

LINEAR PARENT FUNCTION

EQUATION
 $y = x$

DOMAIN
 $-\infty < x < \infty$
 All Real #'s

RANGE
 $-\infty < y < \infty$
 All Real #'s

Aug 22-1:07 PM

Slope of a Line Part 1

Slope is the rate of vertical change to horizontal change. Slope is also called the rate of change. The slope of a line is always constant throughout the line.

Types of slopes: READ THE GRAPH FROM LEFT TO RIGHT

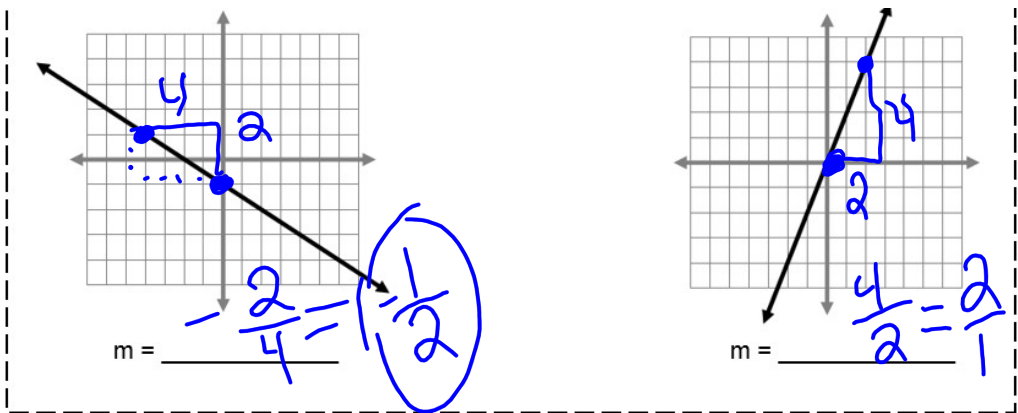
Positive Slope	Negative Slope	Zero Slope	Undefined Slope
Line rises from left to right.	Line falls from left to right.	Horizontal line	Vertical line

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To find slope given a graph:

- Pick two points that cross at the grid lines (whole numbers)
- Count the number of places you move vertically
- Count the number of places you move horizontally
- Put the appropriate sign given by the tilt direction
- Follow the slope to assure the pattern is constant

rise
run



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Slope of a Line Part 3

If given two points (x_1, y_1) and (x_2, y_2) , the slope can be calculated using the

Slope Formula: $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$

To find slope given two points:

- Identify each point as (x_1, y_1) and (x_2, y_2)
- Plug the values into the slope formula

Note: Assure that you always put the negatives in the formula!

Example 1: Find the slope of the line through the points: $(-2, 3)$ and $(4, 8)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{(8) - (3)}{(4) - (-2)} = \frac{5}{6}$$



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~~Example 2: Find the slope of the line through the points: (-13, 11) and (9, -11)~~

Example 3: Find the slope of the line through the points: (-4, 5) and (6, 5)

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{(5) - (5)}{(6) - (-4)} = \frac{0}{10} = 0$$

Example 4: Find the slope of the line through the points (1, 2) and (1, -1)

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{(-1) - (2)}{(1) - (1)} = \frac{-3}{0} = \text{Undefined}$$

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The left diagram shows a vertical line with a circle above it and a hash symbol (#) below it. A separate circle is drawn below the line.

The right diagram shows a horizontal line with a hash symbol (#) above it and a circle below it. The word "Undefined" is written below the diagram.

Sep 13-2:21 PM