Linear Inequalities

GCSE Maths · Higher tier · 25 questions · 68 marks

Name _____ Date _____ Score _____ / 68

Start at Level 1 and climb. Stuck? The worked answers show every step.

Level 1 · Warm-up **Level 2 · Build** **Level 3 · Exam-style** **Level 4 · Challenge**

Level 1 · Warm-up

14 marks

One- and two-step inequalities, listing integers in a range, and number lines.

1 Solve $3x - 5 > 7$. [2 marks]

Answer _____

2 Solve $\frac{x}{2} + 3 \leq 8$. [2 marks]

Answer _____

3 Solve $4(x + 1) < 20$. [2 marks]

Answer _____

4 Write down all the integers n such that $-2 \leq n < 3$. [2 marks]

Answer _____

5 Solve $5x + 2 \geq 2x + 17$. [2 marks]

Answer _____

6 Write down the inequality shown on the number line. [2 marks]



Answer _____

7 Show the inequality $-2 \leq x < 3$ on the number line. [2 marks]



Level 2 · Build 18 marks
Negative coefficients, double inequalities, number lines and a first look at set notation.

8 Solve $7 - 2x > 1$. [2 marks]

Answer _____

9 Solve $-1 < 2x + 3 \leq 9$. [3 marks]

Answer _____

10 List all the integers x that satisfy $5 \leq 3x - 1 < 14$. [3 marks]

Answer _____

11 Find the smallest integer that satisfies $4x - 3 > 11$. [2 marks]

Answer _____

12 Solve $3x + 2 > 11$, and show your solution on the number line. [3 marks]



13 Solve $\frac{x+1}{3} - \frac{x-2}{4} \geq 1$. [3 marks]

Answer _____

14 Solve $3x + 1 > 7$. Give your answer using set notation. [2 marks]

Answer _____

Level 3 · Exam-style 23 marks
Integer solutions to two inequalities, contexts and spotting mistakes.

15 n is an integer. $2n + 5 > 9$ and $3n - 4 < 14$. Find all the possible values of n. [3 marks]

Answer _____

16 A taxi charges £4 plus £2 for every mile. Ella has £25. What is the greatest whole number of miles she can travel? [3 marks]

Answer _____

17 Tom solves $6 - 3x < 12$. He writes $-3x < 6$, so $x < -2$. Explain Tom's mistake, and give the correct answer. [2 marks]

Answer _____

18 A rectangle has sides of length x cm and $(x + 4)$ cm. Its perimeter is less than 40 cm. Find the range of possible values of x. [3 marks]

Answer _____

19 (a) The number line shows the solution of an inequality. Write down all the integers it shows. [2 marks]



Answer _____

(b) Show that the solution of $4 < 2x + 8 \leq 14$ is the inequality shown on the number line. [3 marks]

Answer _____

20 Find the integers that satisfy both $3x - 2 > x + 3$ and $5x \leq 2x + 21$. [4 marks]

Answer _____

21 Solve $-3 \leq 2x - 5 < 4$. Give your answer using set notation. [3 marks]

Answer _____

Level 4 · Challenge 13 marks
Grade 8–9: two variables, chains of inequalities, unknown constants and set notation.

22 x and y are integers. $y \geq 1$, $x + y \leq 6$ and $y < x$. List all the possible pairs (x, y). [3 marks]

Answer _____

23 Solve $3 - 2x \leq x + 12 < 4x + 3$. Give your answer using set notation. [4 marks]

Answer _____

24 A rectangle has sides $(x+2)$ cm and 5 cm. The number of square centimetres in its area is greater than the number of centimetres in its perimeter. Find the range of possible values of x. [3 marks]

Answer _____

25 The solution of the inequality $3x - k > 2x + 5$ is $x > 9$. Find the value of the constant k. [3 marks]

Answer _____