Guide to:
Solving inequalities

maths Links

Explanation:

Solve linear inequalities using the exact same inverse operations as linear equations, keeping the inequality sign (**<, >, ≤, ≥**) in the middle instead of an equals sign. Never replace the inequality sign with an **=** sign in your final answer!

Crucial rule: if you multiply or divide both sides by a **negative number**, you must **flip the inequality sign** around (or avoid negative x terms altogether by adding the negative x term to the other side).

Example 1: Solve $5x - 7 > 2x + 8$

Solution:

Subtract $2x$ from both sides: $3x - 7 > 8$
Add 7 to both sides: $3x > 15$
Divide both sides by 3: $x > 5$
Answer: $x > 5$

Example 2: Solve the double inequality $-5 \leq 3x + 4 < 19$ and state the largest integer x can be.

Solution:

Subtract 4 from all three parts: $-9 \leq 3x < 15$
Divide all three parts by 3: $-3 \leq x < 5$
Since $x < 5$, the largest integer is **4**.
Answer: $-3 \leq x < 5$; largest integer = 4

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