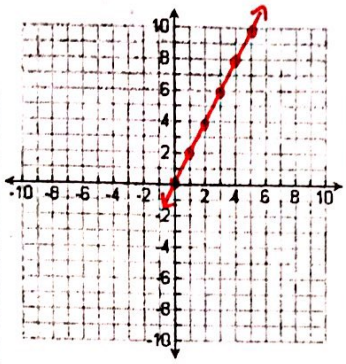
Name: KEY

Graphing Linear Functions – Looking for Patterns

For each equation, complete the table and use it to draw the graph.

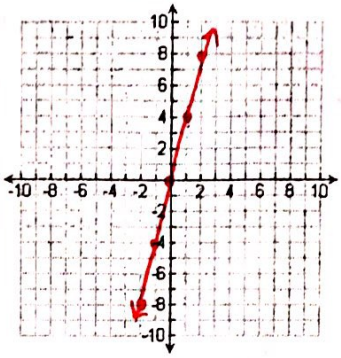
1) y = 2x

x	y
0	0
1	2
2	4
3	6
4	8
5	10



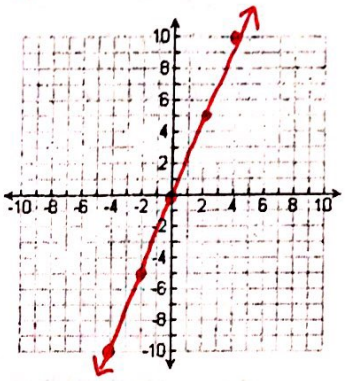
2) y = 4x

x	y
-2	-8
-1	-4
0	0
1	4
2	8



3) $y = \frac{5}{2}x$

x	y
-4	-10
-2	-5
0	0
2	5
4	10

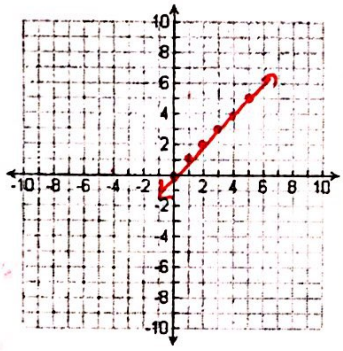


4) So far, what connection do you see between the GRAPH and the EQUATION?

The coefficient of "x" is the slope of the graph!

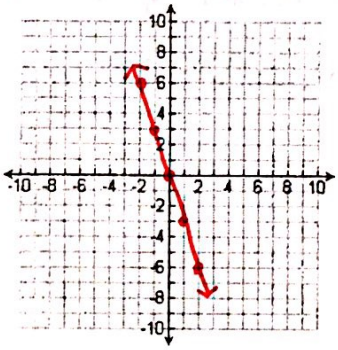
5) y = x

x	y
0	0
1	1
2	2
3	3
4	4
5	5



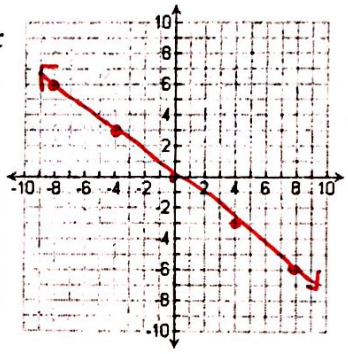
6) y = -3x

x	y
-2	6
-1	3
0	0
1	-3
2	-6



7) $y = -\frac{3}{4}x$

x	y
-8	6
-4	3
0	0
4	-3
8	-6

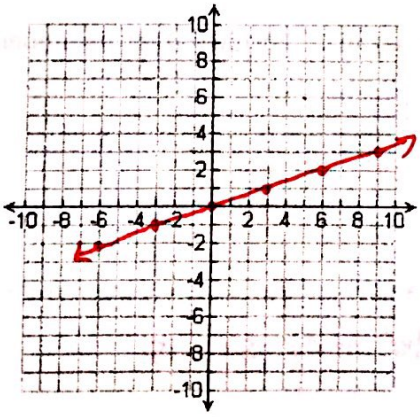


8) How do the graphs of the equations with a negative coefficient of "x" look different than the ones with a positive coefficient of "x"?

They have a negative slope.

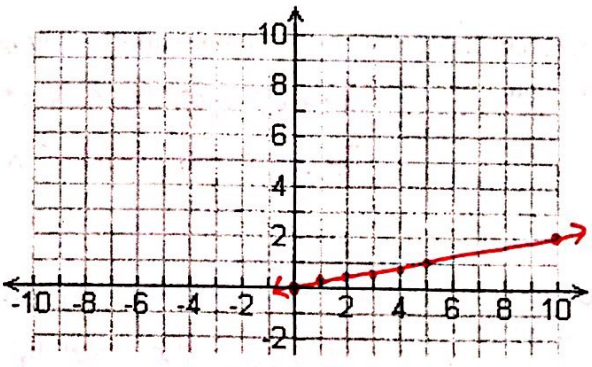
9) $y = \frac{1}{3}x$

x	y
-6	-2
-3	-1
0	0
3	1
6	2
9	3

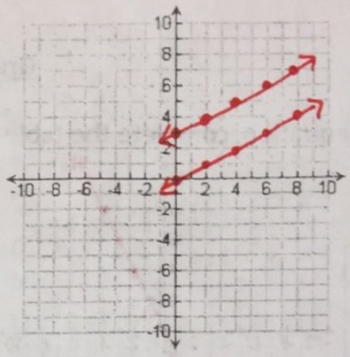


10) $y = \frac{1}{5}x$

x	y
0	0
1	1/5
2	2/5
3	3/5
4	4/5
5	1
10	2



11) a) Complete the table and graph $y = \frac{1}{2}x$ using the graph to the right.



x	0	2	4	6	8
y	0	1	2	3	4

b) PREDICT: What do you think the graph of $y = \frac{1}{2}x + 3$ will look like?

Describe in words. Same slope, but shifted up 3 units.

c) Complete the table for $y = \frac{1}{2}x + 3$, then graph the equation on the same graph.

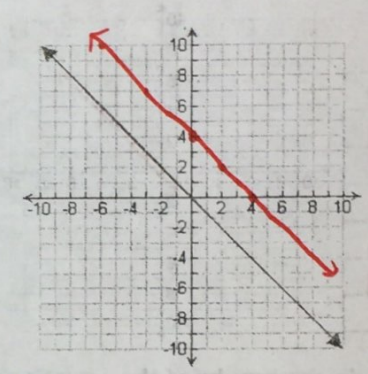
x	0	2	4	6	8
y	3	4	5	6	7

d) Describe what happened. Did it match your prediction?

e) Predict: What do you think the graph of $y = \frac{1}{2}x - 5$ would look like? Describe in words.

It will be the same slope, but shifted down 5 units.

12) The graph of y = -x is shown. On the same graph, without filling out a table, draw a prediction for what you think the graph of y = -x + 4 would look like.



13) The most common way to write a linear equation (a "straight line" equation) is:

$$y = \square\, x + \square$$

a) How does the number in the first box affect the graph? What if it's negative? Positive? A large number? A small number?

It controls the steepness. (It is the slope!)
The bigger this number is, the steeper the line.

b) How does the number in the second box affect the graph? What happens when you make this number bigger or smaller?

It "moves" the graph up or down that many squares.