Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Block:\_\_\_\_\_\_\_\_ Topic:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*Starter: Page 3 in yesterday’s packet\*

Review:

Notes:

When you divide or multiply a negative number out, you must remember to \_\_\_\_\_\_\_\_\_\_\_\_\_ the inequality sign.

Ex 1: Solve: $ 4y-3<5y+2.$ Graph the solution set on a number line.

Ex 2: Solve: $ 12< -4(3x-6)$ . Graph the solution set on a number line.

Ex 3: Solve: $-x> \frac{x-7}{2}$ . Graph the solution set on a number line.



Ex 4: Solve: $-4c \leq \frac{5c + 58}{6}$ . Graph the solution set on a number line.

Write the equation from a graph:

Ex5:

 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Ex6:

 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Ex7:

Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Compound Inequalities: AND OR**

**AND**:





**OR**:

Directions: Solve the following inequalities, then graph the solution.



Ex8:



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex9: $8<3y-7 \leq 23$



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex10: $k +6< -4 or 3k \geq 12$

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice!**

**1.** 7*f* – 9 > 3*f* – 1

**3.** 7*t* – (*t* – 4) ≤ 25

****2.** –3*k* – 8 ≤ 5*k*

**4.** 4(5*x* + 7) ≤ 13

**Solve each inequality. Graph the solution set on a number line.**

1. 2*c* + 1 > 5 or *c* < 0



1. –11 ≤ 4*y* – 3 ≤ 1
2. 10 > –5*x* > 5 



1. 4*a* ≥ –8 or *a* < –3

Starters:

1. Solve:  2. Solve for x: 

Notes:

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a number is its distance from 0 on a number line. Since distance is nonnegative, the absolute value of a number is always nonnegative.

The symbol \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used to represent the absolute value of a number$ x$ .

When evaluating expressions that involve absolute value, the bars act as a grouping symbol. Perform any operation inside the absolute bars first.

*Ex 1:* *Your Turn!*

 Evaluate: $2.7+ \left|6 - 2x\right|$ if $x=4.$ Evaluate the following expression $-\left|abc\right|$ if:

 $a= -3, b=-5 and c= -\frac{1}{2}$

**How to you solve Absolute Value *Equations*?**

Ex: |3x – 2| + 8 = 1

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Directions: Solve each absolute value equations. Check your solutions.

1. $\left|x+12\right|=9$ 2.) $ 6\left|5x+2\right|=312$

 3.) $3\left|x+2\right|-7=14$ 4.) $3|2x – 3| - 5 = 4$

Notes:

Because the absolute value of a number is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , an equation like $\left|x\right|=-4$ is never \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Therefore, it has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The solution set for this type of equation is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, symbolized by \_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_.

Ex 1: Solve: $\left|3x-2\right|+8=1$

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes:

It is possible for an absolute value equation to have only \_\_\_\_\_\_\_\_\_\_ solution. Even if the correct procedure is used for solving the equation, the answers may not be actual solutions to the original equation. Such a number is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is why it is very important to check your answers.

Directions: Solve the following absolute value equations and check your solutions.

1. $\left|x+10\right|=4x-8$ 2.) $2\left|x+1\right|-x=3x-4$

Directions: Solve the following absolute value equations and check your solutions.

 3.) $3\left|2x+2\right|-2x=x+3$ 4.) $2\left|3x-4\right|+8=6$

**Recap:**

1. What is an absolute value equation and how do solve an absolute value equation?
2. What does it mean to have an empty set?
3. What are the symbols for an empty set?
4. Give an example of an absolute value equation that would have no solution.
5. What is an extraneous solution?

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_\_

**Practice!**

**Evaluate each expression if *a* = –1, *b* = –8, *c* = 5, and *d* = –1.4.**

 **1.** |6*a*| **2.** |2*b* + 4|

 **3.** –|10*d* + *a*| **4.** |17*c*| + |3*b* – 5|

 **5.** –6|10*a* – 12| **6.** |2*b* – 1| – |–8*b* + 5|

**Solve each equation. Check your solutions.**

**7.** |*n* – 4| = 13 **8.** 7|*x* + 3| = 42

**9.** |3*u* – 6| = 42 **10.** |5*x* – 4| = –6

**11.** –6|5 – 2*y*| = –9 **12.** |4*w* – 1| = 5*w* + 37

**13.** 4|2*y* – 7| + 5 = 9 **14.** –2|7 – 3*y*| – 6 = –14

**15.** 2|4 – *n*| = –3*n* **16.** 5 – 3|2 + 2*w*| = –7

**17.** 5|2*r* + 3| – 5 = 0 **18.** 3 – 5|2*d* – 3| = 4

Starters:

1. 

2. 

3. ****

Notes: To **solve absolute value inequality equation (ex: |x + 2| > 5)**, it is the same way you would solve absolute value equation (ex: |x + 2| = 5) but when you write your second equation, you need to flip the inequality sign.

Directions: Solve the following absolute value inequalities, then graph the solution.

1.)



2.) $-3\left|5x+8\right|+7 \geq 1$



3.)

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_\_

**Practice**

Directions: Solve the following absolute value inequalities, then graph the solution.

1.) $\frac{5-3x}{4} \geq 2 or -2\left(\frac{1}{3}x+5\right)< -14$

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.)



