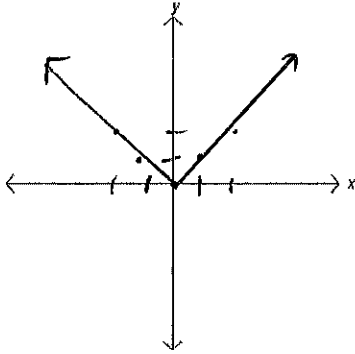


Graphing Absolute Value

Warm Up: Graph $f(x) = |x|$

Sketch the graph below



Complete the table of values

x	f(x)
2	2
1	1
0	0
-1	1
-2	2

The absolute value of a number is its distance from zero. The graph of an absolute value equation is a V-shaped graph that points upward or downward.

A translation is a shift of a graph horizontally, vertically, or both. The result is a graph of the same size and shape, but in a different location.

Graph $f(x) = |x - 2| + 1$

Step 1) Graph the parent function, $f(x) = |x|$.

Step 2) Identify any vertical or horizontal translations

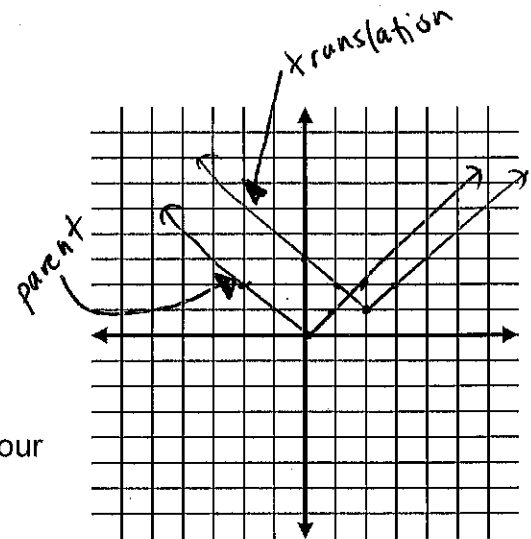
Horizontal Translation:

right 2

Vertical Translation:

up 1

Step 3) Translate three points from your parent function and draw your new function.



Things to Remember when Graphing:

1) Always draw parent function first

2) Vertical translations are found outside the absolute value

- + : moves the function up
- - : moves the function down

3) Horizontal translations are found inside the absolute value

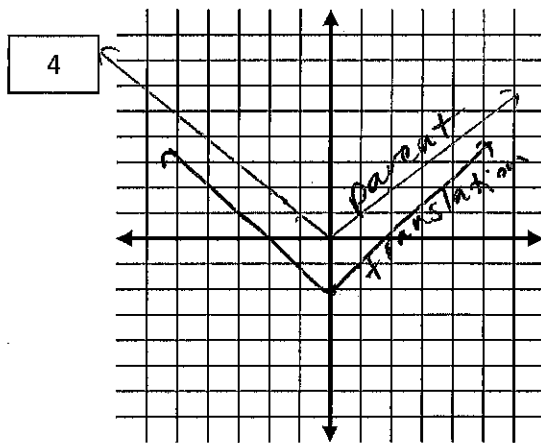
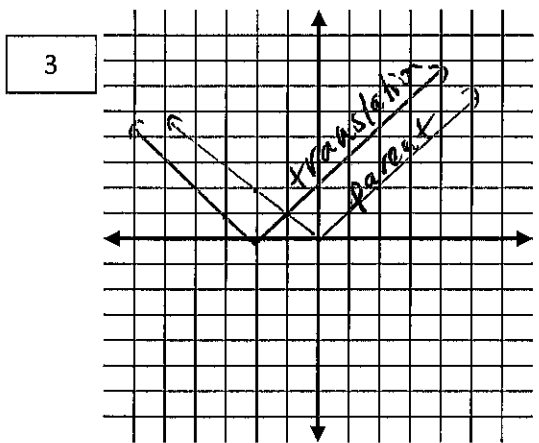
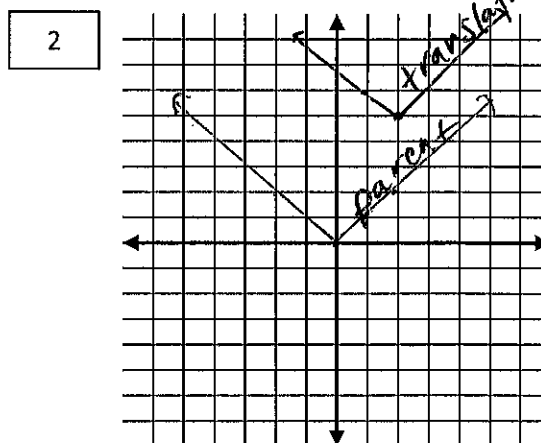
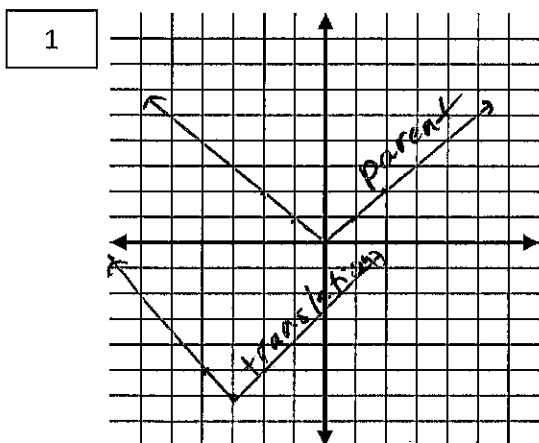
- + : moves the function left
- - : moves the function right

In the following absolute value functions, identify the vertical and horizontal translations

Problem	Equation	Vertical Translation	Horizontal Translation
1	$f(x) = x + 3 - 6$	down 6	left + 3
2	$f(x) = x - 2 + 5$	up 5	right 2
3	$f(x) = x + 2 $	none	left 2
4	$f(x) = x - 2$	down 2	none

Graph parent function First!

Graph each of the equations from the table



12) Write an equation of an absolute value function with a vertex located at (3, 5). You may want to graph the parent function and new vertex to help you.

(3, 5) means right 3 + up 5

$$y = |x - 3| + 5$$

right 3 up 5

