Section 2.7b: Solving Linear Inequalities

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"I can solve inequalities."

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Recall...

Addition Property of Equality

If $a = b$

Then $a + c = b + c$

Subtraction Property of Equality

If $a = b$

Then $a - c = b - c$

Likewise...

Addition Property of Inequality

If	$a < b$	If	$a > b$
Then	$a + c < b + c$	Then	$a + c > b + c$

Subtraction Property of Inequality

If	$a < b$	If	$a > b$
Then	$a - c < b - c$	Then	$a - c > b - c$

We Try 1:

Example

Solve the inequality, and write the solution in interval notation.

$$x + 5 > 9$$

You Try 1:

You Try 1

Solve the inequality, and write the solution in interval notation.

$$p - \frac{3}{4} > \frac{1}{6}$$

We Try 2:

Example

Solve the inequality, graph the solution on the number line and write the solution in interval notation.

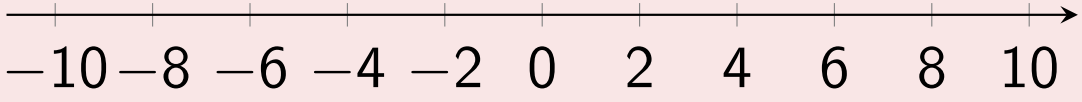
$$n - \frac{1}{2} \leq \frac{5}{8}$$

You Try 2:

You Try 2

Solve the inequality, graph the solution on the number line and write the solution in interval notation.

$$n - \frac{1}{2} \leq \frac{7}{8}$$



Recall...

Multiplication Property of Equality

If $a = b$

Then $ac = bc$

Division Property of Equality

If $a = b$

Then $\frac{a}{c} = bc$

Positive c

Let $c = 5$

Division

$10 < 15$

Multiplication

$10 < 15$

Negative c

Let $c = -5$

Division

$10 < 15$

Multiplication

$10 < 15$

The Takeaway

Remember

When we divide or multiply an inequality by a:

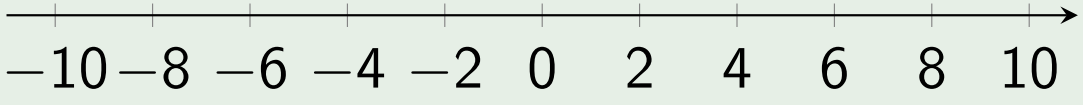
- **positive** number, the inequality stays the **same**.
- **negative** number, the inequality **reverses**.

We Try 3

Example

Solve the inequality, graph the solution on the number line, and write the solution in interval notation.

$$7y < 42$$



You Try 3

You Try 3

Solve the inequality, graph the solution on the number line, and write the solution in interval notation.

$$-7r \leq -70$$