

MFM2P – Equations of Lines – Day 7: Determining Slope from Two Points

You can determine the slope of a line given any two points that lie on that line.

Given two points:

1. Label the points 1 and 2.
2. Label each x-coordinate and y-coordinate **properly**.
 - the x-coordinate of Point 1 is x_1
 - the y-coordinate of Point 1 is y_1
 - the x-coordinate of Point 2 is x_2
 - the y-coordinate of Point 2 is y_2

3. Plug the values into the equation:

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

4. Simplify the numerator (this is your rise)
5. Simplify the denominator (this is your run)
6. Reduce your fraction to lowest terms.

Example

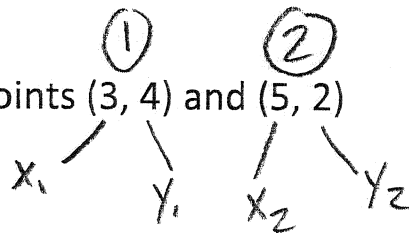
Find the slope of the line through the points (3, 4) and (5, 2)

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

$$= \frac{2 - 4}{5 - 3}$$

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

$$= -1$$



∴ the slope is -1

Determine the slope of the line through the given points.

<p>A (0, 3) B (2, 0)</p> $m = \frac{0-3}{2-0}$ $= \frac{-3}{2}$	<p>C (-2, 0) D (0, 5)</p> $m = \frac{5-0}{0-(-2)} \rightarrow 0+2$ $= \frac{5}{2}$ <p>if you subtract a negative... ADD</p>
<p>E (2, 3) F (5, 0)</p> $m = \frac{0-3}{5-2}$ $= \frac{-3}{3}$ $= -1$	<p>G (2, 1) H (3, 6)</p> $m = \frac{6-1}{3-2}$ $= \frac{5}{1}$ $= 5$
<p>I (-3, -3) J (-3, 7)</p> $m = \frac{7-(-3)}{-3-(-3)} \rightarrow \begin{matrix} 7+3 \\ -3+3 \end{matrix}$ $= \frac{10}{0}$ $= \text{undefined}$	<p>K (-2, 1) L (3, 5)</p> $m = \frac{5-1}{3-(-2)} \rightarrow 3+2$ $= \frac{4}{5}$
<p>M (25, 30) N (35, 20)</p> $m = \frac{20-30}{35-25}$ $= \frac{-10}{10}$ $= -1$	<p>O (-13, -23) P (31, 17)</p> $m = \frac{17-(-23)}{31-(-13)} \rightarrow \begin{matrix} 17+23 \\ 31+13 \end{matrix}$ $= \frac{40}{44}$ $= \frac{10}{11}$ <p>lowest terms</p>
<p>Q (-200, -100) R (30, -6)</p> $m = \frac{-6-(-100)}{30-(-200)} \rightarrow \begin{matrix} -6+100 \\ 30+200 \end{matrix}$ $= \frac{94}{230}$ $= \frac{47}{115}$ <p>lowest terms</p>	<p>S (-12, -15) T (-20, -4)</p> $m = \frac{-4-(-15)}{-20-(-12)} \rightarrow \begin{matrix} -4+15 \\ -20+12 \end{matrix}$ $= \frac{11}{-8}$ $= -\frac{11}{8}$ <p>put the negative sign on top (rise)</p>