Solving One-Step Inequalities

Algebra 1 •Section 3.1

Name: _____	Date: _____	Score: _____ / 12

Quick Review and Helpful Hints

Inequalities solve almost like equations, but dividing or multiplying by a negative reverses the sign. For absolute value, think distance: less-than makes a band, while greater-than usually splits into two rays.

▷ **Example:** Solve $-2x + 5 < 13$.
Work: Subtract 5 to get $-2x < 8$. Divide by -2 and reverse the inequality: $x > -4$.

★ **Answer:** $x > -4$

Practice Problems

Solve each problem. Show enough work that another student could follow your thinking.

1. Solve $x + 6 > 14$.

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2. Solve $y - 9 \leq 3$.

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3. Solve $4m < 28$.

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4. Solve $-3p \geq 18$.

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5. Solve $\frac{a}{5} > 6$.

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6. Solve $-x < 10$.

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7. Solve $b + 2.5 \geq 9$.

_____

8. Solve $r - \frac{1}{2} < \frac{3}{4}$.

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9. Solve $12 \leq 2n$.

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10. Solve $-8 > q + 1$.

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Word Problems

11. A bus can hold at most 48 passengers. Write an inequality for passengers p.

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12. A player needs more than 25 points to advance. Write an inequality.

_____

Answer Keys

1. $x > 8$
2. $y \leq 12$
3. $m < 7$
4. $p \leq -6$
5. $a > 30$
6. $x > -10$
7. $b \geq 6.5$
8. $r < \frac{5}{4}$
9. $n \geq 6$
10. $q < -9$
11. $p \leq 48$
12. $p > 25$

Step-by-Step Explanations

1. Just lift the $+6$ off both sides; no sign worries here since you're only subtracting.
2. Add 9 back to both sides to undo the subtraction — the $\leq$ happily stays as is.
3. Dividing by the positive 4 keeps everything pointing the same way, so $m < 7$.
4. This is the classic flip: dividing by -3 turns $\geq$ around into $\leq$.
5. Multiply both sides by 5, a positive number, so the inequality direction is safe.
6. Multiplying through by -1 to free x reverses the sign — $<$ becomes $>$.
7. Take 2.5 off both sides; subtraction never disturbs the inequality, so $b \geq 6.5$.
8. Add $\frac{1}{2}$ to each side, and combining the fractions gives $\frac{3}{4} + \frac{1}{2} = \frac{5}{4}$.
9. Split both sides by the positive 2; the relation holds, and reading it back gives $n \geq 6$.
10. Subtract 1 from both sides — flipping it to $q + 1 < -8$ first can make it click.
11. 'At most' sets a ceiling that 48 itself reaches, so p can equal 48 or anything less.
12. 'More than' is strict — scoring exactly 25 isn't enough, so use $>$ rather than $\geq$.

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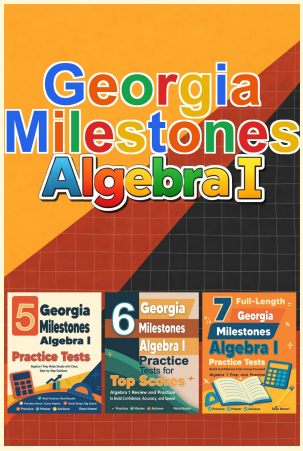

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