



Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 11, Monday

Notebook Check

EQ: \_\_\_\_\_

New Table of Contents  
on page 99



Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

# What is the difference between an equation and an inequality?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 11, Tuesday



Solve Inequalities

EQ: \_\_\_\_\_

New Table of Contents  
on page 99



101

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

$$\text{Bear} + \text{Fox} + \text{Fox} = 17$$

$$\text{Frog} + \text{Frog} + 3 = 13$$

$$\text{Frog} + \text{Monkey} = 9$$

$$\text{Monkey} + \text{Fox} = 14$$

$$\text{Bear} = ?$$

Icons provided by emoji.com

$$2 \text{ Tigers} = 1 \text{ Rabbit}$$

$$1 \text{ Honey Pot} - 1 \text{ Rabbit} = 3$$

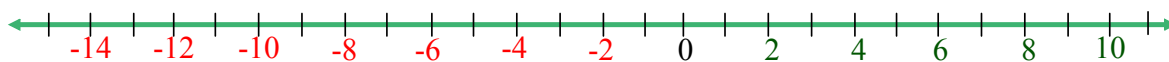
$$8 - 1 \text{ Honey Pot} = 1 \text{ Honey Pot}$$

$$1 \text{ Honey Pot} + 1 \text{ Donkey} = 12$$

$$1 \text{ Tiger} + 1 \text{ Rabbit} + 1 \text{ Donkey} + 1 \text{ Tiger} = ?$$

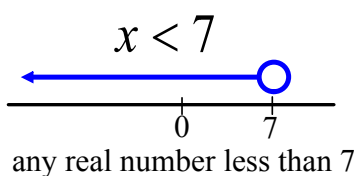
## Solving Linear Inequalities

Which numbers, multiplied by 2 are less than 14?



$$2x < 14$$

$$\frac{2x}{2} < \frac{14}{2}$$



$$\{x \mid x < 7\}$$

all x's such that x is less than 7

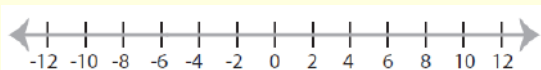
{Interval Notation}

$$(-\infty, 7)$$

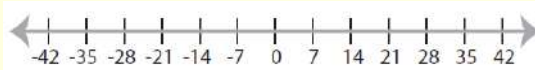
$$3x - 5 \geq 10$$

Summary:

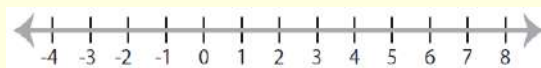
ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity



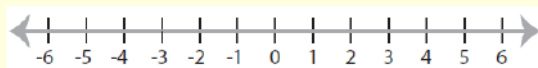
1)  $x - 2 > 4$



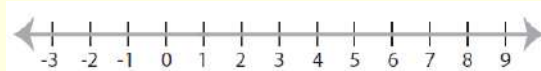
2)  $\frac{x}{3} \leq 7$



3)  $6x < 30$



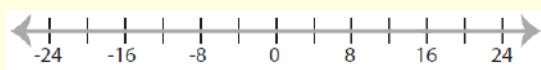
4)  $x + 9 \geq 11$



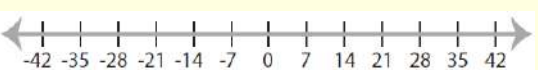
5)  $9 + 3x > 12$



6)  $3x - 4 \leq 5$



7)  $\frac{x}{8} + 1 < 3$

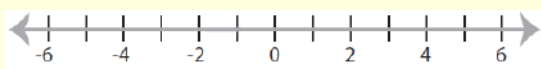


8)  $2x + 5 \geq 19$

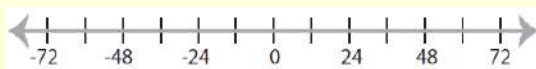
ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

# Algebra 1 – Week 11

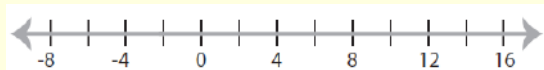
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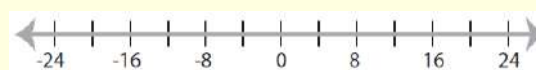
$$1) 6x - 4 < -10$$



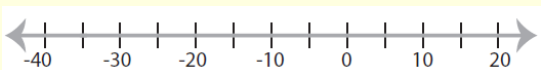
$$2) 17 \leq \frac{x}{2} + 11$$



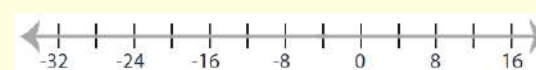
$$3) -4x - 7 > 1$$



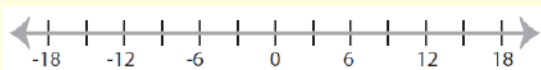
$$4) 8 \leq -2x + 16$$



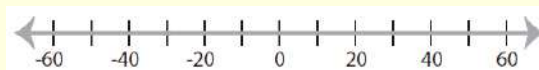
$$5) -9 < \frac{x}{5} - 2$$



$$6) -6x + 20 \geq -11x$$



$$7) -1 > 5x - 16$$



$$8) -7 \leq \frac{x+2}{4}$$

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

# Algebra 1 – Week 11

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

1)  $x + 5 \leq 2$

2)  $4x \geq 40$

3)  $x - 9 > 2$

4)  $\frac{x}{4} < 4$

5)  $2x \geq 10$

6)  $12 + x \leq 14$

7)  $x - 7 < 15$

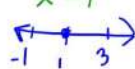
8)  $x + 9 \leq 1$


9)  $\frac{x}{3} > 6$

10)  $3x \geq 21$

Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure

**HOW DO THE EQUATION & INEQUALITY COMPARE?**

$$\begin{aligned}
 5 + 4x - 8 &= 12x - 11 \\
 -3 + 4x &= 12x - 11 \\
 -4x &-4x \\
 -3 &= 8x - 11 \\
 +11 &+11 \\
 \frac{8}{8} &= \frac{8x}{8} \\
 1 &= x \\
 x &= 1
 \end{aligned}$$


$$\begin{aligned}
 5 + 4x - 8 &< 12x - 11 \\
 -3 + 4x &< 12x - 11 \\
 -4x &-4x \\
 -3 &< 8x - 11 \\
 +11 &+11 \\
 \frac{8}{8} &< \frac{8x}{8} \\
 1 &< x \\
 x &> 1
 \end{aligned}$$


Left Side...

What is the difference between an equation and an inequality?

Right Side...



# What does the solution to a linear inequality tell us?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

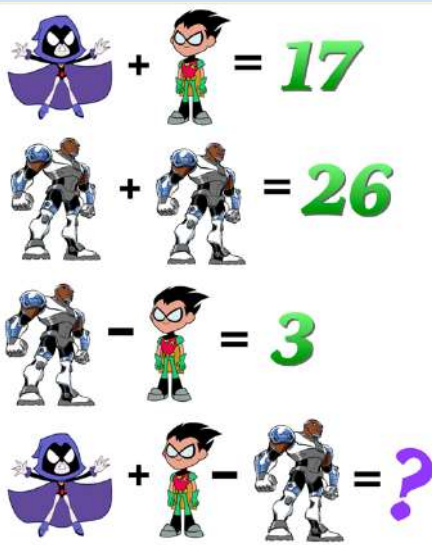
Week 11, Wednesday

Solving Inequalities

EQ: \_\_\_\_\_

103

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up



$\text{Raven} + \text{Robin} = 17$

$\text{Cyborg} + \text{Cyborg} = 26$

$\text{Cyborg} - \text{Robin} = 3$

$\text{Raven} + \text{Robin} - \text{Cyborg} = ?$

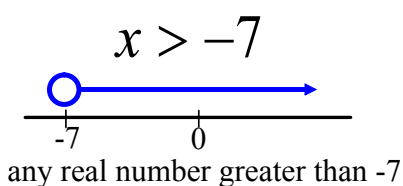
## Solving Linear Inequalities

Which numbers, multiplied by negative 2 are less than 14?



$$-2x < 14$$

$$\frac{-2x}{-2} < \frac{14}{-2}$$



$$\{x \mid x > -7\}$$

all x's such that x is greater than negative 7

{Interval Notation}

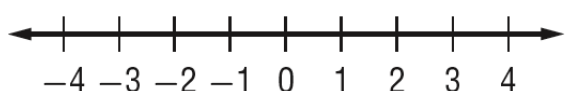
$$(-7, +\infty)$$

$$-3x - 8 \geq 10$$

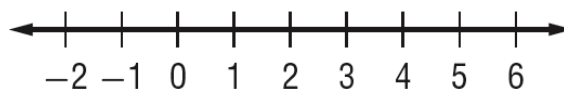
Summary:

**ICA:** Solve each inequality.

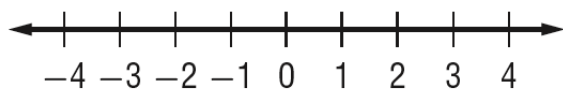
**1.**  $8x - 6 \geq 10$



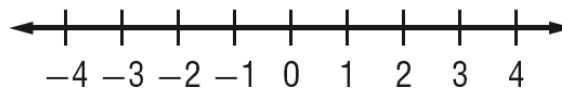
**2.**  $23 - 4u < 11$



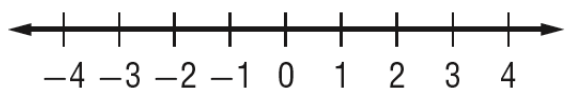
**3.**  $-16 - 8r \geq 0$



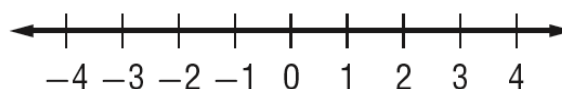
**4.**  $14s < 9s + 5$



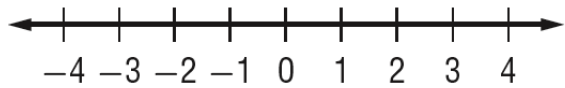
**5.**  $9x - 11 > 6x - 9$



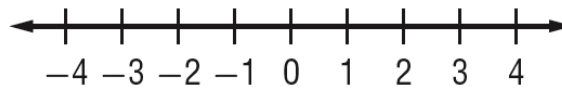
**6.**  $-3(4w - 1) > 18$



**7.**  $1 - 8u \leq 3u - 10$

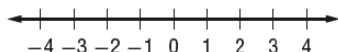


**8.**  $17.5 < 19 - 2.5x$

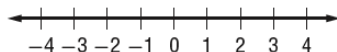


**Solve each inequality. Then graph the solution set on a number line.**

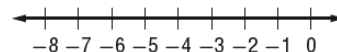
1.  $7(7a - 9) \leq 84$



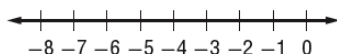
2.  $3(9z + 4) > 35z - 4$



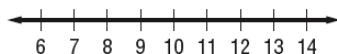
3.  $5(12 - 3n) < 165$



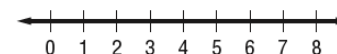
4.  $18 - 4k < 2(k + 21)$



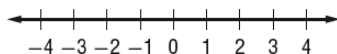
5.  $4(b - 7) + 6 < 22$



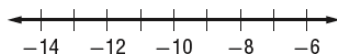
6.  $2 + 3(m + 5) \geq 4(m + 3)$



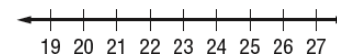
7.  $4x - 2 > -7(4x - 2)$



8.  $\frac{1}{3}(2y - 3) > y + 2$



9.  $2.5d + 15 \leq 75$



Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure

Equation - uses an equal sign;  
typically *only one solution*

Inequality - uses an inequality symbol;  
*infinite amount of solutions*

Left Side...

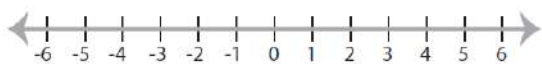
What does  
the solution  
to a linear  
inequality tell  
us?

Right Side...

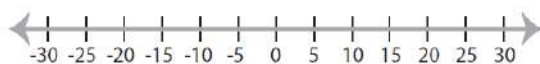
**Solving & Graphing Inequalities**

Solve each inequality and graph the solution.

1)  $2(6x - 5) < 14$



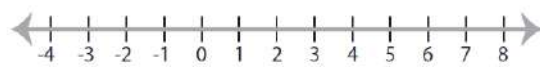
2)  $\frac{3x - 8}{7} > 1$



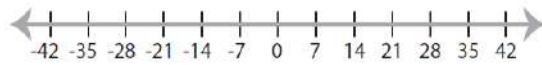
3)  $\frac{7x + 1}{3} \geq 5$



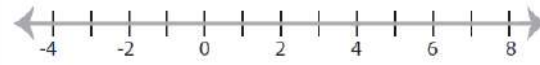
4)  $4(5x + 2) \leq 28$



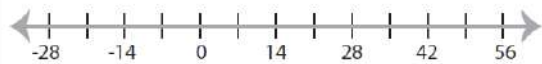
5)  $\frac{9x}{7} - x < 2$



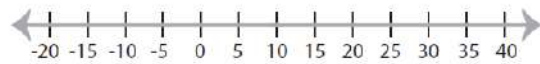
6)  $\frac{4x + 8}{2} \leq 12$



7)  $\frac{5(x - 2)}{10} > 6$



8)  $3 + \frac{2x}{5} \geq 17 - x$



# What does the solution of a compound inequality look like?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 11, Thursday



Compound Inequalities

EQ: \_\_\_\_\_

105

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up



$\text{KitKat} + \text{Candy} = 20$

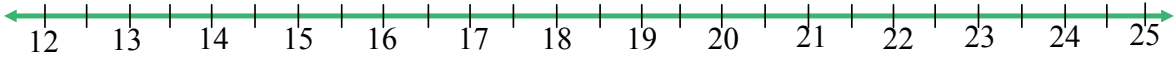
$2 \text{ Reese's} = 12$

$\text{Reese's} + \text{Candy} = 10$

$\text{KitKat} = ?$   
 $\text{Candy} = ?$   
 $\text{Reese's} = ?$

## Compound Inequalities

The recipe for baking cookies states that the cookies must be baked between 16-20 minutes at 350 degrees.

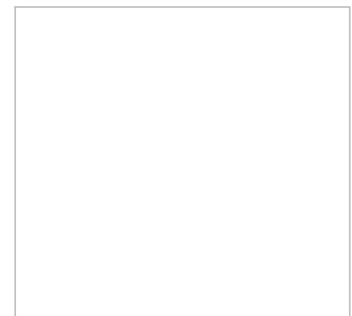
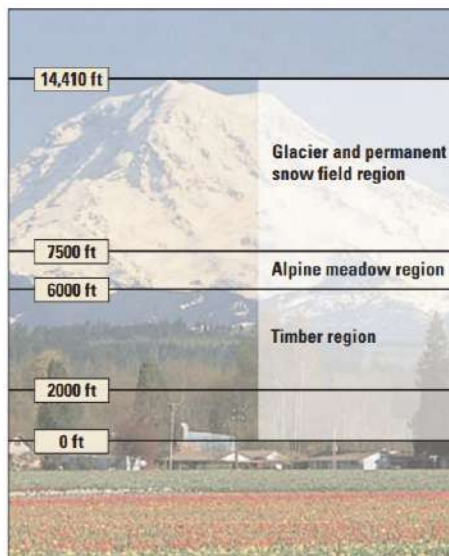


After the test, students were asked to report to tutoring based on their scores. Students who scored a 90% or higher reported to room A, those who scored below 60% reported to room B.



Write an inequality that describes the elevations of the regions of Mount Rainier.

- a. Timber region below 6000 ft
- b. Alpine meadow region below 7500 ft
- c. Glacier and permanent snow field region





Notes Notes

## Compound Inequalities

Solving a Compound Inequality with **AND**

$$-2 \leq 3x - 8 \leq 10 \qquad -2 \leq 3x - 8 \quad \text{and} \quad 3x - 8 \leq 10$$

Solving a Compound Inequality with **OR**

$$3x + 1 < 4 \quad \text{or} \quad 2x - 5 > 7$$

Summary:

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

$$2x - 5 < -11 \text{ or } 5x + 1 \geq 6$$

$$5x - 7 \geq 3 \text{ and } 4x - 8 \leq 0$$

$$2x - 5 < -11 \text{ or } 5x + 1 \geq 6$$

$$x + 3 < 7 \text{ and } x - 2 < -3$$

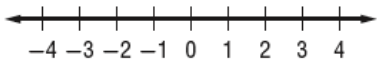
$$3x + 4 \leq 16 \text{ or } 2x - 18 > 20$$

$$x - 3 > -5 \text{ and } 2x + 4 < 8$$

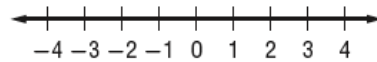
ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

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

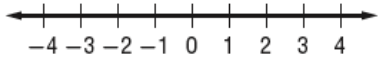
9.  $2c + 1 > 5$  or  $c < 0$



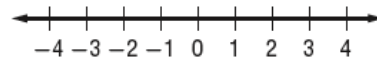
10.  $-11 \leq 4y - 3 \leq 1$



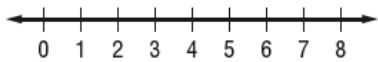
11.  $10 > -5x > 5$



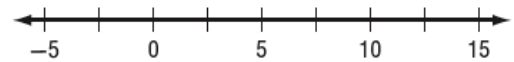
12.  $4a \geq -8$  or  $a < -3$



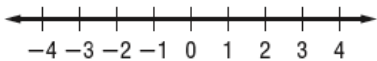
13.  $8 < 3x + 2 \leq 23$



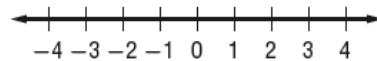
14.  $w - 4 \leq 10$  or  $-2w \leq 6$



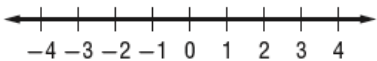
15.  $|t| \geq 3$



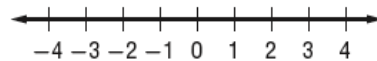
16.  $|6x| < 12$



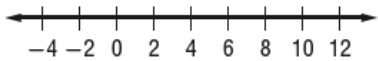
17.  $|-7r| > 14$



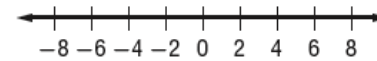
18.  $|p + 2| \leq -2$



19.  $|n - 5| < 7$

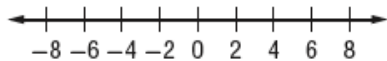


20.  $|h + 1| \geq 5$

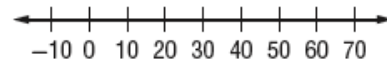


Solve each inequality. Graph the solution set on a number line.

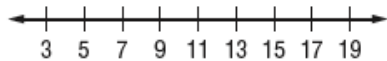
1.  $-10 < 3x + 2 \leq 14$



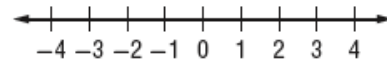
2.  $3a + 8 < 23$  or  $\frac{1}{4}a - 6 > 7$



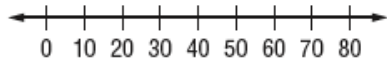
3.  $18 < 4x - 10 < 50$



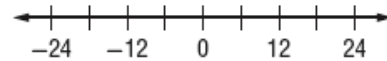
4.  $5k + 2 < -13$  or  $8k - 1 > 19$



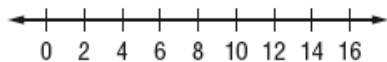
5.  $100 \leq 5y - 45 \leq 225$



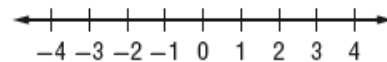
6.  $\frac{2}{3}b - 2 > 10$  or  $\frac{3}{4}b + 5 < -4$



7.  $22 < 6w - 2 < 82$

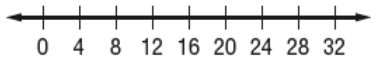


8.  $4d - 1 > -9$  or  $2d + 5 < 11$

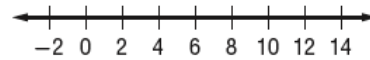


**Solve each inequality. Graph the solution set on a number line.**

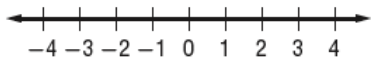
5.  $-8 \leq 3y - 20 < 52$



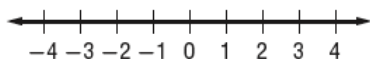
6.  $3(5x - 2) < 24$  or  $6x - 4 > 4 + 5x$



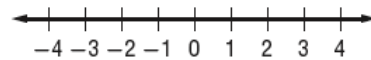
7.  $2x - 3 > 15$  or  $3 - 7x < 17$



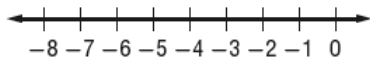
8.  $15 - 5x \leq 0$  and  $5x + 6 \geq -14$



9.  $|2w| \geq 5$



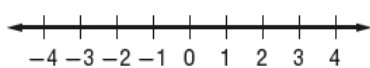
10.  $|y + 5| < 2$



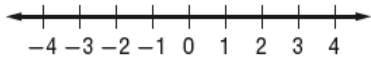
11.  $|x - 8| \geq 3$



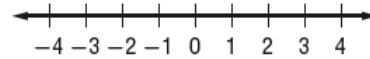
12.  $|2z - 2| \leq 3$



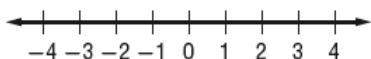
13.  $|2x + 2| - 7 \leq -5$



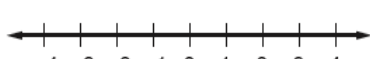
14.  $|x| > x - 1$



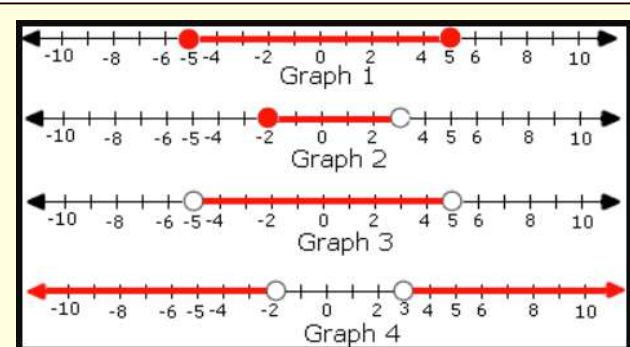
15.  $|3b + 5| \leq -2$



16.  $|3n - 2| - 2 < 1$



Closure Closure



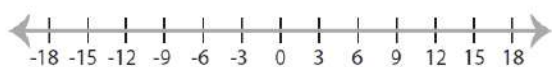
Left Side...

What does the solution of a compound inequality look like?

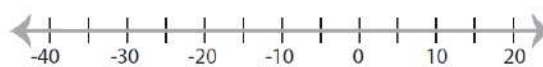
Right Side...

Solve each problem and graph the solutions.

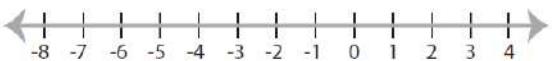
1)  $x + 9 > 6$  or  $x - 1 \leq -10$



2)  $x - 2 \leq 3$  and  $\frac{x}{7} > -5$



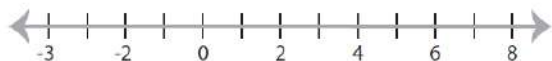
3)  $4x < 8$  and  $\frac{x}{3} \leq -2$



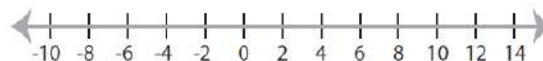
4)  $x + 11 > 9$  or  $8x \geq -24$



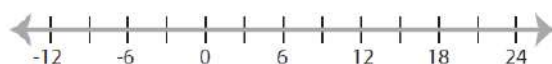
5)  $\frac{x}{2} \leq 1$  or  $x + 9 > 14$



6)  $-4 < 2x \leq 16$



7)  $3 \leq x - 6 < 12$



8)  $x + 12 \geq 5$  and  $\frac{x}{2} > 7$



What is the difference between graphing an equation and graphing an inequality?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 11, Friday



Graphing Inequalities

EQ: \_\_\_\_\_

107

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

$3 \text{ DK} = 36$

$1 \text{ DK} + 2 \text{ Bananas} = 28$

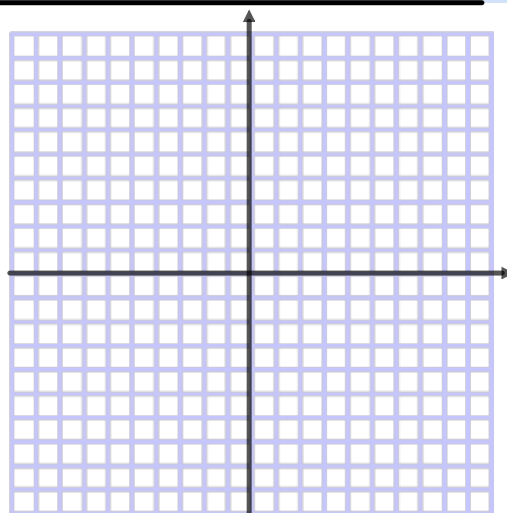
$2 \text{ Bananas} - 1 \text{ DK} = 4$

$1 \text{ DK} + 1 \text{ Banana} + 1 \text{ DK} = ?$



## Graphing Linear Inequalities

$$5x - 4y > 20$$



Algorithm:

1. Graph the line (using any method)  
< and > are dotted lines  
 $\leq$  and  $\geq$  are solid lines
2. Determine which side of the line should be shaded.  
if the inequality is  $y >$ , shade up the y-axis,  
if the inequality is  $y <$ , shade down the y-axis.

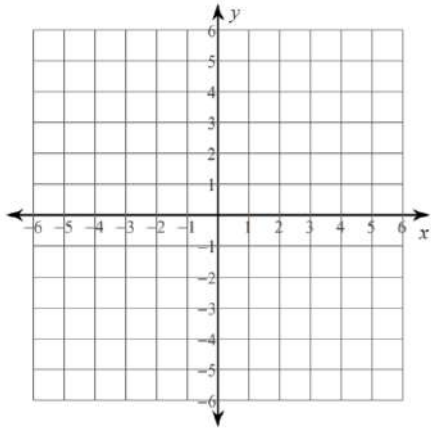
Summary:

# Algebra 1 – Week 11

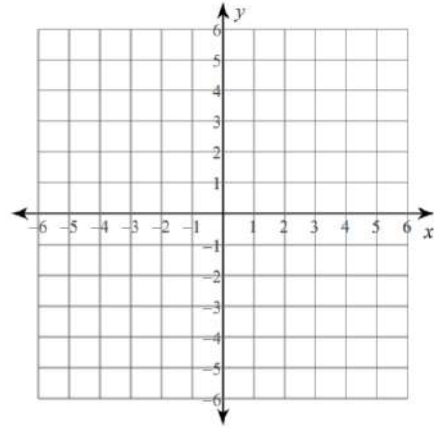
ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

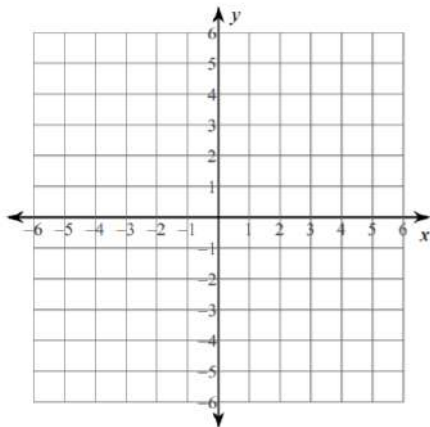
1)  $y \geq -3x + 4$



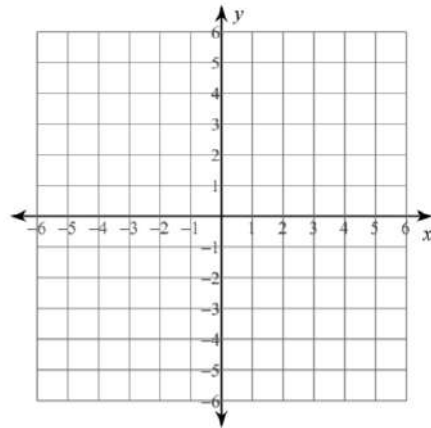
2)  $y \leq \frac{3}{5}x - 5$



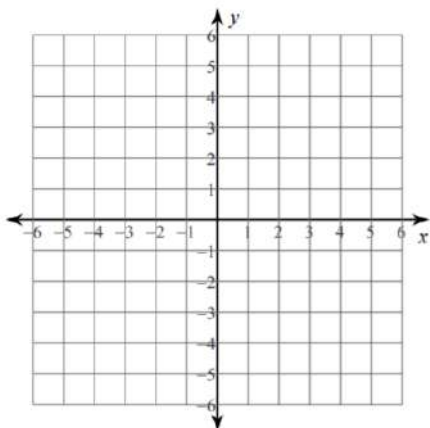
3)  $y > -x - 5$



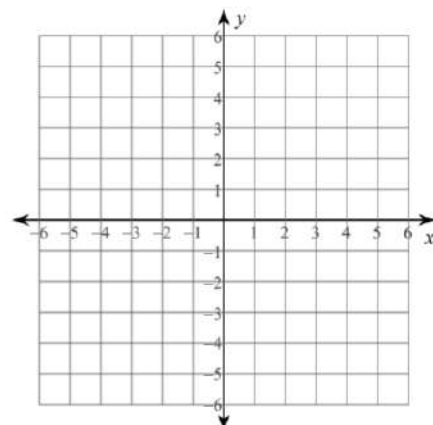
4)  $y > -4$



5)  $y > 2x - 5$



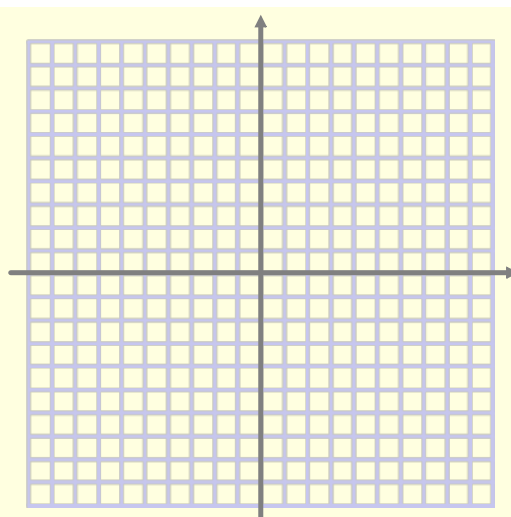
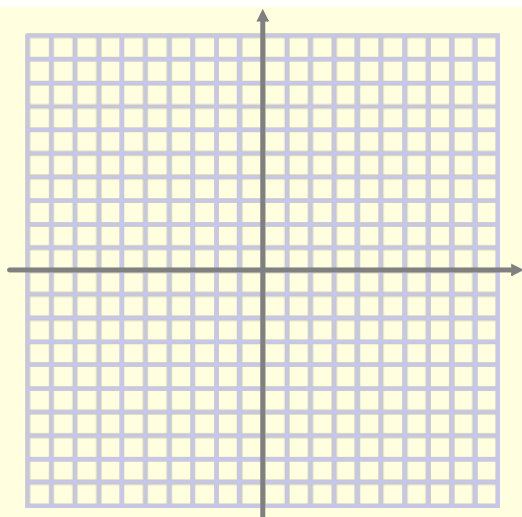
6)  $y \geq \frac{7}{4}x + 2$



**ICA:** Graph each inequality.

1)  $y > -2x + 4$

2)  $y > -3x + 2$



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ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

**ICA:** Graph each inequality.

3)  $y < \frac{2}{3}x - 2$

4)  $y < \frac{3}{4}x - 3$

5)  $y \geq -\frac{5}{3}x + 3$

6)  $y \geq -\frac{1}{5}x + 2$

7)  $5y - x \leq 15$

8)  $-2x - y > 1$

### ICA: Graph each inequality

**36.**  $x \geq -4$

**37.**  $x \leq 5$

**38.**  $y > -1$

**39.**  $x - 3 > -2$

**40.**  $y + 6 \leq 5$

**41.**  $6y < 24$

**42.**  $3x + y \geq 9$

**43.**  $y + 4x \geq -1$

**44.**  $x + y > -8$

**45.**  $x + 2y < -10$

**46.**  $x + 6y \leq 12$

**47.**  $4x + 3y < 24$

**48.**  $2x - y > 6$

**49.**  $-y + x \leq 11$

**50.**  $-x - y < 3$

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

**Graphing Linear Equations and Inequalities - Worksheet 6**

Graph each equation on separate axes.

1)  $y = -\frac{1}{4}x - 1$

2)  $y > -\frac{2}{3}x + 1$

3)  $y = -\frac{3}{2}x + 5$

4)  $y < 3x + 1$

5)  $2y - 6x + 4 = 0$

6)  $y > -\frac{1}{2}x + 3$

7)  $5(x - y) = 10 - 3y$

8)  $y < 2x + 4$

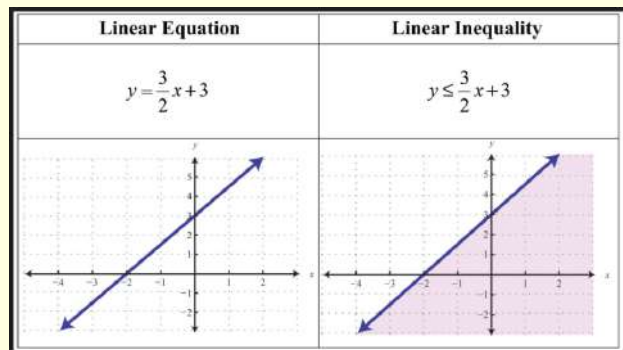
9)  $-3y + 2 = -8y - 13$

10)  $3x + 4y \leq -12$

11)  $5x - 6 = -2x + 8$

12)  $5x + 3y \leq -15$

Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure



Left Side...

What is the difference between graphing an equation and graphing an inequality?

Right Side...

# End of Week 11



Algebra 1



## Attachments

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multi-step-solve-graph-easy1.pdf

compound-solve-graph-one-step1.pdf