



# Discovering Graph Shape

## *Absolute Value*

### **Absolute Value Function**

For each set of graphs, determine how the changing number changes the shape or position of the graph.

(note: make sure to enclose the expression in the // using parenthesis on your calculator.)

1. Graph the following equations (the expression inside the square root must be in parentheses):

$$y = |x| \quad y = |x + 1| \quad y = |x + 2| \quad y = |x - 1| \quad y = |x - 2|$$

How do these changing numbers change the position of the graph?

2. Graph the following equations (Close parenthesis before adding or subtracting.):

$$y = |x| \quad y = |x| + 1 \quad y = |x| + 2 \quad y = |x| - 1 \quad y = |x| - 2$$

How do these changing numbers change the position of the graph?

3. Graph the following equations (the expression inside the must be in parentheses):

$$y = |x| \quad y = |2x| \quad y = |3x| \quad y = |-x| \quad y = |-2x| \quad y = |-3x|$$

How do these changing numbers change the position of the graph?

4. Graph the following equations:

$$y = |x| \quad y = 2|x| \quad y = 3|x| \quad y = -|x| \quad y = -2|x| \quad y = -3|x|$$

How do these changing numbers change the position of the graph?

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If  $a$ ,  $b$ ,  $c$ , and  $d$  represent real numbers, then the general form of a AbsoluteValue function can be written as:

$$y = a|bx + c| + d$$

How do  $a$ ,  $b$ ,  $c$ , and  $d$  change the shape or position of the graph?

**a:**

**b:**

**c:**

**d:**