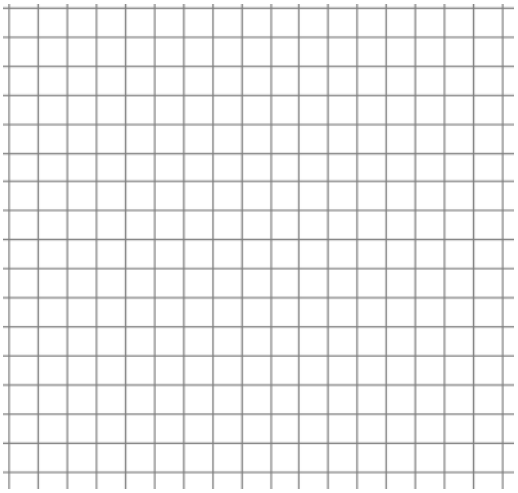
Algebra 1 Name _____

5-1 Absolute Value Function Date _____ **#1**

I. Review: Graph the following functions on the same coordinate plane. Use the table for the first and the slope and intercept for the second.

a. $f(x)=\frac{1}{2}x+3$, Domain: _____

Range: _____



x	$f(x)=\frac{1}{2}x+3$
-2	
2	
4	

b. $g(x)=2x-4$

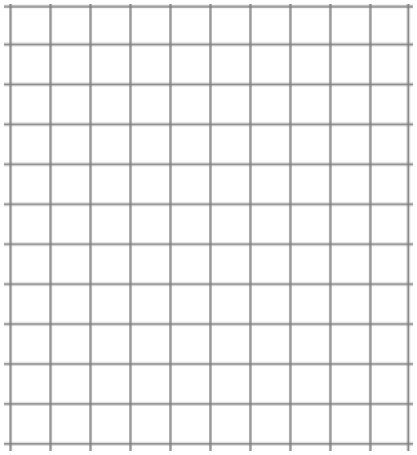
Slope: _____ Domain: _____

y-intercept: _____ Range: _____

II. Absolute Value Functions: Tables

c. Make a table of values to graph the absolute value function $y=|x|$.

x	$y=\|x\|$
-2	
-1	
0	
1	
2	



Domain: _____

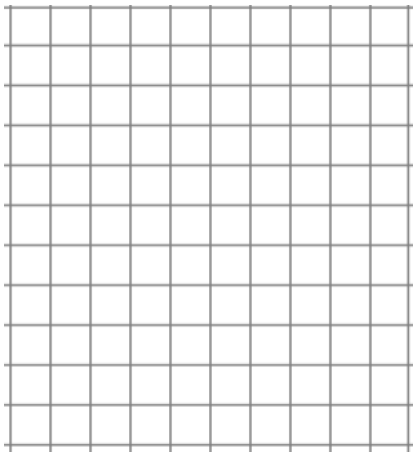
Range: _____

The function $y=|x|$ called the _____ _____ function. The turning point is called the _____ and the _____ ___ _____ divides the graph into two sections that are _____ of each other.

III. Transform the Absolute Value Function

A. How do the domain and range of $g(x)=2|x|$ compare to the domain and range of $f(x)=|x|$

x	$f(x)=\|x\|$	$g(x)=2\|x\|$
-2		
-1		
0		
1		
2		

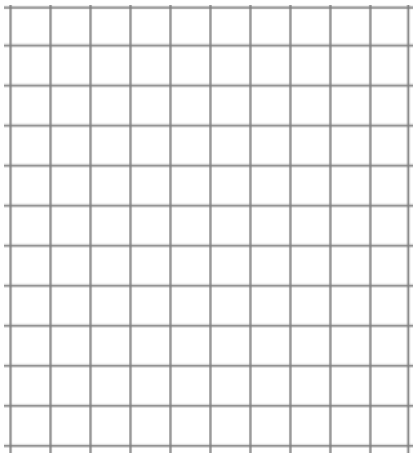


What is the rate of change for $f(x)=|x|$ for $-3\le x\le -1$? For $1\le x\le 3$?

What is the rate of change for $g(x)=2|x|$ for $-3\le x\le -1$? For $1\le x\le 3$?

Try It! a. How do the domain and range of $h(x)=-1|x|$ compare to the domain and range of $f(x)=|x|$?

x	$f(x)=\|x\|$	$h(x)=-1\|x\|$
-2		
-1		
0		
1		
2		



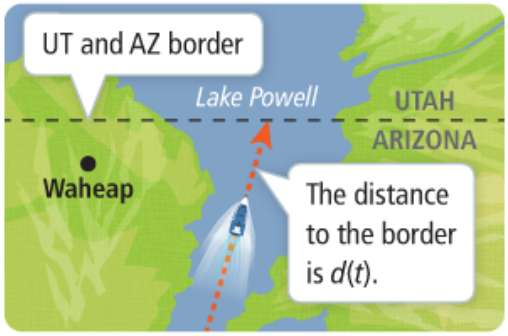
What is the rate of change for $h(x)=-1|x|$ for $-3\le x\le -1$? For $1\le x\le 3$?

How do the domain and range of each function below compare to the domain and range of $f(x)=|x|$?

b. $g(x)=\frac{1}{2}|x|$ **c.** $h(x)=-2|x|$

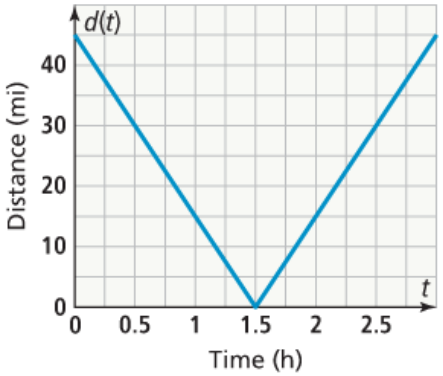
IV. Applications and Interpretation

Jay rides in a boat from his home to his friend's home in a neighboring state. The graph of the function $d(t)=30|t-1.5|$ shows the distance of the boat in miles from the state line at t hours. Assume the graph shows Jay's entire trip.



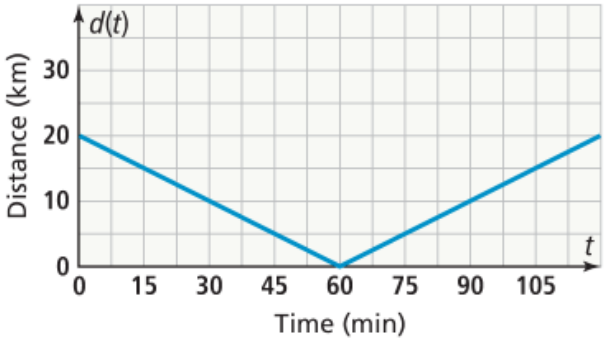
a. How far does Jay travel to visit his friend?

b. How does the graph relate to the domain and range of the function?



Try It! A cyclist competing in a race rides past a water station. The graph of the function $d(t)=13|t-60|$ shows her distance from the water station at t minutes. Assume the graph represents the entire race.

a. What does the graph tell you about her race?



b. What is the rate of change over the interval $2 \le t \le 2.5$?What does it mean in terms of the situation?