

An **inequality** is a mathematical comparison of **two expressions**

4 inequality signs

$>$

“greater than”

$\geq$

“greater than
or equal to”

$<$

“less than”

$\leq$

“less than
or equal to”

$$8x + 2 > 6x + 10$$

An **inequality** is a mathematical comparison of **two expressions**

4 inequality signs

$>$

“greater than”

$\geq$

“greater than
or equal to”

$<$

“less than”

$\leq$

“less than
or equal to”

$$8x + 2 \leq 6x + 10$$

To solve an **inequality**, isolate variable on one side of **inequality** sign.

Properties of Equality

Additive Property of Equality

If $a > b$, then $a + c > b + c$

Subtraction Property of Equality

If $a > b$, then $a - c > b - c$

Multiplication Property of Equality

If $a > b$, then $a \cdot c > b \cdot c$

Division Property of Equality

If $a > b$, then $a \div c > b \div c$

****If we ever multiply or divide by a negative number, we must flip the inequality sign.****

To solve an **inequality**, isolate variable on one side of **inequality** sign.

To graph an **inequality**...

for **shading**...

$x >$ or $x \geq \Rightarrow$ shade to the **right**

$x <$ or $x \leq \Rightarrow$ shade to the **left**

for the **coordinate**...

$x >$ or $x < \Rightarrow$ **open circle**

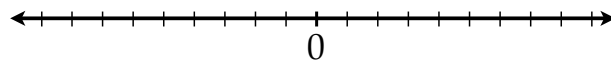
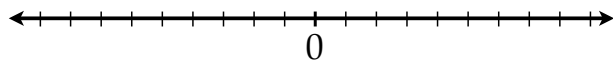
$x \geq$ or $x \leq \Rightarrow$ **closed circle**

****If we ever multiply or divide by a negative number, we must flip the inequality sign.****

Solve and graph the following **inequalities**

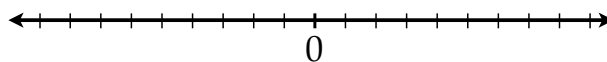
$$3(x + 2) > -9$$

$$x - 3(x + 3) \geq 3$$



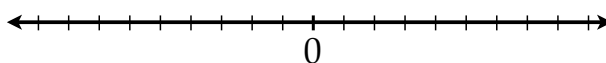
Solve and graph the following **inequalities**

$$3(x - 3) > 5(x - 3)$$



Solve and graph the following **inequalities**

$$2x - 3(x - 1) \geq 6 + 2(x + 3)$$



To solve an **inequality**, isolate variable on one side of **inequality** sign.

Properties of Equality

Additive Property of Equality

If $a > b$, then $a + c > b + c$

Multiplication Property of Equality

If $a > b$, then $a \cdot c > b \cdot c$

Subtraction Property of Equality

If $a > b$, then $a - c > b - c$

Division Property of Equality

If $a > b$, then $a \div c > b \div c$

****If we ever multiply or divide by a negative number, we must flip the inequality sign.****

To solve an **inequality**, isolate variable on one side of **inequality** sign.

To graph an **inequality**...

for **shading**...

$x >$ or $x \geq \Rightarrow$ shade to the **right**

$x <$ or $x \leq \Rightarrow$ shade to the **left**

for the **coordinate**...

$x >$ or $x < \Rightarrow$ **open circle**

$x \geq$ or $x \leq \Rightarrow$ **closed circle**

Set Notation

$\{x \mid x \geq -3\}$

Interval Notation

$[-3, \infty)$