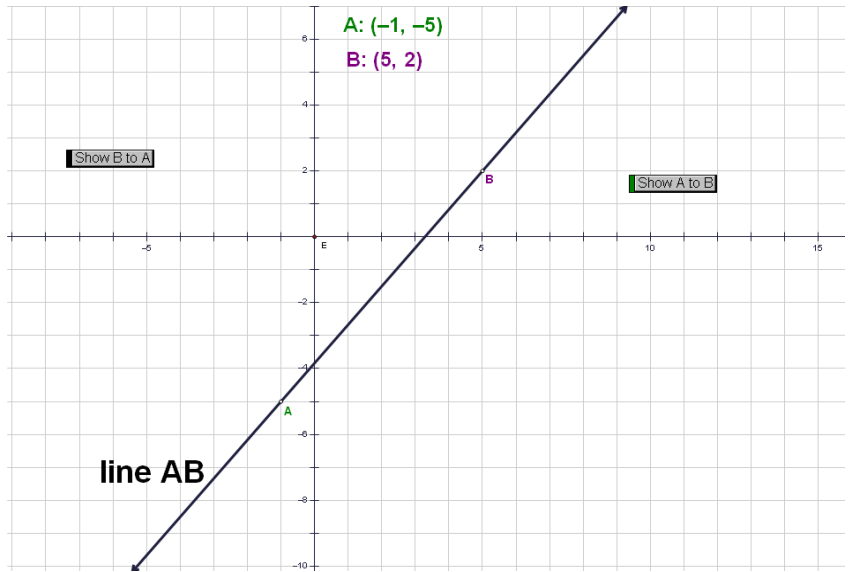


Understanding How Slope Is Measured

Stairs can be used to get your from the first floor of a building to the second floor. All stairs do not have the same steepness. To determine how steep a set of stairs is you can measure the rise (height) and run (depth) of each step. Tall steps have a smaller run than they have rise. Shorter steps have more run than they have rise. Use describe the steepness of a line by setting up steps on the line and measuring the rise and run of the step.

1. Open the sketch understanding slope.gsp. You will see a line AB graphed on a set of coordinate axes. You can click and drag points A and B along the line AB. Move the point A until it is at (1,2) and then move point B to (3, 3). Click on Show A to B. You will see a step drawn on the line. It shows you the rise and run. Record these in the chart along with the slope.



2. Continue to draw points A and B to the described point. Fill in the missing information from the screen.

Point A	Point B	Run	Rise	Slope of Line AB
(1,2)	(3,3)			
(-3,5)	(4,6)			
(-4,-6)	(1,4)			
(-5,-6)	(3,4)			
(3,4)		3	2	

Click on Show B to A and complete the chart below.

Point A	Point B	Run	Rise	Slope of Line AB
(1,2)	(3,3)			
(-3,5)	(4,6)			
(-4,-6)	(1,4)			
(-5,-6)	(3,4)			
(3,4)		-3	-2	

3. Study the coordinates in the last two charts. Can you see how you can use the coordinates to find the rise? To find the run?

4. Hide B to A. Notice that in chart 1 the points A were always below and to the left of point B. Let's see what happens if we change that.

Point A	Point B	Run	Rise	Slope of Line AB
(3,1)	(4,-3)			
(-3,5)	(3,-1)			
(-4,6)	(1,-4)			
(-5,-6)	(3,4)			
(1,6)		-3	2	

Click on Show A to B. Complete the chart below.

Point A	Point B	Run	Rise	Slope of Line AB
(3,1)	(4,-3)			
(-3,5)	(3,-1)			
(-4,6)	(1,-4)			
(-5,-6)	(3,4)			
(1,6)		-3	2	

5. Fill in the chart below with three different locations for the point B so that each result gives the slope of $\frac{2}{3}$.

Point A	Point B	Run	Rise	Slope of Line AB
(3,1)	(6,3)			$\frac{2}{3}$
(3,1)				$\frac{2}{3}$
(3,1)				$\frac{2}{3}$
(3,1)				$\frac{2}{3}$
(3,1)		-3	2	$\frac{2}{3}$

6. Look at your data in all four charts. How can you determine the rise? How can you determine the run?

7. If one point is (a,b) and the other point is (c,d) , how will you determine the slope of the line that passes through the two points?