Algebra 2   Name: _____
Mr. Doherty   Date: _____

Graphing Absolute Value Functions

1) On this worksheet you will be studying **transformations** and **translations**.
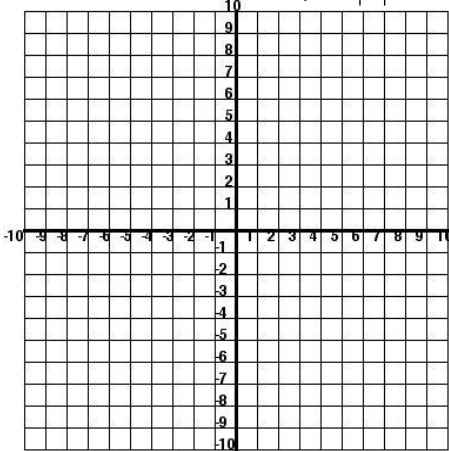   Write down a definition below for these two words.
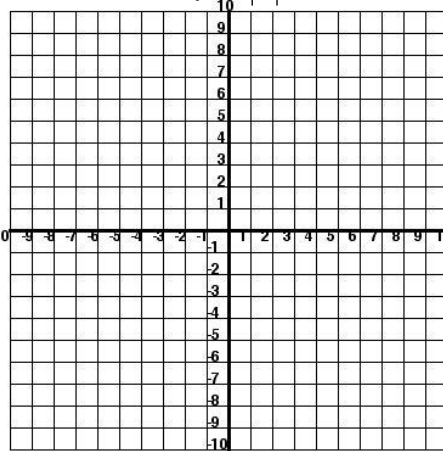
    Transformations –

    Translations –

2) Complete the following table for the absolute value. (Each column is for the y
    values of the function given, the first row is filled in to help you understand.)
    Then use the values from the table to graph each function.

Input value	Output $y=\lvert x\rvert$	Output $y=\lvert x\rvert+2$	Output $y=\lvert x\rvert-3$
-3	**3**	**5**	**0**
-2			
-1			
0			
1			
2			
3			

Graph $y=\lvert x\rvert$

Graph $y=\lvert x\rvert+2$

Graph $y=\lvert x\rvert-3$

Algebra 2   Name: _____
Mr. Doherty   Date: _____
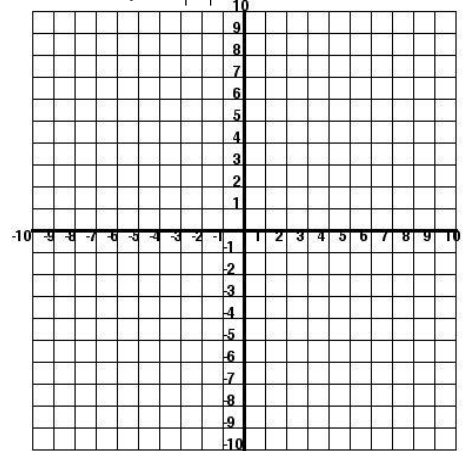
3)   How did adding two outside of the absolute value function affect the graph?

        How did subtracting 3 outside the absolute value function affect the graph?
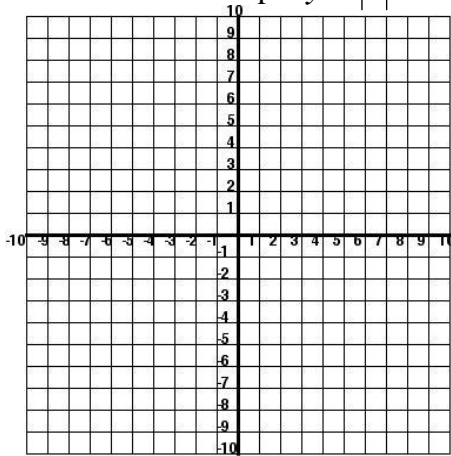

        Given any whole number c what will adding c outside of the absolute value sign
        do to the graph?

        Given any whole number c what will subtracting it outside of the absolute value
        sign do to the graph?
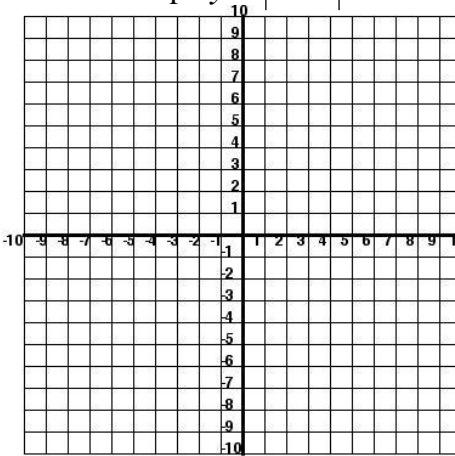   Is this a translation or a transformation?

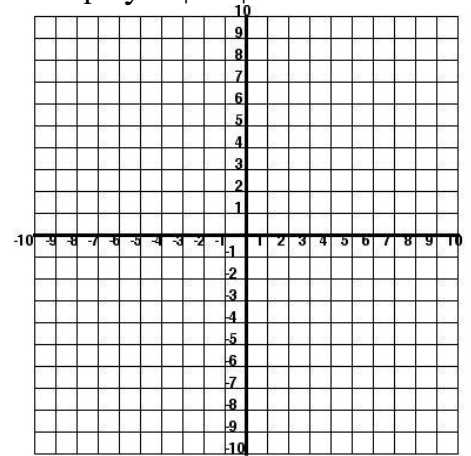4)   Graph the functions below (Create your own table as you desire).

        Graph $y = |x|$ Graph $y = |x + 1|$ Graph y = |x-2|

        How did adding one inside of the absolute value function affect the graph?

        How did subtracting 2 inside of the absolute value function affect the graph?
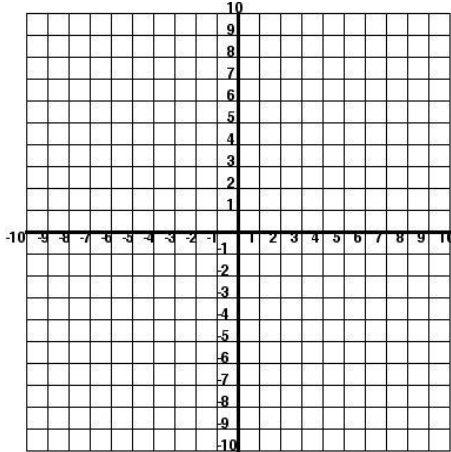

        Given any whole number c, what will adding c inside of the absolute value sign
        do to the graph?

        Given any whole number c, what will subtracting c inside of the absolute value
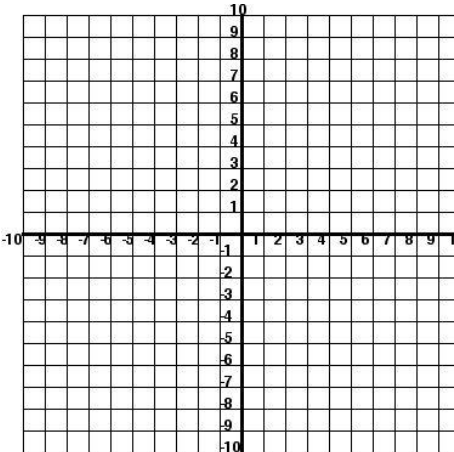   sign do to the graph?

        Is this a translation or a transformation?

Algebra 2

Mr. Doherty

Name: _____

Date: _____

5)   Complete the following graphs and then answer the questions.
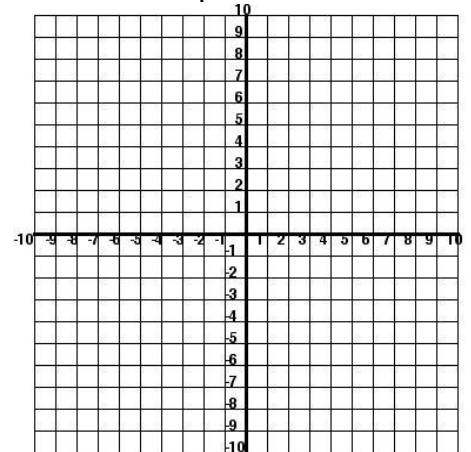
Graph $y = |x|$ Graph $y = 4 \cdot |x|$ Graph $y = \dfrac{1}{4} \cdot |x|$

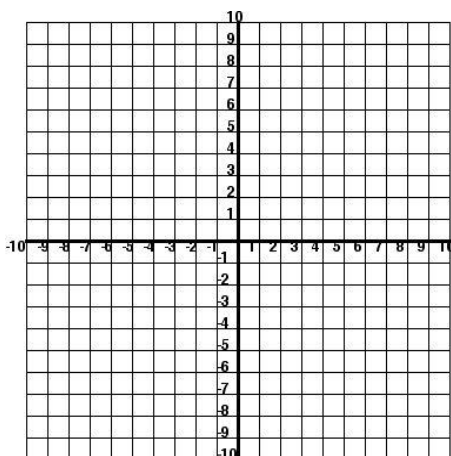How did multiplying by 4 affect the graph?

What affect will multiplying by a number that is greater than one have on the graph?

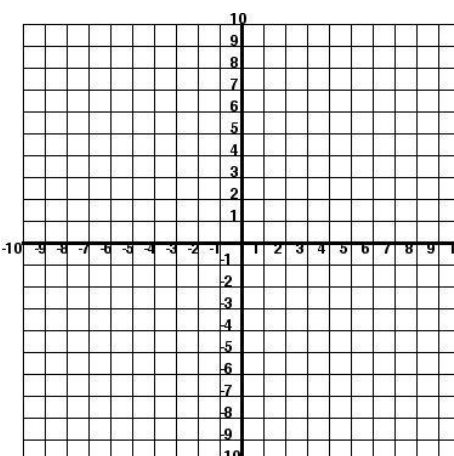How did multiplying by $\dfrac{1}{4}$ affect the graph?

What affect will multiplying by a number that is between zero and one have on the graph?

6)   Complete the following graphs and then answer the questions.
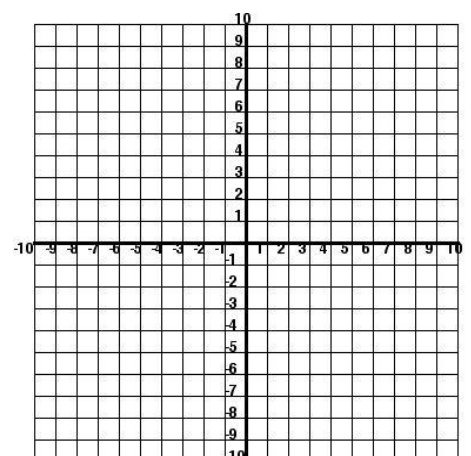
Graph $y = |x|$ Graph $y = -1 \cdot |x|$ Graph $y = -3 \cdot |x|$

Algebra 2   Name: _____
Mr. Doherty   Date: _____

How did multiplying by a negative 1 affect the graph?

How did multiplying by a negative 3 affect the graph?

What do you think will happen any time you multiply by a negative number outside of the absolute value function?

7)   Using what you have learned predict how the graph of
      $f(x) = -2 \cdot |x-2| + 1$ will compare to the graph of $y = |x|$

Complete the graph below to see if you are correct.
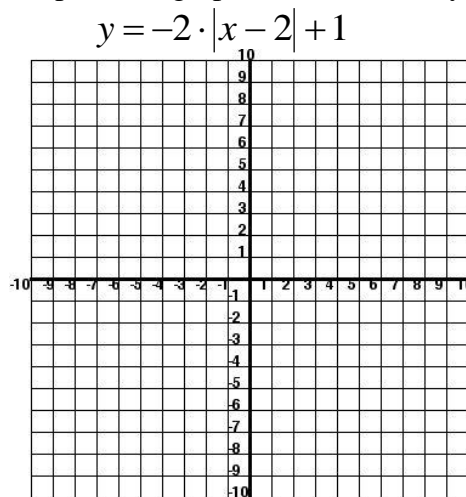
$$y = -2 \cdot |x-2| + 1$$

Input value	Output $y = -2 \cdot |x-2| + 1$
-3	
-2	
-1	
0	
1	
2	
3	

8)   Write an equation that would give the graph below.