Inequalities

6th Grade

Solving works like an equation, with one rule that catches everyone out.

Solve an inequality exactly like an equation — except that multiplying or dividing by a negative flips the direction of the sign.

$$-2x > 8 \rightarrow x < -4$$

$x + 3 > 7$ → **$x > 4$**

Adding and subtracting never flip the sign.

$3x \leq 12$ → **$x \leq 4$**

Dividing by a positive does not flip it either.

$-2x > 8$ → **$x < -4$**

Divided by a negative, so the sign flipped.

Graphing it — **open or closed circle**

< and > get an open circle; ≤ and ≥ get a filled one.

THE COMMON MISTAKE

× $-2x > 8 \rightarrow x > -4$

✓ $-2x > 8 \rightarrow x < -4$

Multiplying or dividing by a negative reverses the order of every number, so the sign must flip.

Test your answer with an actual number. Put $x = -5$ into $-2x > 8$ and check it works.