

GCSE Maths: Solving linear inequalities (Higher): worksheet

GCSE Maths - Inequalities - Higher - Lesson 10.3

Name: _____

Date: _____

Score: _____

22 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch10-inequalities/higher/solving-linear-inequalities/

Exercise 10C Solving one-step and two-step inequalities

Non-calculator

1 Solve each inequality.

(a) $x + 5 > 9$

Answer: _____

(b) $x - 3 \leq 4$

Answer: _____

(c) $2x < 14$

Answer: _____

(d) $\frac{x}{4} \geq 3$

Answer: _____

(e) $x + 7 \leq 2$

Answer: _____

(f) $5x > 35$

Answer: _____

2 Solve each inequality.

(a) $2x + 3 > 11$

Answer: _____

(b) $3x - 4 \leq 14$

Answer: _____

(c) $5x + 1 < 26$

Answer: _____

(d) $4x - 7 \geq 9$

Answer: _____

(e) $2x + 9 \leq 3$

Answer: _____

(f) $6x - 5 > -17$

Answer: _____

3 Solve each inequality. Give your answer with x on the left.

(a) $12 > 2x + 4$

Answer:

(b) $20 \leq 3x - 1$

Answer:

(c) $7 < 5x - 8$

Answer:

(d) $10 \geq 4x + 2$

Answer:

(e) $-4 < 2x + 6$

Answer:

(f) $2 > 3x - 7$

Answer:

4 Solve each inequality. (The letter is divided by a number.)

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

Answer:

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

Answer:

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

Answer:

(d) $\frac{2x}{3} < 8$

Answer:

5 Hana solves $2x - 5 < 9$ and writes $x < 2$. Explain her mistake and give the correct solution.

Answer:

6 Show that $x = 4$ is a solution of $5x - 3 > 12$, but $x = 3$ is not.

Answer:

7 Solve $4x - 3 \leq 17$. Write down the largest whole number that satisfies the inequality.

Answer:

8 Solve $3n + 5 > 20$. Write down the smallest whole number that satisfies the inequality.

Answer:

9 The number n satisfies $5n - 4 < 31$. What is the largest whole-number value of n ?

Answer:

10 Solve $2x + 7 \geq 25$ and show your solution on a number line.

Answer:

11 Solve $3x + 2 = 14$ and $3x + 2 > 14$. What is the difference between the two answers?

Answer:

- 12** Is it true that $2x < 10$ and $10 > 2x$ have the same solutions? Show your working.

Answer:

- 13** Mia and Leo both solve $3x + 4 > 19$. Mia gets $x > 5$. Leo gets $x \geq 5$. Who is right? Test $x = 5$ to decide.

Answer:

Exercise 10D Solving, number lines and whole-number solutions

Non-calculator

- 1** Solve each inequality and show the solution on a number line.

(a) $2x + 1 > 9$

Answer:

(b) $3x - 2 \leq 7$

Answer:

(c) $4x + 5 < 1$

Answer:

(d) $5x - 1 \geq 14$

Answer:

- 2** Solve each inequality, then write down the **largest whole number** that satisfies it.

(a) $2x + 3 < 12$

Answer:

(b) $5x - 1 \leq 24$

Answer:

(c) $3x + 2 < 9$

Answer:

(d) $4x + 1 \leq 20$

Answer:

- 3** Solve each inequality, then write down the **smallest whole number** that satisfies it.

(a) $3x + 1 > 13$

Answer:

(b) $2x - 5 \geq 4$

Answer:

(c) $5x + 2 > 6$

Answer:

- 4** Solve each inequality, then list the **positive whole numbers** that satisfy it.

(a) $2x + 1 < 11$

Answer:

(b) $3x \leq 12$

Answer:

(c) $5x - 3 < 12$

Answer:

(d) $4x + 3 \leq 20$

Answer:

- 5 Sam thinks of a whole number, n . He multiplies it by 3 and adds 4. The answer is less than 30. What is the largest number Sam could be thinking of?

Answer:

- 6 Dev solves $2x + 1 < 8$ and gets $x < 3.5$. He says the largest whole number is 4. Is he right? Explain.

Answer:

- 7 Explain why the smallest whole number satisfying $n > 1.3$ is 2, and not 1.

Answer:

- 8 Solve each inequality.

(a) $\frac{x+3}{2} \geq 4$

Answer:

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

Answer:

(c) $\frac{x+4}{5} > 3$

Answer:

- 9 Solve each inequality.

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

Answer:

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

Answer:

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

Answer: