

Name: _____

GCSE (1 – 9)

Inequalities

Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.*

Advice

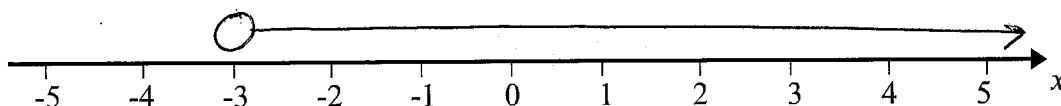
- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

- 1 n is an integer such that $-2 \leq n < 3$
Write down all the possible values of n .

-2, -1, 0, 1, 2

(Total for question 1 is 2 marks)

- 2 (a) On the number line, show the inequality $x > -3$



(2)

$1 \leq y < 5$ where y is an integer.

- (b) Write down all the possible values of y .

1, 2, 3, 4 ~~1, 2, 3, 4~~

(2)

- (c) Solve $4t + 7 \leq 19$

$$-7 \quad -7$$

$$4t \leq 12$$

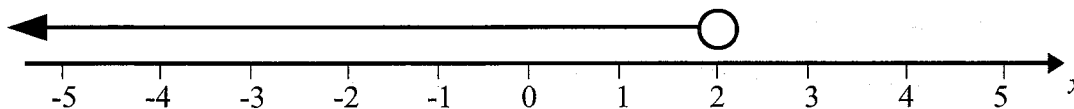
$$t \leq 3$$

$t \leq 3$

(2)

(Total for question 2 is 6 marks)

- 3 Write down the inequality shown on the number line.



$x < 2$

(Total for question 3 is 2 marks)

4 (a) $-1 < n \leq 3$ where n is an integer.

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

..... 0, 1, 2, 3 (2)

(c) Solve $2x - 5 > 8$
 $+5 \quad +5$

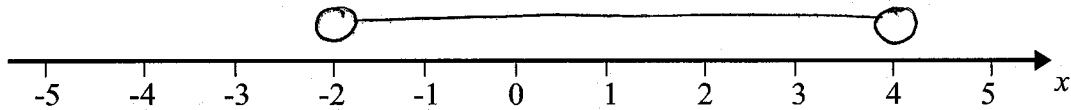
$$2x > 13$$

$$x > \frac{13}{2}$$

..... $x > \frac{13}{2}$ (2)

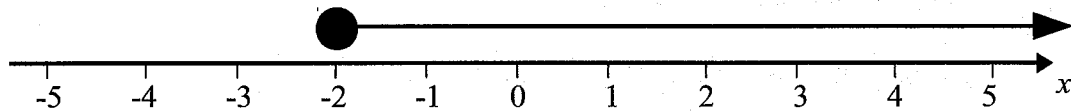
(Total for question 4 is 4 marks)

5 (a) On the number line, show the inequality $-2 < x < 4$



(2)

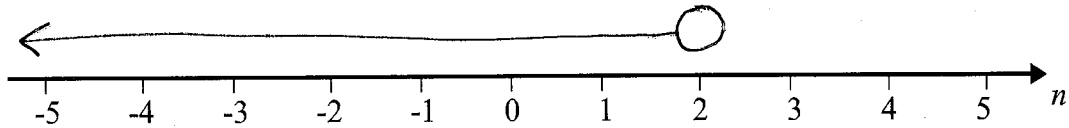
(b) Write down the inequality shown on the number line.



..... $x \geq -2$ (2)

(Total for question 5 is 4 marks)

- 6 (a) On the number line, show the inequality $n < 2$.



(2)

$4 \leq y < 8$ where y is an integer.

- (b) Write down all the possible values of y .

..... 4, 5, 6, 7

(2)

- (c) Solve $4x + 6 \leq x + 21$

$$\begin{array}{r} -x \\ -x \end{array}$$

$$\begin{array}{r} 3x + 6 \geq 21 \\ -6 \quad -6 \end{array}$$

$$3x \geq 15$$

$$x \geq 5$$

..... $x \geq 5$

(3)

(Total for question 6 is 7 marks)

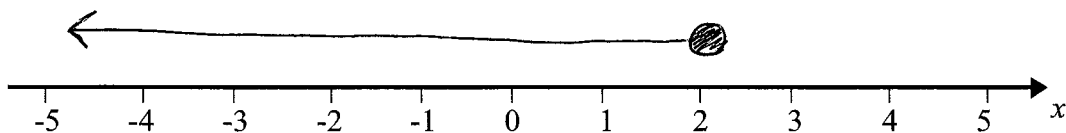
- 7 Solve $4x \leq x + 6$

Show your answer on the number line.

$$\begin{array}{r} 4x \leq x + 6 \\ -x \quad -x \end{array}$$

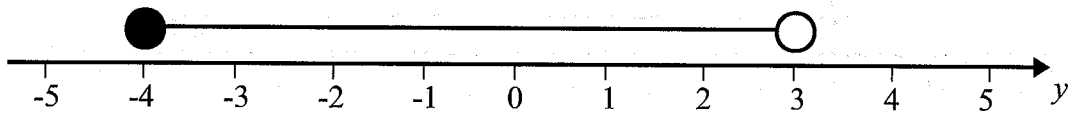
$$3x \leq 6$$

$$x \leq 2$$



(Total for question 7 is 3 marks)

8 Write down the inequality shown on the number line.

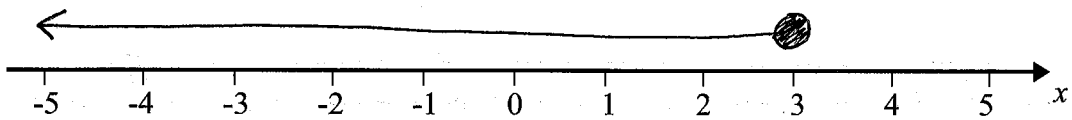


$$-4 \leq y < 3$$

(Total for question 8 is 2 marks)

9 (a) On the number line, show the inequality $x + 1 \leq 4$

$$x \leq 3$$



(2)

$5 < 2y < 12$ where y is an integer.

(b) Write down all the possible values of y .

$$2.5 < y < 6$$

$$3, 4, 5$$

(2)

(c) Solve $4 > 19 - 3x$

$$+3x \quad +3x$$

$$3x + 4 > 19$$

$$-4 \quad -4$$

$$3x > 15$$

$$x > 5$$

$$x > 5$$

(2)

(Total for question 9 is 6 marks)

10 n is an integer such that $-8 < 3n < 10$
Write down all the possible values of n .

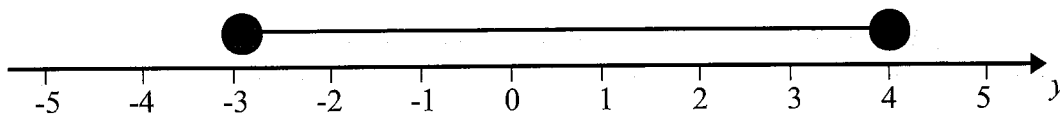
$$-\frac{8}{3} < n < \frac{10}{3}$$

$$-2.6 < n < 3.3$$

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

(Total for question 10 is 2 marks)

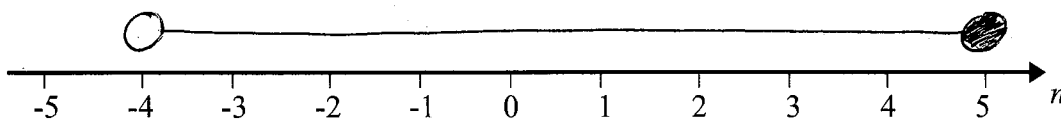
11 Write down the inequality shown on the number line.



$$-3 \leq y \leq 4$$

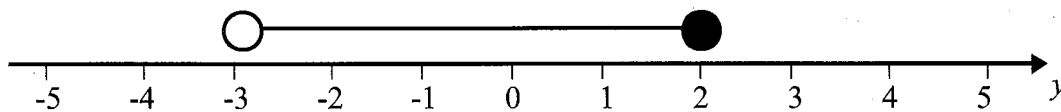
(Total for question 11 is 2 marks)

12 (a) On the number line, show the inequality $-4 < n \leq 5$



(2)

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



$$-3 < y \leq 2$$

(2)

(Total for question 12 is 4 marks)

13 Solve $2(3n - 5) > 12$

$$\begin{array}{r} 6n - 10 > 12 \\ +10 \quad +10 \end{array}$$

$$6n > 22$$

$$n > \frac{22}{6}$$

$$n > \frac{11}{3}$$

$$n > \frac{11}{3}$$

(Total for question 13 is 2 marks)

- 14 n is an integer such that $-3 < 2n < 6$
Write down all the possible values of n .

$$\frac{-3}{2} < n < 3$$

$$-1.5 < n < 3$$

.....
-1, 0, 1, 2

(Total for question 14 is 2 marks)

- 15 Solve $3(n+1) < 24$

$$3n + 3 < 24$$

$$3n < 21$$

$$n < 7$$

.....
 $n < 7$

(Total for question 15 is 2 marks)

- 16 Solve $4(2x+1) > 9$

$$8x + 4 > 9$$

$$8x > 5$$

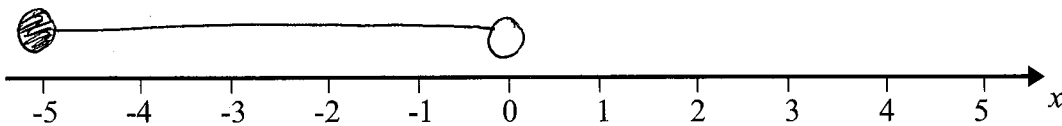
$$x > \frac{5}{8}$$

.....
 $x > \frac{5}{8}$

(Total for question 16 is 2 marks)

17 (a) On the number line, show the inequality $-3 \leq x+2 < 2$

$$-5 \leq x < 0$$



(3)

$1 \leq 2y-3 < 9$ where y is an integer.

$$\begin{array}{ccc} +3 & +3 & +3 \\ \hline \end{array}$$

(b) Write down all the possible values of y .

$$4 \leq 2y < 12$$

$$2 \leq y < 6$$

..... 2, 3, 4, 5

(3)

(c) Solve $4x-4 \leq 7x-19$

$$\begin{array}{ccc} -4x & & -4x \\ \hline \end{array}$$

$$-4 \leq 3x - 19$$

$$\begin{array}{ccc} +19 & & +19 \\ \hline \end{array}$$

$$15 \leq 3x$$

$$5 \leq x$$

$$x \geq 5$$

..... $x \geq 5$

(3)

(Total for question 17 is 9 marks)