

## Points on a Line and Slope of a Line

We know that it only takes two points to determine a line because the rate of change from one point to the next is constant. How much “x” changes from one point to the next is called the “change in x” and denoted by  $\Delta x$  (“delta x”. It’s Greek.), and how much “y” changes from one point to the next is called the “change in y”, or  $\Delta y$ .

What we are going to do is look at some lines in standard form, find a couple of points on those lines, and examine the  $\Delta x$  and  $\Delta y$  associated with them. Then we are going to see what happens with the ratio between  $\Delta y$  and  $\Delta x$  and compare it to the equation in standard form, and you’ll hopefully see a pattern.

1.  $2x + 3y = 6$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

2.  $3x - 4y = 12$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

3.  $6x - y = 6$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

4.  $x + 4y = 8$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

5.  $7x - 3y = 21$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

6.  $2x + 4y = 12$

x	y
0	
	0

$\Delta x = \underline{\hspace{2cm}}$

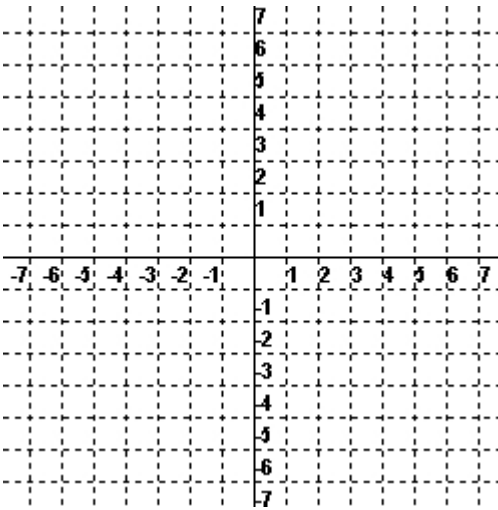
$\Delta y = \underline{\hspace{2cm}}$

$$\frac{\Delta y}{\Delta x} = \underline{\hspace{2cm}}$$

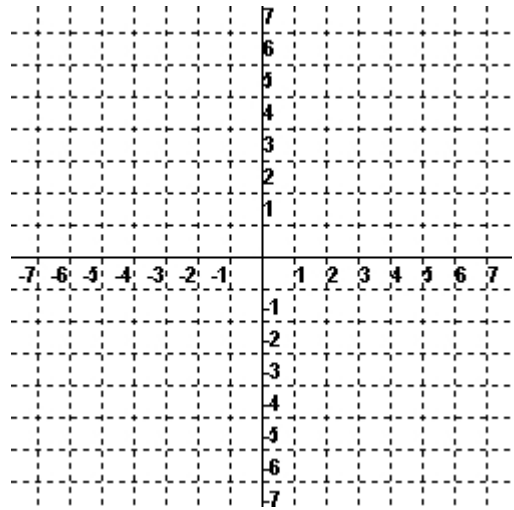
The lines above are written in standard form, usually given as  $Ax + By = C$ . The ratio  $\frac{\Delta y}{\Delta x}$  is called the **slope** of a line because it measures the incline of a line.

1. Using the  $\Delta x$  and  $\Delta y$ , find another point on the line and put it in the third spot on your chart.
2. What is the relationship between the slope of each line and A, B, and/or C. \_\_\_\_\_  
\_\_\_\_\_
3. On a piece of graph paper, graph the six lines with the points you found.

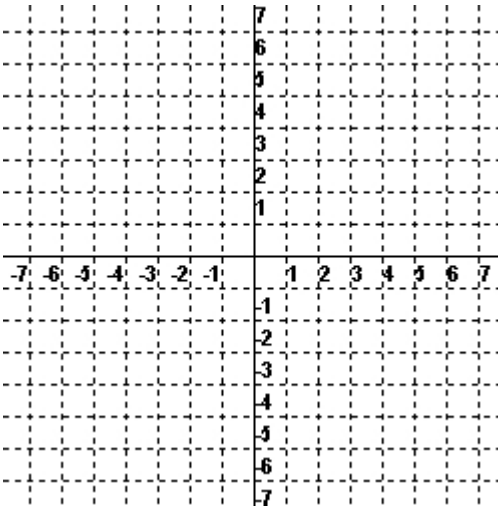
1.



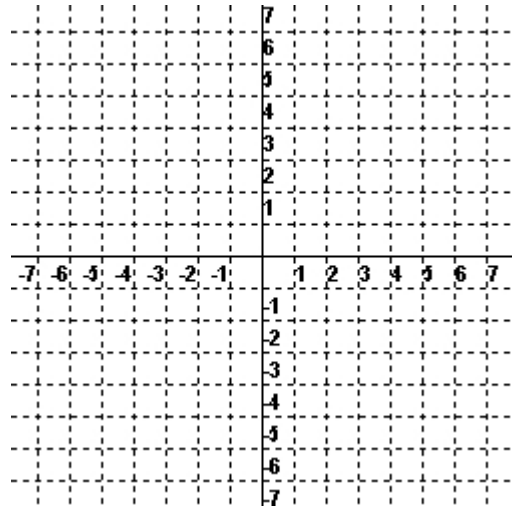
2.



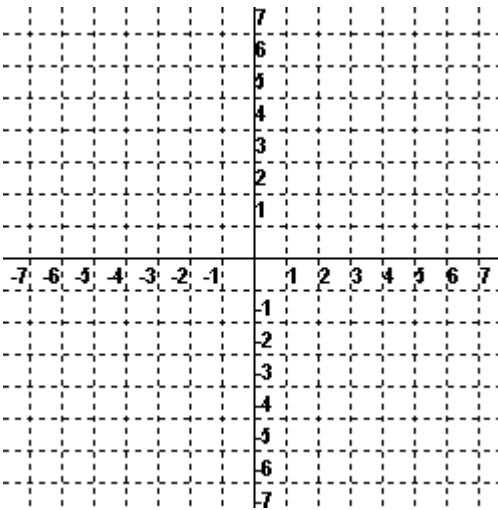
3.



4.



5.



6.

