So we got it down. The **rate of change** is a ratio that compares the amount of change in a dependent variable to the amount of change in the independent variable. We also know that this can be called **slope**. We also know how to find this from a graph and from a table of values.

Linear functions have a constant rate of change, a constant slope. A formula defines slope by the following equation:

$$m = \frac{y_2 - y_1}{x_2 - x_1}, \qquad where\ \boldsymbol{m}\ is\ always\ recognized\ as\ the\ variable\ for\ slope.$$

When we found our rate of change in Section 5.3, we looked at the change in value of two ordered pairs. We looked at the difference in the rise, $y_2 - y_1\ or \Delta y$ and the difference in the run, $x_2 - x_1\ or\ \Delta x$, then we took the ratio of $\frac{rise}{run}$. This is exactly what the slope formula is doing so it should be no big deal.

BE CAREFUL! BE CONSISTENT IN CHOOSING POINT 1 AND POINT 2:

Find the slope of a line that contains the points,	
$(-3,-5)\ and\ (1,\ 7)$. **OR** $(-3,-5)\ and\ (1,\ 7)$. $(x_2,\ y_2),\qquad (x_1, y_1)\qquad\quad (x_1, y_1)\qquad (x_2,\ y_2)$ $$m = \frac{y_2 - y_1}{x_2 - x_1}$$ $m = \dfrac{-5-7}{-3-1}$ **OR** $m = \dfrac{7-(-5)}{1-(-3)}$ $m = \dfrac{-12}{-4}$ **OR** $m = \dfrac{7+5}{1+3} = \dfrac{12}{4}$ $m = 3$	1. Label one ordered pair point 1 and the other ordered pair point 2. It does not matter which is which, be consistent! 2. Fill in the slope formula with the point values. 3. Simplify *Either way you choose point 1 and point 2, the slope comes out the same. Just watch the signs and don't mix up which x or y is 1 and which is 2.*

Find the slope of the line that contains the points:

$(-2,-2) and\ (7,-2)$ $\qquad\qquad\qquad (5,-7), and\ (6,-4)$ $\qquad\qquad \left(\dfrac{3}{4},\dfrac{7}{5}\right)\ and\ \left(\dfrac{1}{4},\dfrac{2}{5}\right)$

Find the slope from the tables:

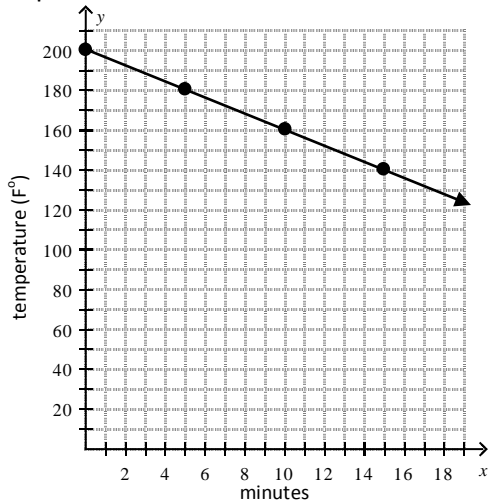| x	0	2	5	6
y	1	5	11	13

x	-2	0	2	4
y	3	0	-3	-6

Are these tables showing a linear relationship? Explain why or why not.
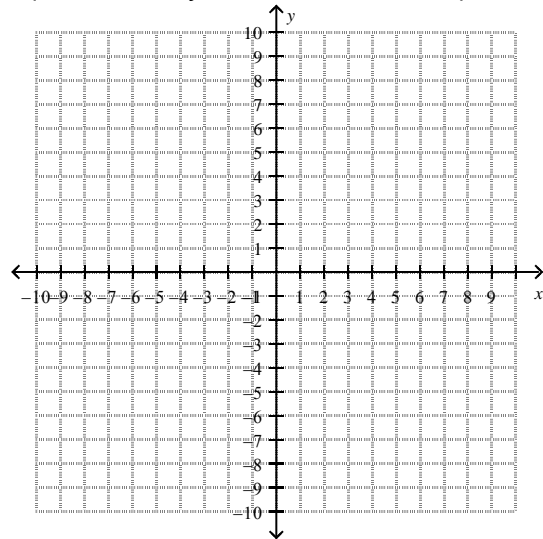
Find the slope:
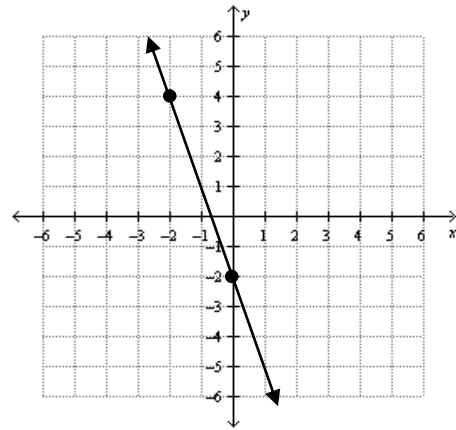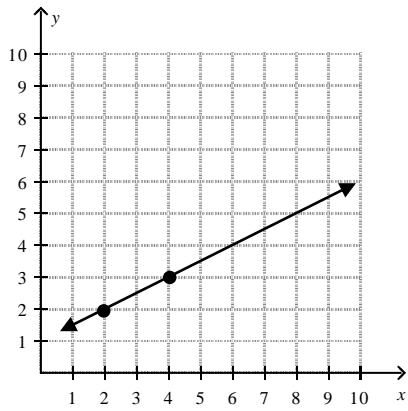
The graph shows the temperature of coffee in a cup. Find the slope of the line. Then tell what the slope represents.

Solve the equation and check your answer. $k - 3.14 = 1.71$	Use intercepts to graph the line described by the equation $3x + y = 9$. What is the slope?
Is the set of ordered pairs a function? $\{(1,1), (3, -4),\ (5, 1), (6, 4),\ (4, 3)\}$	Solve: $a = \dfrac{1}{2} - \dfrac{3}{2}$