

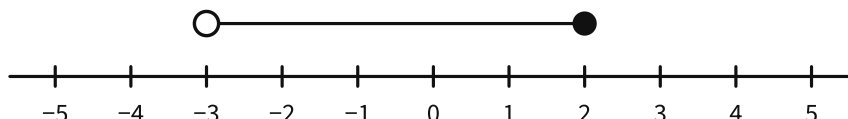
Inequalities and Formulae

ANSWERS

Calculator | 30 minutes | Total marks: 30

Name Class

- 1 (a) Write down the inequality shown on the number line.



Answer $-3 < x \leq 2$ (1)(1) [2 marks]

- (b) n is an integer and $-2 \leq n < 3$

Write down all the possible values of n .

Answer $-2, -1, 0, 1, 2$ (1)(1) [2 marks]

- 2 Solve

(a) $3(x+2) \leq x-4$

$$3x + 6 \leq x - 4 \quad (1)$$

$$2x \leq -10 \quad (1)$$

Answer $x \leq -5$ (1) [3 marks]

(b) $-7 < 2x+1 \leq 9$

$$-8 < 2x \leq 8 \quad (1)$$

Answer $-4 < x \leq 4$ (1)(1) [3 marks]

3

(a) Solve $x^2 < 25$ Answer $-5 < x < 5$ (1)(1)

[2 marks]

(b) Solve $x^2 - 3x - 10 > 0$

$$(x - 5)(x + 2) \text{ (1)}$$

critical values 5 and -2 (1)

the curve is above the axis outside these values (1)

Answer $x < -2$ or $x > 5$ (1)

[4 marks]

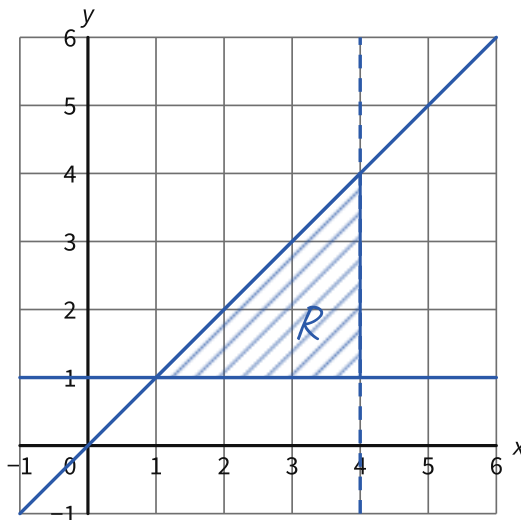
4

The region R satisfies these three inequalities.

$$y \geq 1$$

$$x < 4$$

$$y \leq x$$



On the grid, draw straight lines and use shading to show the region R.

Label the region R.

[3 marks]

Two lines correct (1)

All three, with $x = 4$ dashed (1)

Correct region (1)

5

An electrician charges a call out fee of £35 plus £28 for each hour.

(a) Write a formula for the total charge, £C, for a job that takes h hours.Answer $C = 35 + 28h$ (1)

[1 mark]

(b) The total charge for a job is £147

Work out how many hours the job takes.

$$28h = 112 \text{ (1)}$$

Answer 4 (1)

hours

[2 marks]

6

(a) Make t the subject of $v = u + at$

$$v - u = at \quad (1)$$

$$t = \frac{v - u}{a} \quad (1) \quad [2 \text{ marks}]$$

(b) Make r the subject of $A = \pi r^2$

$$r^2 = \frac{A}{\pi} \quad (1)$$

$$r = \sqrt{\left(\frac{A}{\pi}\right)} \quad (1) \quad [2 \text{ marks}]$$

(c) Make x the subject of $y = \frac{x+3}{x-2}$

$$y(x - 2) = x + 3 \quad (1)$$

$$xy - 2y = x + 3$$

$$xy - x = 2y + 3 \quad (1)$$

$$x(y - 1) = 2y + 3 \quad (1)$$

$$x = \frac{2y + 3}{y - 1} \quad (1) \quad [4 \text{ marks}]$$

Question	Topic	RAG
1	I can read an inequality from a number line and list integer values	
2	I can solve linear inequalities	
3	I can solve quadratic inequalities	
4	I can show a region on a grid	
5	I can write and use a formula	
6	I can change the subject of a formula, including when it appears twice	