GCSE · Edexcel · Maths

3 hours 51 questions

Exam Questions

Solving Inequalities

Solving Linear Inequalities / Solving Quadratic Inequalities

Easy (16 questions)	/43
Medium (21 questions)	/65
Hard (14 questions)	/53
Total Marks	**/161**

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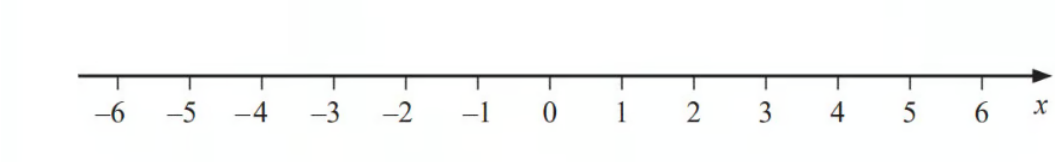
Easy Questions

1 (a) Solve $14n > 11n + 6$

(2 marks)

(b) On the number line below, show the set of values of x for which $-2 < x + 3 \leqslant 4$



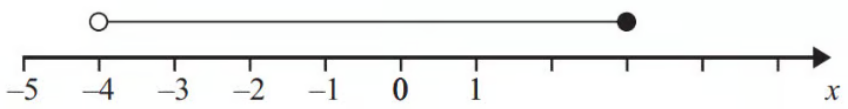
(3 marks)

2 (a) n is an integer.

$-1 \leqslant n < 4$ List the possible values of n.

(2 marks)

(b)



Write down the inequality shown in the diagram.

(2 marks)

(c) Solve $y - 2 > 5$

(1 mark)

3 (a) $-3 < n \leqslant 1$

n is an integer.

Write down all the possible values of n.

(2 marks)

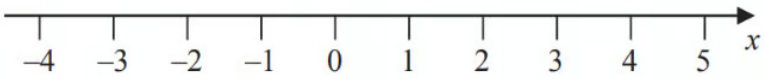
(b) Solve the inequality $3p - 7 > 11$

(2 marks)

4 Solve $3x - 5 < 16$

(2 marks)

5 (a) Show the inequality $x < 3$ on the number line below



(2 marks)

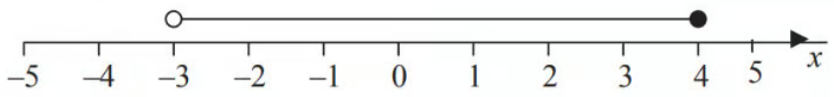
(b) Solve the inequality $4x - 7 \geqslant 13$

(2 marks)

6 (a) Solve the inequality $6y + 5 > 8$

(2 marks)

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



Write down the inequality.

(2 marks)

7 $-4 \leqslant 2y < 6$

y is an integer.

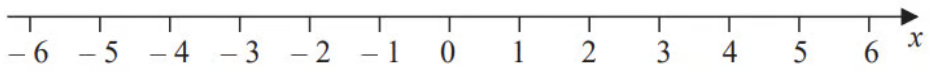
Write down all the possible values of y.

(2 marks)

8 (a) Solve the inequalities $-7 \leqslant 2x - 3 < 5$

(3 marks)

(b) On the number line, represent the solution set to part (a).



(1 mark)

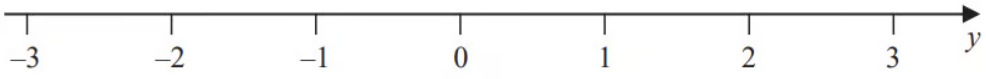
9 Solve the inequality $5x - 7 \leqslant 2$

(2 marks)

10 (a) n is an integer. Write down all the values of n such that $-2 \leqslant n < 3$

(2 marks)

(b) On the number line, represent the inequality $y \leqslant 1$



(1 mark)

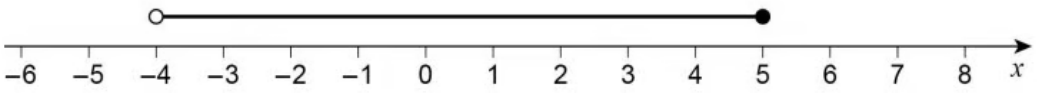
11 Solve $5(x + 3) < 60$

(2 marks)

12 Solve $-3x > 6$

(1 mark)

13 Choose the inequality shown by the diagram.



A. $-4 \leqslant x < 5$

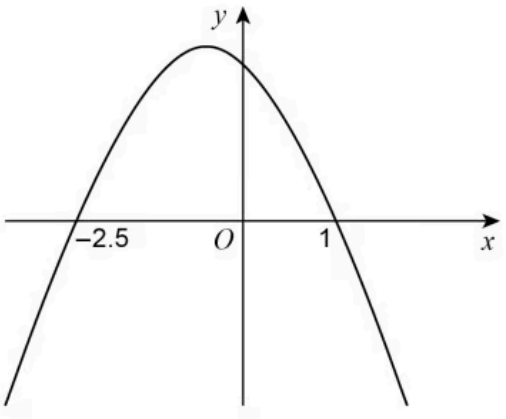
B. $-4 \leqslant x \leqslant 5$

C. $-4 < x < 5$

D. $-4 < x \leqslant 5$

(1 mark)

14 Here is a sketch of $y = \mathrm{f}(x)$ where $\mathrm{f}(x)$ is a quadratic function. The graph intersects the x-axis where $x = -2.5$ and $x = 1$



Not drawn accurately

Choose the solution of $\mathrm{f}(x) > 0$

A. $x < -2.5$ or $x > 1$

B. $x > -2.5$ or $x > 1$

C. $-2.5 < x < 1$

D. $x > -2.5$ or $x < 1$

(1 mark)

15 Solve the inequality.

$3x - 2 > 10$

(2 marks)

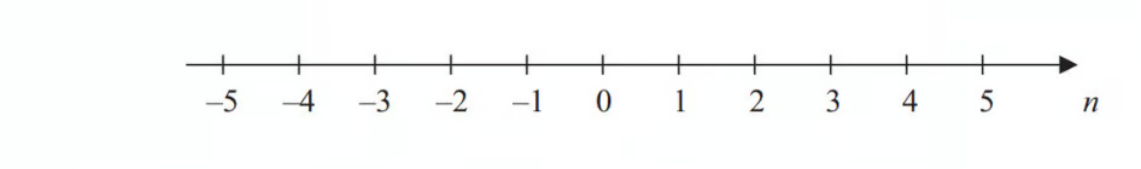
16 Write down the largest integer that satisfies $5x - 1 < 10$.

(1 mark)

Medium Questions

1 (a) $-2 < n \leqslant 3$

Represent this inequality on the number line.



(2 marks)

(b) Solve the inequality $8x - 3 \geqslant 6x + 4$

(2 marks)

2 (a) $-5 < y \leqslant 0$

y is an integer.

Write down all the possible values of y.

(2 marks)

(b) Solve $6(x-2) > 15$

(2 marks)

3 (a) m is an integer such that $-2 < m \leqslant 3$

Write down all the possible values of m.

(2 marks)

(b) Solve $7x - 9 < 3x + 4$

(2 marks)

4 (a) Solve $6x + 4 > x + 17$

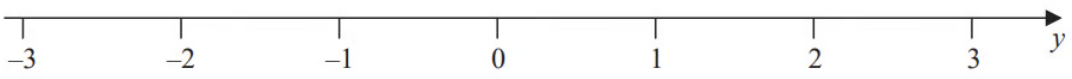
(2 marks)

(b) n is an integer with $-5 < 2n \leqslant 6$

Write down all the values of n

(2 marks)

5 (a) On the number line, show the inequality $-2 \leqslant y < 1$



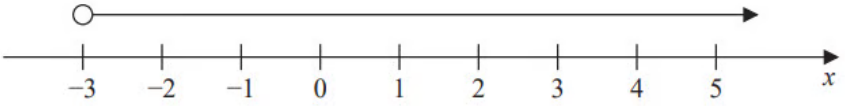
(2 marks)

(b) n is an integer.

Write down all the values of n that satisfy $-3.4 < n \leqslant 2$

(2 marks)

6 (a)



Write down the inequality shown on the number line.

(1 mark)

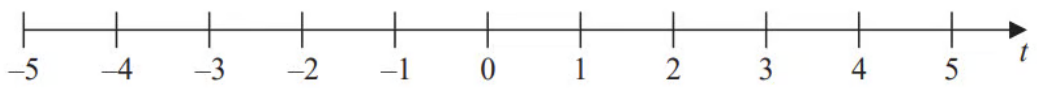
(b) Solve the inequality $4y - 13 \leqslant y + 8$

(2 marks)

7 (a) Solve the inequality $7t - 8 \leq 2t + 7$

(3 marks)

(b) On the number line below, represent the solution set of the inequality solved in part (a).



(1 mark)

8 Solve the inequality $7t - 3 \leqslant 2t + 31$

Show your working clearly.

(2 marks)

9 Solve the inequality $3x + 15 < 8x + 3$

Show clear algebraic working.

(3 marks)

10 Solve the inequality $2q \geqslant 31 - 3q$

(2 marks)

11 Solve $4 > 11 - \frac{x}{3}$

(2 marks)

12 x is an integer.

$-4 < x \leqslant 2$

and

$2 \leqslant x + 3 < 9$

Work out all the possible values of x.

(3 marks)

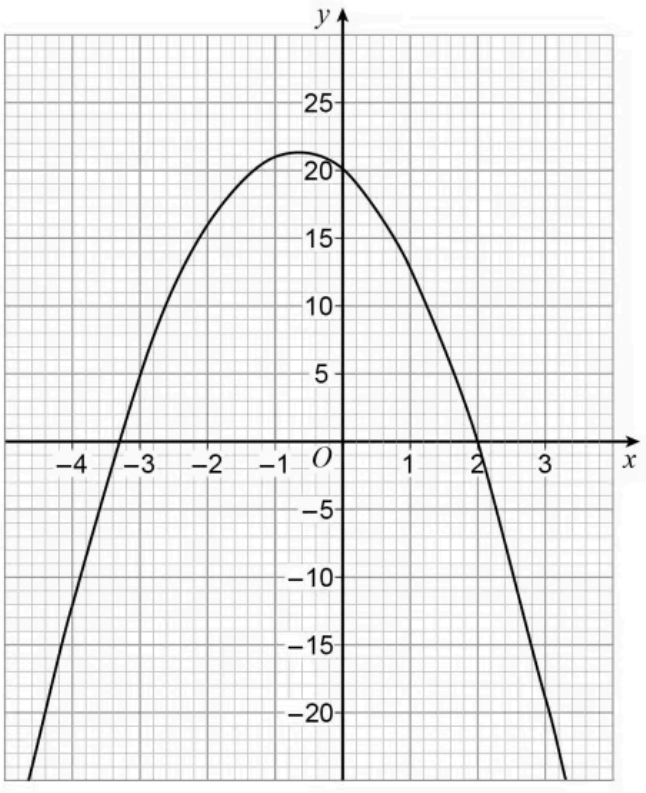
13 Solve $8 > 3 - \frac{1}{2}x$

(2 marks)

14 Solve $7x + 6 > 1 + 2x$

(2 marks)

15 Here is the graph of $y = \mathrm{f}(x)$ where $\mathrm{f}(x)$ is a quadratic function.



Write down all the **integer** solutions of $f(x) \geqslant 0$

(2 marks)

16 (a) Solve $5x + 6 > 3x + 15$

(3 marks)

(b) Write down the inequality represented by the number line.

(2 marks)

17 $m^2 > 9$

Choose the possible value of m.

A. $2\frac{7}{8}$

B. 2.8

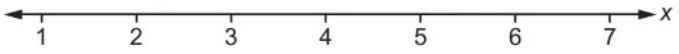
C. 3

D. $-\frac{7}{2}$

(1 mark)

18 Solve $3x+4 < 19$.

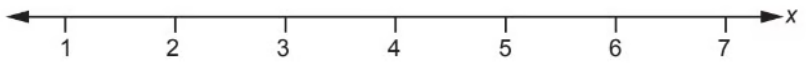
Show your solution on the number line.



(4 marks)

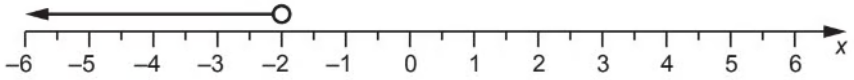
19 Solve $3x-5 \geqslant 10$

Show your solution on the number line.



(4 marks)

20 Gemma's solution to the inequality $3x + 1 > -5$



Is Gemma's solution correct?
Explain your reasoning.

(3 marks)

21 Solve.

$$5x + 1 > x + 13$$

(3 marks)

Hard Questions

1 Solve the inequality $x^2 > 3(x + 6)$

(4 marks)

2 Solve $x^2 > 3x + 4$

(3 marks)

3 Solve $2x^2 + 3x - 2 > 0$

(3 marks)

4 n is an integer such that $3n + 2 \leqslant 14$ and $\frac{6n}{n^2 + 5} > 1$

Find all the possible values of n.

(5 marks)

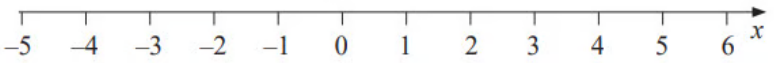
5 Solve the inequality $4x^2 - 5x - 6 > 0$

(4 marks)

6 (a) Solve $x^2 + 2x > 6x + 5$

(3 marks)

(b) Represent your solution set to part (a) on the number line below.



(1 mark)

7 Here is a rectangle.

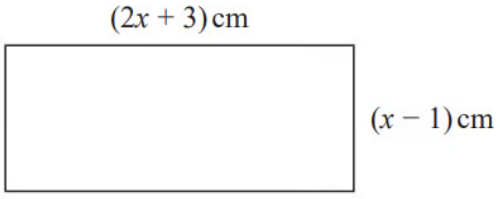


Diagram **NOT** accurately drawn

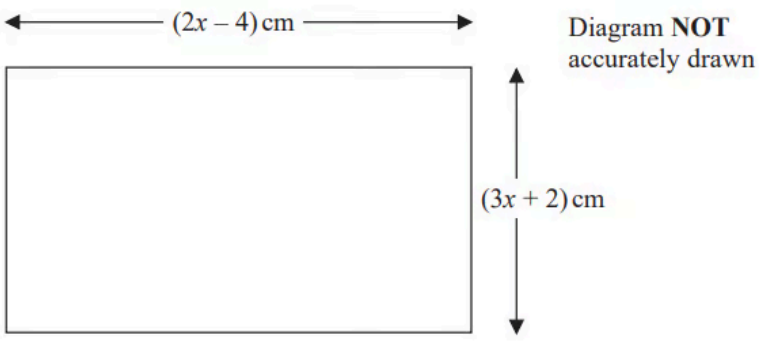
Given that the area of the rectangle is less than $75\ \text{cm}^2$
find the range of possible values of x

(5 marks)

8 Solve the inequality $5y^2 - 17y \leqslant 40$

(3 marks)

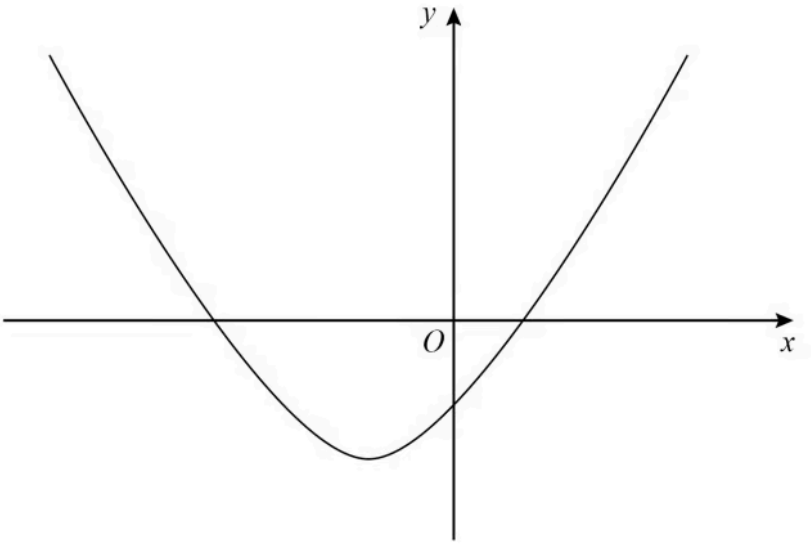
9 The diagram shows a rectangle.



The area of the rectangle is $A\,\text{cm}^2$
Given that $A < 3x + 27$
find the range of possible values for x.

(5 marks)

10 Here is a sketch of the curve $y = x^2 + 4x - 12$



Work out the values of x for which $x^2 + 4x - 12 < 0$

Give your answer as an inequality.

(3 marks)

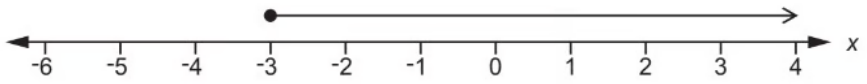
11 Here are two inequalities.

$-2 \leqslant x \leqslant 3$
$9 \leqslant x + y \leqslant 11$

x and y are integers.
Work out the **greatest** possible value of $y - x$

(3 marks)

12 Martha's solution to the inequality $8x + 5 \leqslant 3x - 10$ is shown on the number line.



Is her solution correct?
Explain your reasoning.

(4 marks)

13 Solve the inequality.

$$x^2 - 5x - 6 \leqslant 0$$

(4 marks)

14 Find the interval for which $x^2 - 7x + 10 \leqslant 0$.

..... $\leqslant x \leqslant$ .....

(3 marks)