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.*
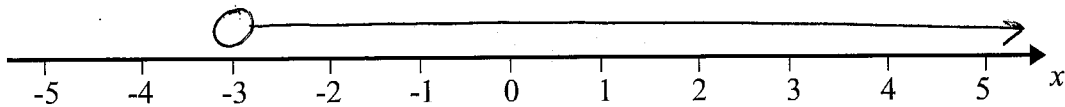
Advice

- 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.

.... $1, 2, 3, 4$ ~~5~~ ....

(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.

.... $x < 2$ ....
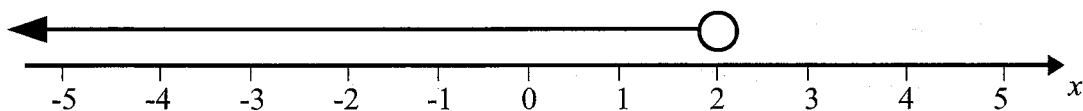
(Total for question 3 is 2 marks)

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

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

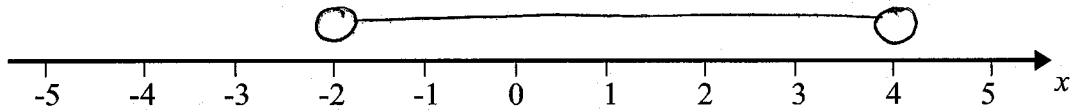.......... $0, 1, 2, 3$ ....

(2)

(c) Solve $2x - 5 > 8$

$+5 \quad +5$

$2x > 13$

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

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

....
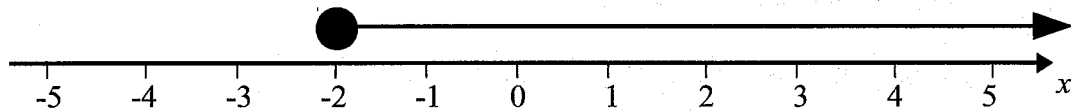
(2)

(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.

$x \geqslant -2$

....

(2)

(Total for question 5 is 4 marks)

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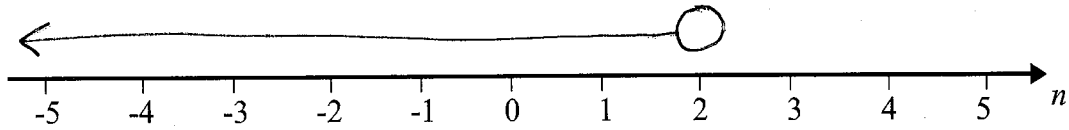
(2)

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

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

4, 5, 6, 7

(2)

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

$\quad -x \qquad -x$

$3x + 6 \leq 21$

$\quad -6 \qquad -6$

$3x \leq 15$

$x \leq 5$

$x \leq 5$

(3)

(Total for question 6 is 7 marks)

7 Solve $4x \leq x + 6$

Show your answer on the number line.
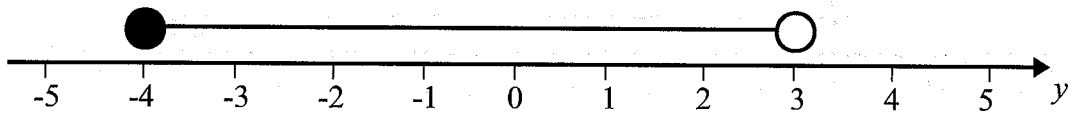
$4x \leq x + 6$

$\quad -x \qquad -x$

$3x \leq 6$

$x \leq 2$
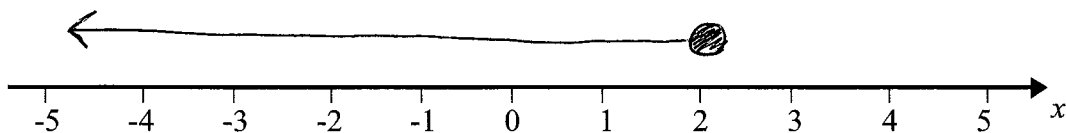
(Total for question 7 is 3 marks)

8 Write down the inequality shown on the number line.
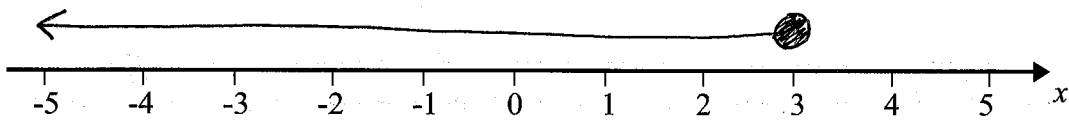

$$-4 \leqslant y < 3$$

(Total for question 8 is 2 marks)

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

$$x \leqslant 3$$

(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 $4 > 19 - 3x$

$$+3x \qquad +3x$$
$$3x + 4 > 19$$
$$-4 \qquad -4$$
$$3x > 15$$
$$x > 5$$

.... $x > 5$ ....

(2)

(Total for question 9 is 6 marks)

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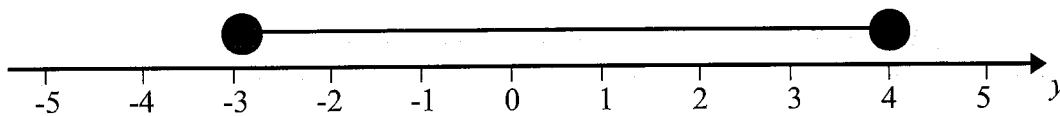Write down all the possible values of n.

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

$$-2.\dot{6} < n < 3.\dot{3}$$

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

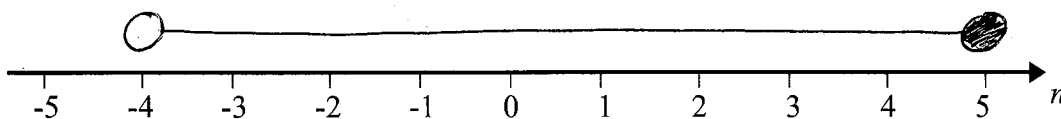**(Total for question 10 is 2 marks)**

11 Write down the inequality shown on the number line.
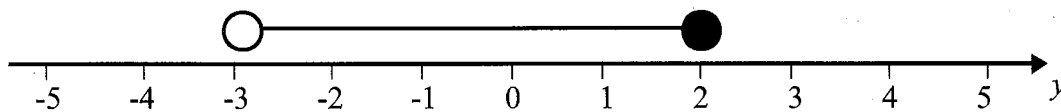

$$-3 \leq y \leq 4$$

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

$6n - 10 > 12$
$+10 +10$

$6n > 22$

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

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

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

(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 $3(n + 1) < 24$

$$3n + 3 < 24$$
$$\quad -3 \quad\quad -3$$
$$3n < 21$$
$$n < 7$$

.... $n < 7$ ....

(Total for question 15 is 2 marks)

16 Solve $4(2x + 1) > 9$
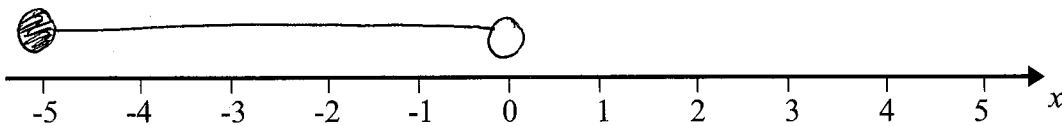
$$8x + 4 > 9$$
$$8x > 5$$
$$x > \frac{5}{8}$$

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

(Total for question 16 is 2 marks)

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

$$-5 \le x < 0$$

(3)

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

$+3 \qquad +3 \qquad +3$

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

$$4 \le 2y < 12$$

$$2 \le y < 6$$

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

(3)

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

$\quad -4x \qquad -4x$

$\qquad -4 \le 3x - 19$

$+19 \qquad\qquad +19$

$\qquad 15 \le 3x$

$\qquad 5 \le x$

$\qquad x \ge 5$

........$x \ge 5$........

(3)

(Total for question 17 is 9 marks)