

## Slope

We can find the slope of a line connecting two points  $(x_1, y_1)$  and  $(x_2, y_2)$ , by the following formula:

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{\textit{rise}}{\textit{run}}$$

Slope is often denoted by the letter “m”. Basically, the slope is the ratio of the change in height to the change in length. It doesn’t matter which order you put the coordinates in, but make sure that if you put one y coordinate first on the top, then the corresponding x coordinate comes first on the bottom.

Example:

Find the slope of a line joining  $(1, 2)$  and  $(5, 7)$

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

So, the slope is  $5/4$

A horizontal line has slope of zero and a vertical line’s slope is undefined. You can think of it as being infinite.

Try finding the slope of a line joining the following pairs of points:

1.  $(0, 0)$  and  $(-2, -9)$
2.  $(12, -3)$  and  $(2, 1)$

3.  $(7, 4)$  and  $(-1, 5)$
4.  $(5, -2)$  and  $(5, 5)$
5.  $(4, 0)$  and  $(7, -12)$
6.  $(3, -9)$  and  $(1, 1)$
7.  $(4, 8)$  and  $(1, -1)$
8.  $(-4, -8)$  and  $(-1, 1)$
9.  $(3, -3)$  and  $(17, -2)$
10.  $(x, x + 2)$  and  $(x + 2, x + 4)$