Essential Question: How do we solve and graph simple inequalities?
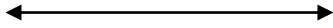
Do Now:

Remember:

An inequality is a statement, using an inequality symbol, that compares two expressions that are **not equal**.

Inequalities

> greater than < less than	○
≥ greater than or equal to ≤ less than or equal to	●

Don't FORGET!

Graph the following inequalities.

	Graph of Solution Set	State a possible solution.
x > 7	←———————→	
x ≤ -6	←———————→	

Think about this…
Are there other ways to describe the solution set to an inequality?

Interval Notation

(means "not included"   ○

[means "included"   ●

Remember: ∞ *and* −∞ always use **(**

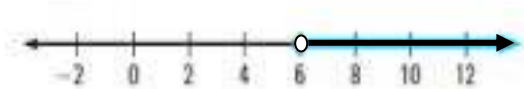Using interval notation, state the solution set of the above inequalities.

Solving Simple Inequalities

$$6x - 7 > 2x + 17$$

$$6x > 2x + 24$$

$$4x > 24$$

$$x > 6$$

A **solution** to an inequality is any value, when replaced by the variable, makes the inequality true.

- Use properties of inequality to solve.

- When *multiplying* or *dividing* both sides of an inequality by a *negative number*, "*flip*" the inequality sign in order to make the statement true.

- Represent the solution set to the inequality on a number line.

Determine the solution set to each inequality, graph on the number line and state the solution in interval notation.

1. $x + 4 \geq 7$

2. $-\dfrac{x}{2} > 11$

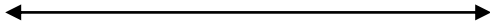# Solving and Graphing Multi-step Inequalities

Determine the solution set to the inequality. Represent the solution set on a number line.
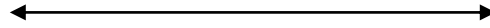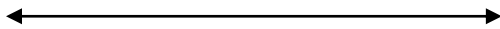
3. $-2x + 3 > 7$

4. $4x - 8 \leq 8x - 4$
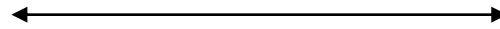
5. $-2(c + 4) - 1 \leq 3$

6. $3y + 7 > 6(y - 2) + 10$

7. $-.01x - .03 > .02 - .01(2x + 4)$

8. $\dfrac{x+2}{3} + \dfrac{5x}{6} \leq \dfrac{1}{2}$

9. $8y + 4 \leq 7y - 2$

10. $4(x - 3) > 2(x - 2)$

11. $6a - 5 < 7a + 4$

12. $13x \leq 9(1 - x)$