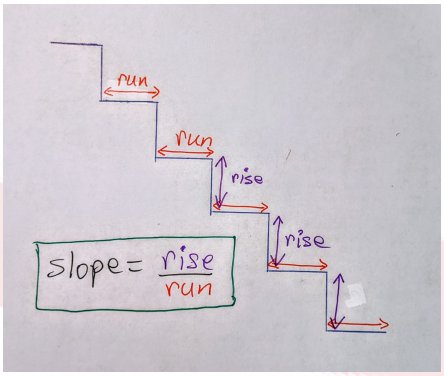
Slope of a Line

RaiseMyMarks.com
2021

What is slope?

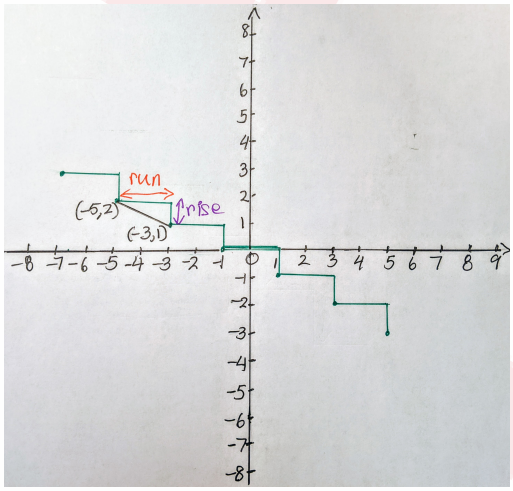
I like to think of slope as measuring how steep a line or staircase is and in which direction it is pointing upwards, left or right. If we look at a staircase we can define how high the step is as the *rise* and how deep the step is as the *run*. The rise and run can be measured.



The slope, or steepness of the staircase, can be defined as,

$$slope = \frac{rise}{run}$$

Let's draw our staircase on the Cartesian plane.



We have two points from our staircase, $(-3, 1)$ and $(-5, 20)$. The slope can now be written as,

$$\begin{aligned} slope &= \frac{rise}{run} = \frac{y_1 - y_0}{x_1 - x_0} = \frac{2-1}{-5-(-3)} \\ \therefore slope &= \frac{1}{-2} \end{aligned}$$

Here we took the points $(x_0, y_0) = (-3, 1)$ and $(x_1, y_1) = (-5, 2)$.

What doe sthe slope mean? We calculated the slope to be $-\frac{1}{2}$. The negative sign tells us that the staircase is sloping upwards to the left and the value $\frac{1}{2}$ tells us how steep the staircase is. The bigger the number, the steeper the staircase.

$$slope = -\frac{1}{2}$$

Exercises

1. Find the slope of each line segment.