

GCSE Maths: Negative numbers, brackets and letters on both sides (Higher): answers

GCSE Maths - Inequalities - Higher - Lesson 10.4

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch10-inequalities/higher/negative-numbers-brackets-and-letters-on-both-sides/

Exercise 10E Negative numbers, brackets and letters on both sides Non-calculator

1 Solve each inequality.

(a) $-2x < 8$

Answer: $x > -4$

(b) $-5x \geq 20$

Answer: $x \leq -4$

(c) $-x + 3 > 1$

Answer: $x < 2$

(d) $-2x + 7 \leq 1$

Answer: $x \geq 3$

(e) $-3x + 10 > 4$

Answer: $x < 2$

(f) $-4x + 1 \geq 13$

Answer: $x \leq -3$

2 Solve each inequality.

(a) $5x + 2 < 3x + 10$

Answer: $x < 4$

(b) $4x - 1 \geq 2x + 9$

Answer: $x \geq 5$

(c) $7x + 3 > 2x + 13$

Answer: $x > 2$

(d) $3x + 5 \leq 5x + 1$

Answer: $x \geq 2$

(e) $2x - 3 < 6x + 5$

Answer: $x > -2$

(f) $8x + 1 \geq 3x - 9$

Answer: $x \geq -2$

3 Solve each inequality. Expand the brackets first.

(a) $3(x + 2) > 15$

Answer: $x > 3$

(b) $2(x - 3) \leq 10$

Answer: $x \leq 8$

(c) $4(2x + 1) < 36$

Answer: $x < 4$

(d) $5x \geq 2(x + 6)$

Answer: $x \geq 4$

(e) $2(3x - 1) > 4(x + 2)$

Answer: $x > 5$

(f) $5(x - 2) \geq 3(x + 4)$

Answer: $x \geq 11$

4 Solve each inequality.

(a) $\frac{x+1}{2} > 3$

Answer: $x > 5$

(b) $\frac{2x-1}{3} \leq 5$

Answer: $x \leq 8$

(c) $\frac{x+4}{5} < -1$

Answer: $x < -9$

(d) $\frac{x}{2} - 3 \geq 1$

Answer: $x \geq 8$

5 Priya solves $-3x < 12$ and writes $x < -4$. Explain her mistake and write the correct solution.

Answer: $x > -4$. She did not reverse the sign when dividing by -3

6 Jack solves $2 - x > 5$ and gets $x > -3$. Is he correct? Test a value to decide.

Answer: No. The correct answer is $x < -3$

7 Without solving first, use $x = 0$ to decide whether the solution of $4 - 2x < 10$ is $x > -3$ or $x < -3$. Then solve it to check.

Answer: $x > -3$

8 Solve $5 - 2x \geq 17$. Write down the largest whole number that satisfies it.

Answer: -6

9 Find the largest whole number n such that $3n - 4 > 5n - 20$.

Answer: 7

- 10** Solve $2(3x - 1) > 4(x + 2)$. Then say whether $x = 5$ is a solution.

Answer: $x > 5$; 5 is not a solution (it is the boundary)

- 11** Solve $3(2 - x) > 6 - 5x$.

Answer: $x > 0$

- 12** Solve each inequality.

(a) $9x < -4x + 3$

Answer: $x < \frac{3}{13}$

(b) $-4x + 9 < 2x + 3$

Answer: $x > 1$

(c) $7x - 2 \geq -3x + 8$

Answer: $x \geq 1$

- 13** Solve each inequality.

(a) $\frac{x+3}{2} \geq \frac{x-1}{3}$

Answer: $x \geq -11$

(b) $\frac{2x-1}{3} < \frac{x+4}{2}$

Answer: $x < 14$

(c) $\frac{3x+1}{4} > \frac{x-2}{3}$

Answer: $x > -2.2$