The following are not in Enable, but will appear on midterm 2 and the final exam.

Another way to interpret |x-a| is the distance between x and a. For instance, the distance between -5 and 7 is |-5-7|, which is |-12| or 12.

Translate the following sentences into absolute value equations or inequalities by turning each of them into a sentence of the form "the distance between and is ".

The **blue** numbers represent distances, and the **orange** numbers represent points on a number line.

eg.	the distance between x and 9 is 2	ANSWER:	x - 9 = 2	
eg.	x is closer than 6 away from 3 i.e. the distance between x and 3 is less than 6	ANSWER:	x-3 < 6	

- eg. x and -2 are at least 5 apart ie. the distance between x and -2 is greater than or equal to 5 ANSWER: $|x - (-2)| \ge 5$ OR $|x + 2| \ge 5$
- [1] -8 is 4 away from x
- [2] 7 and *x* are farther than 3 apart
- [3] *x* and 3 are separated by no more than 7
- [4] x is within 7 of 3
- [5] x is at most 7 away from 3
- [6] *x* is a maximum of 3 away from 7
- [7] *x* and 7 are no closer than 3 away from each other
- [8] *x* and 3 are separated by at least 7
- [9] x is beyond 3 of 7
- [10] *x* is no farther than 7 away from 3
- [11] x is no less than 7 away from 3
- [12] *x* is a minimum of 3 away from 7
- [13] 7 and *x* are closer than 3 apart

SOLUTIONS

[1]	-8 is 4 away from <i>x</i>	
	the distance between x and -8 is 4	x8 = 4 or $ x + 8 = 4$
[2]	7 and <i>x</i> are farther than 3 apart	
	the distance between x and 7 is greater than 3	x-7 > 3
[3]	x and 3 are separated by no more than 7	
	the distance between x and 3 is less than or equal to 7	$ x-3 \leq 7$
[4]	<i>x</i> is within 7 of 3	
	the distance between x and 3 is less than or equal to 7	$ x-3 \leq 7$
[5]	<i>x</i> is at most 7 away from 3	
	the distance between x and 3 is less than or equal to 7	$ x-3 \leq 7$
[6]	<i>x</i> is a maximum of 3 away from 7	
	the distance between x and 7 is less than or equal to 3	$ x-7 \le 3$
[7]	<i>x</i> and 7 are no closer than 3 away from each other	
	the distance between x and 7 is greater than or equal to 3	$ x-7 \geq 3$
[8]	<i>x</i> and 3 are separated by at least 7	
	the distance between x and 3 is greater than or equal to 7	$ x-3 \ge 7$
[9]	<i>x</i> is beyond 3 of 7	
	the distance between x and 7 is greater than 3	x-7 > 3
[10]	<i>x</i> is no farther than 7 away from 3	
	the distance between x and 3 is less than or equal to 7	$ x-3 \leq 7$
[11]	<i>x</i> is no less than 7 away from 3	
	the distance between x and 3 is greater than or equal to 7	$ x-3 \ge 7$
[12]	<i>x</i> is a minimum of 3 away from 7	
	the distance between x and 7 is greater than or equal to 3	$ x-7 \geq 3$
[13]	7 and <i>x</i> are closer than 3 apart	
	the distance between x and 7 is less than 3	x-7 < 3