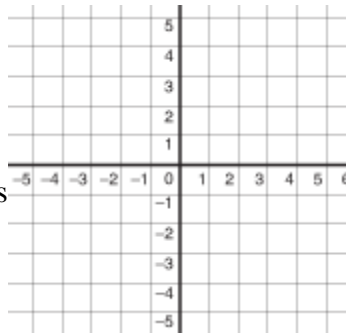
In Algebra 1, you learned how to graph lines in the coordinate plane using these formulas:

#1	Slope-Intercept Form		
#2	Point-Slope Form		

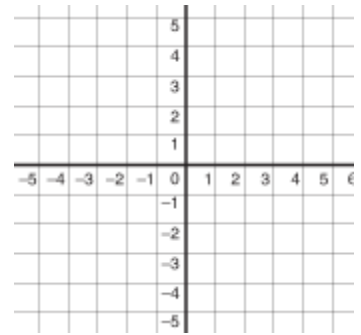
Graphing #1: Slope-Intercept Form

2. $y = -3x + 1$

- (1) Graph the y-int (b)
- (2) From the y-int, plot new points using the slope (m) "rise/run"
- (3) Make at least 3 points
- (4) Connect the points with a straightedge



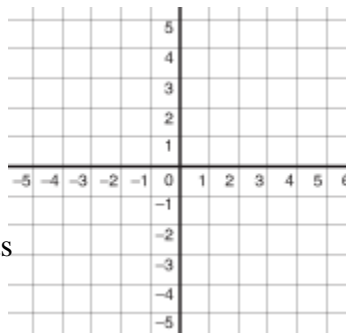
3. $y = \frac{3}{4}x - 2$



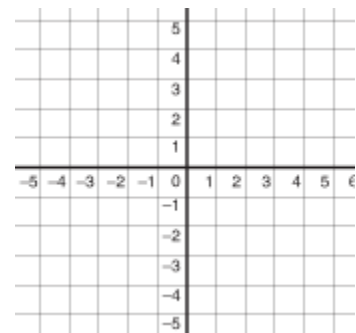
Graphing #2: Point-Slope Form

4. $y + 3 = -2(x - 1)$

- (1) Graph the point (x_1, y_1)
- (2) From this point, plot new points using the slope (m) "rise/run"
- (3) Make at least 3 points
- (4) Connect the points with a straightedge



5. $y - 1 = -\frac{2}{3}(x + 2)$



Vertical Lines	The equation of a vertical line is _____, where _____ is the _____ - intercept.	Example:
Horizontal Lines	The equation of a vertical line is _____, where _____ is the _____ - intercept.	Example:

Connecting it to Geometry

Parallel Lines Theorem (\parallel Lines Thm)	In a coordinate plane, two distinct non-vertical lines are parallel if and only if they have the _____ slope. Also, any two vertical lines are parallel.
Perpendicular Lines Theorem (\perp Lines Thm)	In a coordinate plane, two distinct non-vertical lines are perpendicular if and only if the _____ of their slopes is _____. Also, horizontal lines are perpendicular to vertical lines.

Example:

6. Determine which of the lines are parallel and which of the lines are perpendicular.

