

1. The Slope of a Line
2. You should be familiar with rates of change. In this lesson, we will give a formal definition of the slope of a line and use it to find missing coordinates.
3. Given two points, we can find the slope between the points by subtracting coordinates. The vertical change, the change in y , also known as the rise, is placed in the numerator, and the horizontal change, the change in x or run, is placed in the denominator.
4. In general, the slope between two arbitrary points is given by the slope formula. y -coordinates are subtracted in the numerator, x -coordinates are subtracted in the same order in the denominator.
5. (a) Given the slope of a line, we can solve several types of problems. The first is called interpolation, finding a y -value corresponding to an x -value between two points. First, we use two known points to find the slope.
(b) Then we use the new point with either known point and solve to find the unknown value.
6. (a) A second type of problem is extrapolation, also called prediction. We find the y -value of a future point using the same method as we did for interpolation. First finding the slope using the two known points.
(b) Then using the slope plus one of the known points with the new point, and solving for y .
7. We can also find a missing x -value using the same technique.
8. (a) We can also write the equation of a line containing two points as follows: First, find the slope between the two known points. The line is the set of all points (x, y) , whose slope to some fixed point on the line is given, in this case, we used the two known points to calculate the slope of $\frac{3}{4}$.
(b) Once we know the slope, we write the general equation by writing the slope formula using the slope, an arbitrary point (x, y) and a known point.
9. To recap: the slope of a line is found by the slope formula.