

1.7 Linear Inequalities

- **Solve linear inequalities**
 - Remember if you **multiply or divide** by a **negative** number, **flip** the inequality symbol

LT: Solve linear inequalities

- Solving a linear inequality. Solve & graph the solution set on a number line.

Example 3:

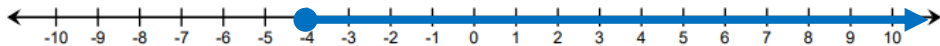
$$3 - 2x \leq 11$$

$$\begin{array}{r} 3 - 2x \leq 11 \\ \underline{-3} \quad \underline{-3} \end{array}$$

$$-2x \leq 8$$

$$\begin{array}{r} -2x \leq 8 \\ \underline{-2} \quad \underline{-2} \end{array}$$

$$x \geq -4$$



Your Turn 3:

$$2 - 3x \leq 5$$

$$\begin{array}{r} 2 - 3x \leq 5 \\ \underline{-2} \quad \underline{-2} \end{array}$$

$$-3x \leq 3$$

$$\begin{array}{r} -3x \leq 3 \\ \underline{-3} \quad \underline{-3} \end{array}$$

$$x \geq -1$$



LT: Solve linear inequalities

- Solving a linear inequality. Solve & graph the solution set on a number line.

Example 4:

$$-2x - 4 > x + 5$$

$$-2x - 4 > x + 5$$

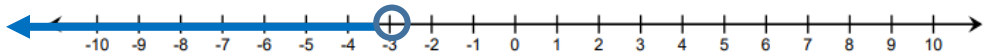
$$\underline{-x \quad -x}$$

$$-3x - 4 > 5$$

$$\underline{+4 \quad +4}$$

$$\frac{-3x}{-3} < \frac{9}{-3}$$

$$x < -3$$



Your Turn 4:

$$3x + 1 > 7x - 15$$

$$3x + 1 > 7x - 15$$

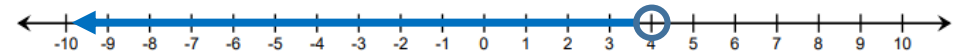
$$\underline{-7x \quad -7x}$$

$$-4x + 1 > -15$$

$$\underline{-1 \quad -1}$$

$$\frac{-4x}{-4} < \frac{-16}{-4}$$

$$x < 4$$



LT: Solve linear inequalities

- Solving a linear inequality. Solve & graph the solution set on a number line.

Example 5:

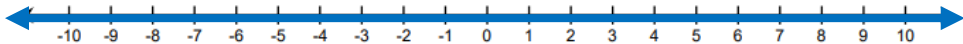
a. $2(x + 4) > 2x + 3$

$$\begin{array}{r} 2x + 8 > 2x + 3 \\ \underline{-2x} \quad \underline{-2x} \end{array}$$

$$8 > 3$$

Since 8 is greater than 3, the inequality is true for all values of x.

The solution is **all real numbers**



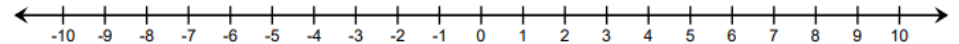
b. $x + 7 \leq x - 2$

$$\begin{array}{r} x + 7 \leq x - 2 \\ \underline{-x} \quad \underline{-x} \end{array}$$

$$7 \leq -2$$

Since 7 is NOT less than -2, the inequality is false for all values of x.

There is **NO SOLUTION**



LT: Solve linear inequalities

- Solving a linear inequality. Solve & graph the solution set on a number line.

Your Turn 5:

a. $3(x + 1) > 3x + 2$

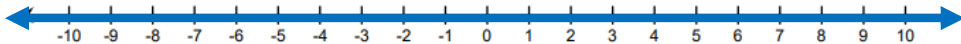
$$3x + 3 > 3x + 2$$

$$\underline{-3x} \quad \underline{-3x}$$

$$3 > 2$$

Since 3 is greater than 2, the inequality is true for all values of x.

The solution is **all real numbers**



b. $x + 1 \leq x - 1$

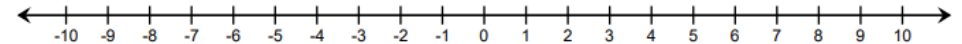
$$x + 1 \leq x - 1$$

$$\underline{-x} \quad \underline{-x}$$

$$1 \leq -1$$

Since 1 is NOT less than -1, the inequality is false for all values of x.

There is **NO SOLUTION**



Change assignment sheet to:

- Pg 175 #27-49 odds

Change Review assignment to:

- Pg 181 #16-34 evens (only solve), 39-47 odds, 58, 59, 61, 63, *use Quadratic Formula on 67-69, 111-116