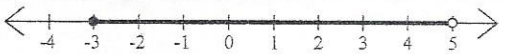
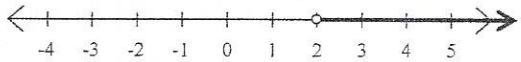
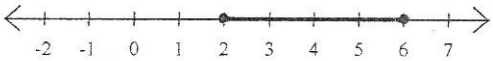
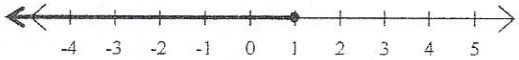
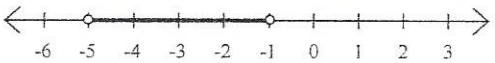
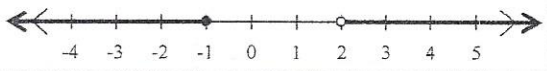
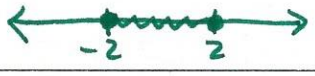
[means equal to. So ≥, ≤, = or a solid line or closed circle

(means not equal to. So >, <, or an open circle or dotted line. This always goes on ∞ infinity.

Student Activity

Introducing Interval Notation

Instructions: Fill in the missing parts in the chart below.

		Inequality	Interval Notation	Graph
•	Ex.	$-3 \le x < 5$	$[-3, 5)$	
	Ex.	$x > 2$	$(2, \infty)$	
	1.	$x \le 3$	$(-\infty, 3]$	
	2.	$X < 4$	$(-\infty, 4)$	
•	3.	$2 \le X \le 6$	$[2, 6]$	
	4.	$X \ge 5$	$[5, \infty)$	
	5.	$X \le 1$	$(-\infty, 1]$	
*	6.	$x < 1$ or $x \ge 5$	$(-\infty, 1) \cup [5, \infty)$	
•	7.	$-5 < X < -1$	$(-5, -1)$	
	8.	x is any real #	$(-\infty, \infty)$	
*	9.	$X \le -1$ OR $X > 2$	$(-\infty, -1] \cup (2, \infty)$	
•	10.	$1 < X < 4$	$(1, 4)$	
	11.	$x > 7$	$(7, \infty)$	
•	12.	$-2 \le X \le 2$	$[-2, 2]$	

There is no need to write all the numbers on the number line. I know you know how to count. Just give me the numbers required.

* ∪ means union meaning there is a gap in the data.
  - union goes with "OR"

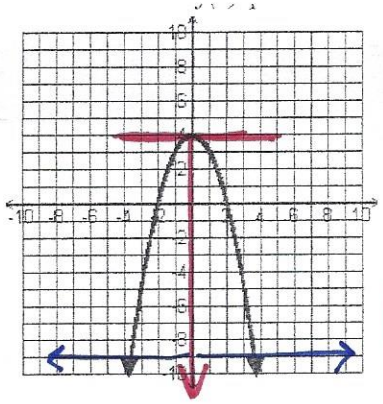
• These inequalities are "and" meaning the numbers are between the ends.

Domain - all the x-values

Range - all the y-values

13. Given the graph of $f(x)$ below

State the Domain and Range



Domain: $(-\infty, \infty)$

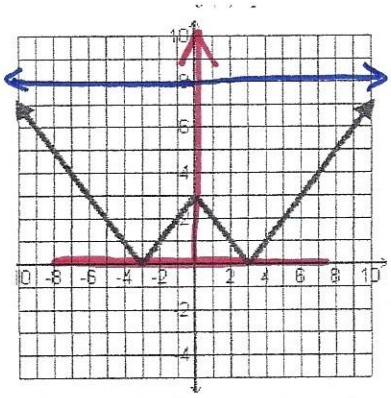
The quadratic will keep getting wider as the graph grows so it will hit all x-values.

Range: $(-\infty, 4]$

The graph points down to neg ∞ but the highest point, maximum, is at 4.

14. Given the graph of $f(x)$ below

State the Domain and Range



Domain: $(-\infty, \infty)$

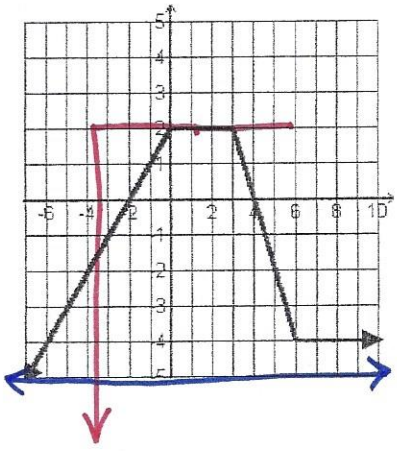
The arrows point left and right indicating all x-values, or ∞

Range: $[0, \infty)$

The lowest point is at 0 and the graph points up, ∞

15. Given the graph of $f(x)$ below

State the Domain and Range



Domain: $(-\infty, \infty)$

The arrows again point left and right.

Range: $(-\infty, 2]$

The maximum is 2 so that is the highest y-value. Even though the right side stops at -4, the left side keeps going downward through ∞