

Name: \_\_\_\_\_  
First Last

Period: \_\_\_\_\_

## ***Objective 9 – Assignment List***

**Absolute Value:** *solve absolute value equations and inequalities*

### **Monday**

**In Class:** *Compound Inequalities Word Problems*

**Watch:** *Absolute Value Equations*

### **Tuesday**

**In Class:** *Absolute Value Equations*

**Watch:** *Absolute Value Inequalities*

### **Wednesday**

**In Class:** *Absolute Value Inequalities*

**Watch:** *More Absolute Value Inequalities*

### **Thursday**

**In Class:** *Applying Absolute Value Inequalities*

### **Friday**

**In Class:** *TEST – Unit 4: Solving Inequalities*

Parent Signature: \_\_\_\_\_

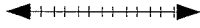
## Compound Inequalities Word Problems

1. Proper pool maintenance recommends that the pH( $x$ ) level of swimming water be between 7.2 and 7.6 inclusive. Write a compound inequality to show the pH levels that are within the recommended range. Graph the solutions.
2. An iguana needs to live in a warm environment. The temperature in a pet iguana's cage should be between  $70^{\circ}\text{F}$  and  $96^{\circ}\text{F}$  inclusive. Write a compound inequality to show the temperatures( $x$ ) that are within the recommended range. Graph the solutions.
3. Earth's atmosphere is made of several layers. A layer called the stratosphere extends from about 10 miles above the earth's surface to 30 miles above earth's surface. Write a compound inequality to show the altitudes( $x$ ) that are within the range of the stratosphere. Graph the solutions.
4. The cruise-control function on Georgina's car should keep the speed of the car within 3 mi/hr of the set speed. Write a compound inequality to show the acceptable speeds( $x$ ) if the set speed is 55 mi/hr.. Graph the solutions.
5. The ball used in a soccer game may not weigh more than 16 ounces or less than 14 ounces at the start of the match. After  $1\frac{1}{2}$  ounces of air was added to a ball, the ball was approved for use in a game. Write and solve a compound inequality to show how many ounces( $x$ ) the ball might have weighed before the air was added.
6. Water is not a liquid if its temperature is above  $100^{\circ}\text{C}$  or below  $0^{\circ}\text{C}$ . Write a compound inequality for the temperatures( $x$ ) when water is not a liquid.
7. It is recommended that a certain medicine be stored in temperatures above  $32^{\circ}\text{F}$  and below  $70^{\circ}\text{F}$ . Write a compound inequality to show the acceptable storage temperatures( $x$ ) for this medicine.
8. One day, the high temperature was  $84^{\circ}\text{F}$  and the low temperature was  $68^{\circ}\text{F}$ . Write a compound inequality to show the day's temperatures( $x$ ).

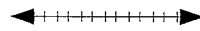
## Absolute Value Equations

Solve for  $x$  and graph the two solutions.

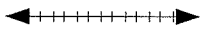
1.  $|x| = 3$



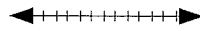
2.  $|x| = 5$



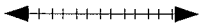
3.  $|4x| = 12$



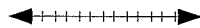
4.  $\left|\frac{1}{2}x\right| = 7$



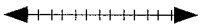
5.  $|x - 5| = 3$



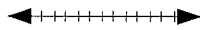
6.  $|9 - x| = 2$



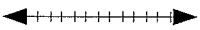
7.  $|2 - x| = 4$



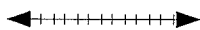
8.  $|x + 7| = 9$



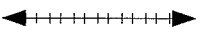
9.  $|x - 3| = 4$



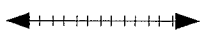
10.  $|x + 2| = 7$



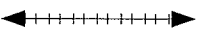
11.  $|4x - 2| = 22$



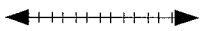
12.  $|2x + 5| = 3$



13.  $|6x - 4| = 9$



14.  $|3x - 5| = 22$

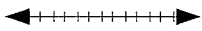


15. For problems 5 to 10 explain the relationship of the problem and solution to the graph or “How could you make a graph by looking at the problem and not working out the solution?”

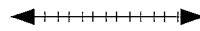
## Absolute Value Inequalities

Solve each inequality and make a number line graph for each set of solutions.

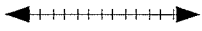
1)  $|x| < 3$



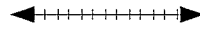
2)  $|x| > 5$



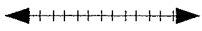
3)  $|x + 5| < 3$



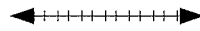
4)  $|x - 4| > 7$



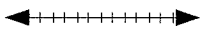
5)  $|7x| < 21$



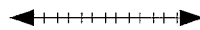
6)  $|8x| > 20$



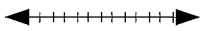
7)  $|2x - 9| < 11$



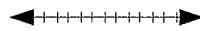
8)  $|4x + 2| > 6$



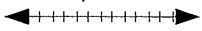
9)  $|32x - 16| < 32$



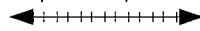
10)  $|2x + 7| > 19$



11)  $|8x - 10| < 6$



12)  $|4x - 3| > 7$



13) What is the same in every odd problem?

14) What is the same in every even problem?

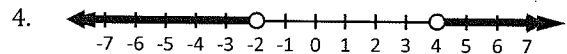
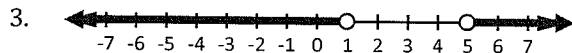
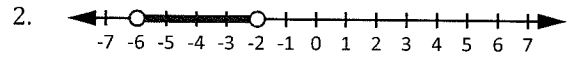
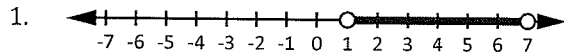
15) What is the same in every odd graph?

16) What is the same in every even graph?

17) How can you look at a graph and know what kind of absolute value inequality it describes.

## Applying Absolute Values Inequalities

Write an absolute value inequality for each graph:



- Proper pool maintenance recommends that the pH( $x$ ) level of swimming water range no more than  $\pm 0.2$  from the ideal 7.4. Write an absolute value inequality to show the pH levels that are within the recommended range. Graph the solutions.
- An iguana needs to live in a consistently warm environment. The temperature in a pet iguana's cage should range no more than  $13^\circ$  from a balmy  $83^\circ\text{C}$ . Write an absolute value inequality to show the temperatures( $x$ ) that are within the recommended range. Graph the solutions.
- Earth's atmosphere is made of several layers. A layer called the stratosphere extends 10 miles either side of and altitude of 20 miles. Write an absolute value inequality representing the altitudes( $x$ ) that are within the range of the stratosphere. Graph the solutions.
- The cruise-control function on Georgina's car should keep the speed of the car within 3 mi/hr of the set speed. Write an absolute value inequality to show the acceptable speeds( $x$ ) if the set speed is 55 mi/hr.. Graph the solutions.
- The ball used in a soccer game weigh within one ounce of 15 ounces at the start of the match. After  $1\frac{1}{2}$  ounces of air was added to a ball, the ball was approved for use in a game. Write and solve a compound inequality to show how many ounces( $x$ ) the ball might have weighed before the air was added.
- Water is not a liquid if its temperature is more than  $50^\circ$  from  $50^\circ\text{C}$ . Write an absolute value inequality for the temperatures( $x$ ) when water is not a liquid.