

Linear Inequalities and Set Notation

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Solve

(a) $4x + 3 \leq 23$

[2 marks]

Answer _____

(b) $5x + 6 > 3x + 15$

[2 marks]

Answer _____

2 Solve $5 - 2x \geq 11$

Give your answer in set notation.

[3 marks]

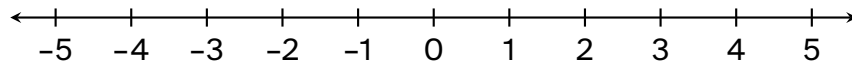
Answer _____

3 (a) Solve $-3 \leq 2x + 1 < 9$

[2 marks]

Answer _____

(b) Show your answer to part (a) on the number line.



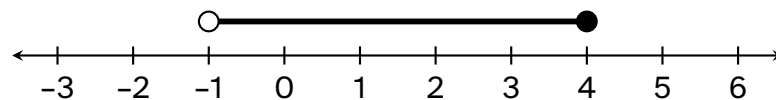
[2 marks]

(c) Write down the integers that satisfy the inequality in part (a).

[1 mark]

Answer _____

4 Here is a number line.



(a) Write down the inequality shown on the number line.

[1 mark]

Answer _____

(b) Circle the set notation for this inequality.

[1 mark]

$\{x: -1 \leq x < 4\}$

$\{x: -1 < x \leq 4\}$

$\{0, 1, 2, 3, 4\}$

$\{-1, 4\}$

5 Solve $7 < 2 - \frac{x}{4}$

[2 marks]

Answer _____

6 Solve $4(x - 3) > 2x + 5$
Give your answer in set notation.

[3 marks]

Answer _____

- 7 Hollie says,
“The inequalities $-4 < 2n \leq 6$ and $-2 \leq n < 3$ are satisfied by exactly the same integers.”
Is Hollie correct?
You must show your working.

[2 marks]

- 8** n is an integer.

$$5n - 3 > 2n + 9 \quad \text{and} \quad 2(n + 1) < 17$$

Work out all the possible values of n .

[3 marks]

Answer _____

- 9** A pottery studio charges a membership fee of £18, plus £7.50 for each session. Keeley has £100 to spend on membership and sessions. Form and solve an inequality to work out the greatest number of sessions Keeley can pay for.

[3 marks]

Answer _____ sessions

- 10** a and b are integers.

$$-7 < 2a + 1 \leq 5 \quad \text{and} \quad 3 \leq b < 8$$

Work out the smallest possible value of $a^2 - b$

[3 marks]

Answer _____