Inequalities: exam questions

10 questions · 26 marks · mark schemes at the end

Name _____ Date _____ Score / 26

- Calculators are allowed on both 4MA1 Higher papers (1H and 2H). Show your working: most marks are for method.
- Mark schemes start after the questions. M marks are for a correct method, A marks for an accurate answer that follows a correct method, and B marks for a correct result on its own.
- Online, with more practice: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/inequalities

1. **2 marks**

Solve $5x - 3 > 2x + 9$.

2. **3 marks**

(a) Solve $-3 \leqslant 2x + 1 < 9$. **(2)**

(b) n is an integer. Write down all the values of n that satisfy $-3 \leqslant 2n + 1 < 9$. **(1)**

3. **2 marks**

Solve $x^2 < 16$.

4. 3 marks

Solve $x^2 - x - 12 \geqslant 0$.

5. 2 marks

Solve $3 - 4x \leqslant 15$.

6. 3 marks

Solve $\frac{x + 2}{3} > x - 4$.

7. 3 marks

Solve $2x^2 + 5x - 3 < 0$.

8. **3 marks**

n is an integer.

$2n - 3 < 11$ and $3n + 2 \geqslant 8$

Find all the possible values of n.

9. **2 marks**

Solve $4(x - 3) \geqslant 7x + 6$.

10. **3 marks**

A rectangle has width x cm and length $(x + 5)$ cm. The area of the rectangle is less than 50 cm².

Find the range of possible values of x.

Answers and worked solutions

Question 1 — 2 marks

M1 $3x > 12$

A1 $x > 4$

Answer: $x > 4$

Question 2 — 3 marks

(a)

M1 $-4 \leqslant 2x < 8$

A1 $-2 \leqslant x < 4$

(b)

B1 $-2, -1, 0, 1, 2, 3$

Answer: (a) $-2 \leqslant x < 4$; (b) $-2, -1, 0, 1, 2, 3$

Question 3 — 2 marks

M1 critical values 4 and -4

A1 $-4 < x < 4$

Answer: $-4 < x < 4$

Question 4 — 3 marks

M1 $(x - 4)(x + 3)$

M1 critical values 4 and -3

A1 $x \leqslant -3$ or $x \geqslant 4$

Answer: $x \leqslant -3$ or $x \geqslant 4$

Question 5 — 2 marks

M1 $-4x \leqslant 12$

A1 $x \geqslant -3$

An answer of $x \leqslant -3$ scores M1 A0.

Answer: $x \geqslant -3$

Question 6 — 3 marks

M1 $x + 2 > 3x - 12$

M1 $14 > 2x$

A1 $x < 7$

Answer: $x < 7$

Question 7 — 3 marks

M1 $(2x - 1)(x + 3)$

M1 critical values $\frac{1}{2}$ and -3

A1 $-3 < x < \frac{1}{2}$

Answer: $-3 < x < \frac{1}{2}$

Question 8 — 3 marks

M1 $n < 7$

M1 $n \geqslant 2$

A1 2, 3, 4, 5, 6

Answer: 2, 3, 4, 5, 6

Question 9 — 2 marks

M1 $4x - 12 \geqslant 7x + 6$

A1 $x \leqslant -6$

Answer: $x \leqslant -6$

Question 10 — 3 marks

M1 $x(x + 5) < 50$, so $x^2 + 5x - 50 < 0$

M1 $(x + 10)(x - 5)$, critical values -10 and 5

A1 $0 < x < 5$ (a width must be positive)

Answer: $0 < x < 5$

Online, with every solution: igcsemathrevision.com/igcse-frontend/4ma1/exam-questions/inequalities
Our own original questions, written and checked by IGCSE Math Revision. Independent, not affiliated with Pearson Edexcel.