



1

a. Write each statement as an inequality.

- (i) x is greater than 5
- (ii) n is at most 10
- (iii) y is at least -2

b. Explain the difference between $x < 4$ and $x \leq 4$

(3 marks)

a)

(i) $x > 5$

(ii) at most means $\leq$

$n \leq 10$

(iii) at least means $\geq$

$y \geq -2$

b)

$x < 4$: 4 is not included

$x \leq 4$: 4 is included

$\leq$ includes 4, $<$ does not

2

n is an integer.

$-2 < n \leq 3$

Write down all the possible values of n .

(2 marks)

n must be greater than -2 , so -2 itself is not included

n can be less than or equal to 3, so 3 is included

The integers are $-1, 0, 1, 2, 3$



3

The number line shows an inequality.

- Write down the inequality shown, using x .
- Write down the smallest integer that satisfies the inequality.



(2 marks)

a)

Open circle, so not included

Arrow right, so greater than

$$x > -2$$

b)

-

4

On the number line, show the inequality $-1 < x \leq 3$



(2 marks)

$<$ means not included: open circle

Open circle at -1

$\leq$ means included: filled circle

Filled circle at 3

Join them with a line

Open circle at -1, filled circle at 3, joined

- 5 The diagram shows an inequality on a number line.

Write down the inequality shown, using x .



(2 marks)

The solid circle at -1 means -1 is included, so $x \geq -1$

The open circle at 4 means 4 is not included, so $x < 4$

Together

$$= x < 4$$



- 6 Solve $4x + 3 < 19$

(2 marks)

Subtract 3 from both sides: $4x < 16$

Divide both sides by 4: $x < 4$

$$x < 4$$

- 7 A taxi charges £4 plus £2 for every mile.

Leo has £15. He travels m miles.

a. Write an inequality in m to show that Leo cannot spend more than £15.

b. Solve your inequality to find the greatest whole number of miles Leo can travel.

(3 marks)

a)

$$4 + 2m \leq 15$$

b)

$$2m \leq 11$$

$\div 2$ both sides

$$m \leq 5.5$$

5 miles

8

a. Solve $3(x - 1) \geq 6$

b. Show your solution on the number line.



(3 marks)

a) Divide both sides by 3

$$\begin{array}{rcl} x - 1 & \geq & 2 \\ +1 & & +1 \\ \hline x & \geq & 3 \end{array}$$

b) Draw a solid circle at 3, because 3 is included, with an arrow pointing right

9

Solve $5x - 2 > 3x + 10$

(3 marks)

Subtract $3x$ from both sides: $2x - 2 > 10$ Add 2 to both sides: $2x > 12$ Divide both sides by 2: $x > 6$

$x > 6$

10

a. Solve $-3 < 2x + 1 \leq 9$ b. Write down all the integer values of x that satisfy your answer to part a.

(4 marks)

a) Subtract 1 from all three parts

$$= 8$$

Divide all three parts by 2

$$= 4$$

b) The integers strictly greater than -2 and at most 4 are -1, 0, 1, 2, 3, 4

11

a. Solve $5 \leq 3x - 4 < 14$

b. Show your answer to part a on the number line.



(3 marks)

a)

$$5 \leq 3x - 4 < 14$$

+4 to all three parts

$$9 \leq 3x < 18$$

 $\div 3$ all three parts

$$3 \leq x < 6$$

$$3 \leq x < 6$$

b)

Filled circle at 3, open circle at 6

Joined by a line

12

Ayesha thinks of a whole number, n .

She doubles it and adds 3.

Her answer is greater than 10 and less than or equal to 21.

a. Write a two-sided inequality in n .b. Work out all the possible values of n .

(4 marks)

a)

$$10 < 2n + 3 \leq 21$$

b)

$$7 < 2n \leq 18$$

 $\div 2$ all three parts

$$3.5 < n \leq 9$$

$$4, 5, 6, 7, 8, 9$$