

Coordinate Plane / Slope

The Coordinate Plane

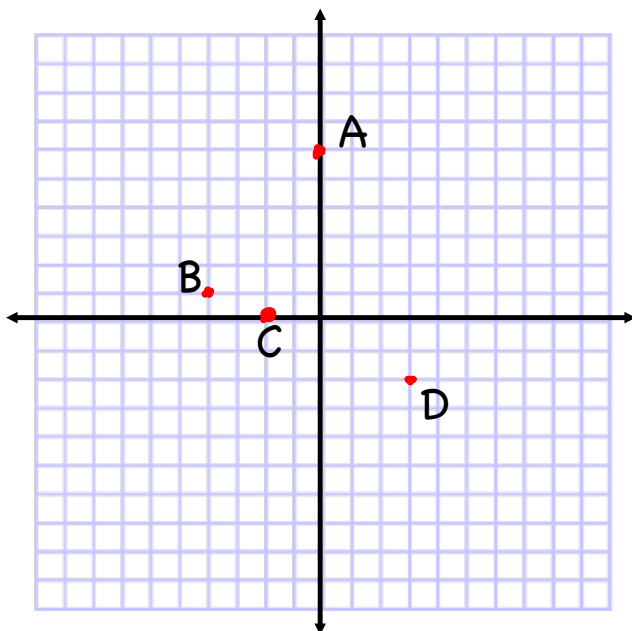
A coordinate plane is formed by two number lines that intersect at the origin.

The horizontal number line is the x-axis, and the vertical number line is the y-axis.

Each point in a coordinate plane corresponds to an ordered pair of real numbers.

The ordered pair for the origin is $(0, 0)$.

Example 1: Use the graph to name the coordinates of the given point.



$A(0, 6)$

$B(-4, 1)$

$C(-2, 0)$

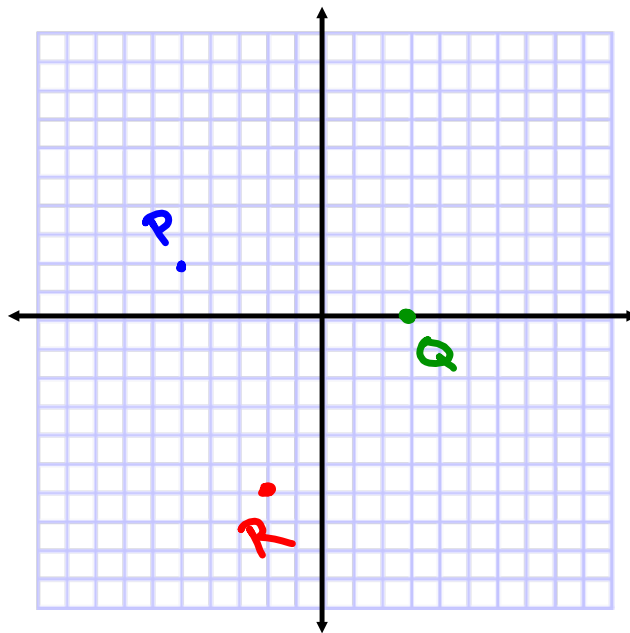
$D(3, -2)$

Example 2: Plot each point in a coordinate plane.

$P(-5, 2)$

$Q(3, 0)$

$R(-2, -6)$



Slope of a Line

The slope of a line is the ratio of the vertical rise to the horizontal run between any two points on the line.

You subtract coordinates to find the rise and the run. If a line passes through the points (x_1, y_1) and (x_2, y_2) , then:

$$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{y_2 - y_1}{x_2 - x_1} = m$$

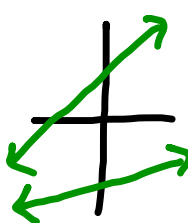
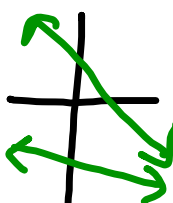
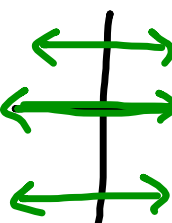
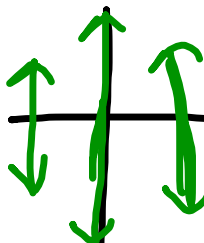
Example 3: Find the slope of the line that passes through the points $(-2, 1)$ and $(5, 4)$.

$\begin{matrix} x & y & & x & y \\ -2 & 1 & & 5 & 4 \end{matrix}$

$$\frac{1-4}{-2-5} = \frac{-3}{-7} = \frac{3}{7}$$

$$m = \frac{4-1}{5-(-2)} = \frac{3}{7}$$

The slope of a line can be positive, negative, zero, or undefined.

	Positive	Negative	Zero	Undefined
Graph:				
Values:	$\frac{3}{2}$	$-\frac{2}{3}$	horizontal $\frac{0}{\#}$	Vertical $\frac{0}{\#}$

Name

Coordinate Plane Slope

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10-15

Notes Evaluating Expressions