

Edexcel GCSE

Mathematics (Linear) – 1MA0

ALGEBRA:

INEQUALITIES

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers

Nil

**Instructions**

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. $-1 \leq n < 4$

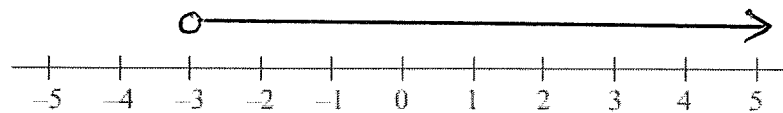
n is an integer.

Write down all the possible values of n .

-1, 0, 1, 2, 3
(2 marks)

2. (a) $x > -3$

Show this inequality on the number line.



(2)

(b) Solve the inequality $7y - 34 \leq 8$

$$\begin{array}{l} \textcircled{+34} \\ \textcircled{\div 7} \end{array} \quad \begin{array}{l} 7y - 34 \leq 8 \\ 7y \leq 42 \\ y \leq 6 \end{array}$$

$y \leq 6$
(2)

(c) Write down the integer values of x that satisfy the inequality

$$-2 \leq x < 3$$

-2, -1, 0, 1, 2
(2)

(6 marks)

3. $-2 \leq n < 5$
 n is an integer.

(a) Write down all the possible values of n .

$-2, -1, 0, 1, 2, 3, 4$
 (2)

(b) Solve the inequality $4x + 1 > 11$

$4x + 1 > 11$
 (-1) $4x > 10$
 $(\div 4)$ $x > \frac{10}{4}$
 $x > 2.5$ $x > 2.5$
 (2)

(4 marks)

4. (a) On the number line below, show the inequality $-2 < y < 3$



(1)

(b) Here is an inequality, in x , shown on a number line.



Write down the inequality.

$-3 < x \leq 4$
 (2)

(c) Solve the inequality $4t - 5 > 11$

$4t - 5 > 11$
 $(+5)$ $4t > 16$
 $(\div 4)$ $t > 4$ $t > 4$
 (2)

(5 marks)

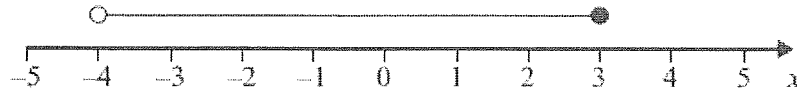
5. (a) n is an integer.

$$-1 \leq n < 4$$

List the possible values of n .

-1, 0, 1, 2, 3 (2)

(b)



Write down the inequality shown in the diagram.

$-4 < x \leq 3$ (2)

(c) Solve $3y - 2 > 13$

$$\begin{aligned} \textcircled{+2} \quad 3y - 2 &> 13 \\ 3y &> 15 \\ \textcircled{\div 3} \quad y &> 5 \end{aligned}$$

$y > 5$ (2)

(6 marks)

6. $-3 < n \leq 1$

n is an integer.

(a) Write down all the possible values of n .

-2, -1, 0, 1 (2)

(b) Solve the inequality $3p - 7 > 11$

$$\begin{aligned} 3p - 7 &> 11 \\ \textcircled{+7} \quad 3p &> 18 \\ \textcircled{\div 3} \quad p &> 6 \end{aligned}$$

$p > 6$ (2)

(4 marks)

7. n is an integer.

$$-3 < n < 4$$

(a) Write down all the possible values of n .

$$\underline{-2, -1, 0, 1, 2, 3} \dots \dots \dots (2)$$

(b) Solve $2x - 7 \leq 11$

$$\begin{aligned} & 2x - 7 \leq 11 \\ \textcircled{+7} \quad & 2x \leq 18 \\ \textcircled{\div 2} \quad & x \leq 9 \end{aligned}$$

$$\underline{x \leq 9} \dots \dots \dots (2)$$

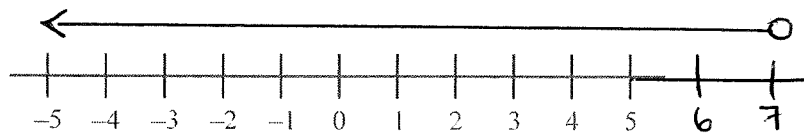
(4 marks)

8. (a) (i) Solve the inequality

$$\begin{aligned} & 5x - 7 < 28 \\ \textcircled{+7} \quad & 5x - 7 < 28 \\ & 5x < 35 \\ \textcircled{\div 5} \quad & x < 7 \end{aligned}$$

$$\underline{x < 7} \dots \dots \dots$$

(ii) On the number line, represent the solution set to part (i).



(3)

n is an integer such that $-4 \leq 2n < 3$.

(b) Write down the possible values of n .

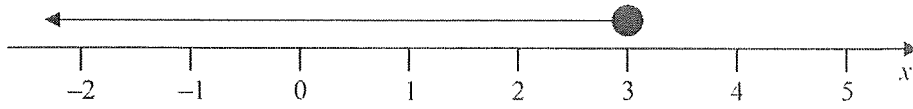
$$\begin{aligned} & -4 \leq 2n < 3 \\ \textcircled{\div 2} \quad & -2 \leq n < \frac{3}{2} \end{aligned}$$

$$\underline{-2, -1, 0, 1} \dots \dots \dots$$

(3)

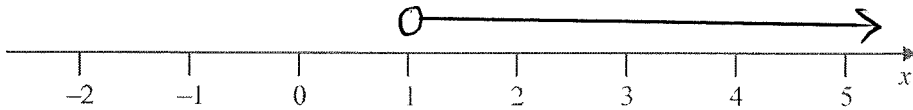
(6 marks)

9. (i) Write down the inequality shown on the number line.



$x \leq 3$

- (ii) Show the inequality $x > 1$ on the number line below.



(3 marks)

10. (i) Solve the inequality $7x - 3 > 18$

$$\begin{aligned} 7x - 3 &> 18 \\ (+3) \quad 7x &> 21 \\ (\div 7) \quad x &> 3 \end{aligned}$$

$x > 3$

x is a whole number such that $7x - 3 > 18$

- (ii) Write down the smallest value of x .

4

(4 marks)

11. (a) Solve $5x + 12 < 17$

(2)

$$\begin{aligned} &5x + 12 < 17 \\ \textcircled{-12} \quad &5x < 5 \\ \textcircled{\div 5} \quad &x < 1 \end{aligned}$$

$x < 1$

(b) Solve the inequality $3(2y + 1) > 10$

(2)

$$\begin{aligned} &6y + 3 > 10 \\ \textcircled{-3} \quad &6y > 7 \\ \textcircled{\div 6} \quad &y > 7/6 \end{aligned}$$

$y > 7/6$ or $y > 1.1\bar{6}$

(4 marks)

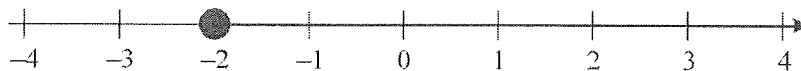
12. (a) Solve the inequality $4x - 3 < 7$

$$\begin{aligned} &4x - 3 < 7 \\ \textcircled{+3} \quad &4x < 10 \\ \textcircled{\div 4} \quad &x < 2.5 \end{aligned}$$

$x < 2.5$

(2)

An inequality is shown on the number line.



(b) Write down the inequality.

$x \geq -2$

(2)

(c) n is a whole number such that

$$6 \leq 3n < 15$$

List all the possible values of n .

$$\begin{aligned} &6 \leq 3n < 15 \\ \div 3 \quad &2 \leq n < 5 \end{aligned}$$

2, 3, 4.....(2)

(6 marks)

