

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Symbols and solution graphs

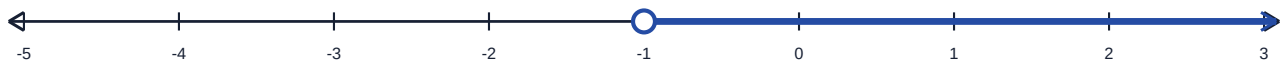
An inequality compares quantities. Open circles exclude an endpoint; filled circles include it.

$$x < 4$$



Strict inequalities use an open endpoint.

$$x > -1$$



Strict inequalities use an open endpoint.

$$x \leq 3$$



Inclusive inequalities use a filled endpoint.

$$x \geq -2$$



Inclusive inequalities use a filled endpoint.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Addition property

Adding the same value to both sides preserves the solution set.

$$x < 7$$

Begin with x less than 7.

$$x + 5 < 12$$

Add 5 to both sides; the direction stays the same.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Subtraction property

Subtracting the same value from both sides preserves the inequality direction.

$$x \geq 9$$

Begin with x greater than or equal to 9.

$$x - 3 \geq 6$$

Subtract 3 from both sides; the direction stays the same.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Multiplication property

Positive factors preserve direction. Negative factors reverse direction.

$$x < 4$$

Begin with x less than 4.

$$3x < 12$$

Multiply both sides by 3; the direction stays the same.

$$-2x > -8$$

Multiply both sides by negative 2; reverse the direction.

Never omit the reversal with a negative multiplier.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Division property

A positive nonzero divisor preserves direction. A negative divisor reverses direction.

$$6x > 18$$

Begin with 6x greater than 18.

$$3x > 9$$

Divide both sides by 2; the direction stays the same.

$$-2x < -6$$

Divide both sides by negative 3; reverse the direction.

Division by zero is undefined.

Math Sheet

Name _____ Score _____ Teacher _____ Date _____

Inequalities Reference

Use these examples to connect inequality symbols, operations, and number-line graphs.

Transitive and comparison properties

Chain comparisons when their directions connect consistently.

$$2 < 5$$

Two is less than five, and five is less than nine, so two is less than nine.

$$5 < 9$$

The two comparisons form one increasing chain.

$$x + 3 > x$$

Adding a positive number makes a quantity greater.