

Mathematics

Paper 4 (Calculator) Higher Tier



Surname

Other names

You should have:

A pen, pencil, ruler, eraser and a scientific calculator.

Tracing paper may be used.

Information

- The total mark for this paper is 50
- The marks for each question are shown in brackets.
- Answer all questions in the spaces provided – *there may be more space than you need.*
- You must show all your working.
- Diagrams are not accurately drawn, unless otherwise indicated.
- Check your answers if you have time at the end.

- 1 a)** Use your calculator to work out $\frac{37.6 \times 12.9}{17.2 - 5.6}$
Write all the digits on your calculator display.

_____ (1 mark)

- b)** Write your answer to part a), correct to 1 significant figure.

_____ (1 mark)

- 2** Solve the equation $0.4x - 1.8 = 7.3$

_____ (2 marks)

3 A restaurant owner is buying plates.

A box of plates costs £87.50

She buys 6 boxes.

She gets a discount of 7% on her order.

Work out the total cost of the order after the discount.

(3 marks)

4 Filip is on holiday in Germany

He buys a guidebook for 25 euros.

In the UK, the same guidebook costs £15

The exchange rate is £1 = €1.09

Work out the difference between the cost of the guidebook in Germany
and the cost of the guidebook in the UK.

(3 marks)

5 Find the next term in each sequence.

a) 12 10.8 9.6 8.4 _____

(1 mark)

b) 1 5 25 125 _____

(1 mark)

6 A dice is biased so the probability it lands on 4 is 0.2

a) What is the probability that the dice does not land on 4?

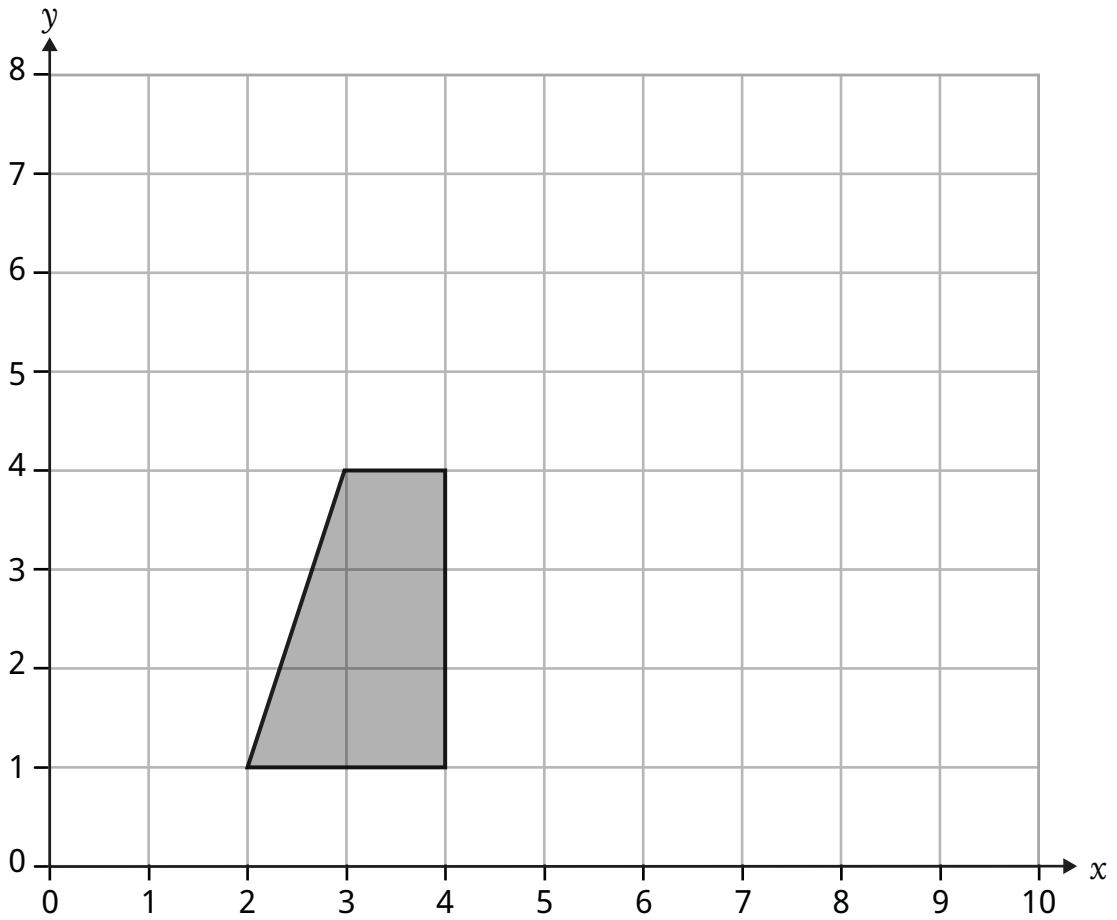
_____ (1 mark)

b) Aisha is going to roll the dice 300 times.

Work out an estimate for the number of times the dice will land on 4

_____ (2 marks)

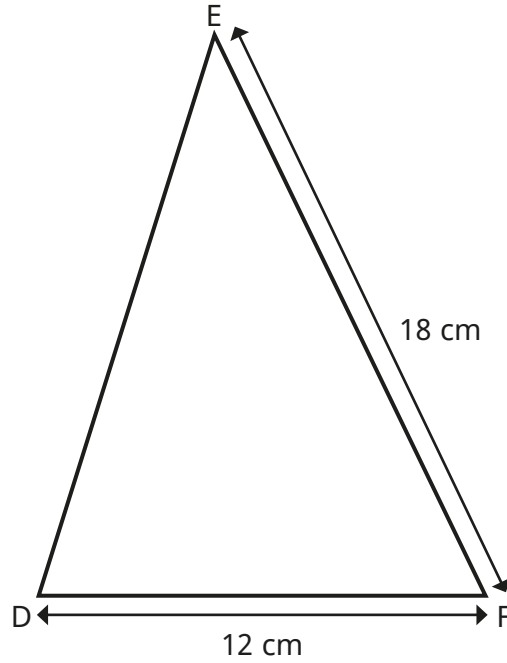
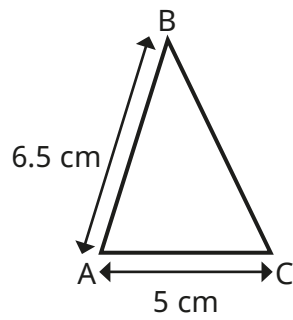
7



On the grid, enlarge the shape by a scale factor of 2, centre (0, 0).

(3 marks)

8



Triangles ABC and DEF are similar.

$AB = 6.5 \text{ cm}$

$AC = 5 \text{ cm}$

$EF = 18 \text{ cm}$

$DF = 12 \text{ cm}$

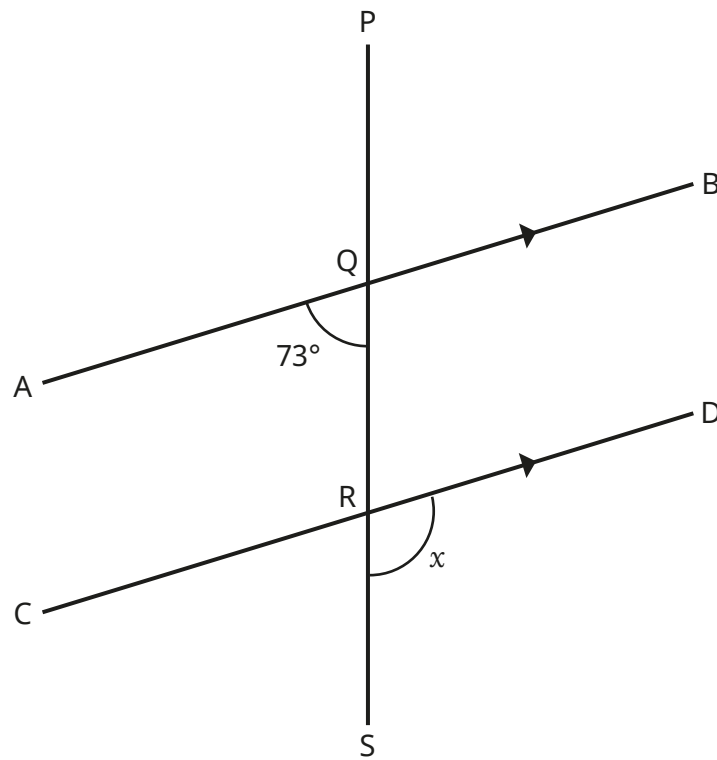
a) Work out the length of DE.

_____ (2 marks)

b) Work out the length of BC.

_____ (2 marks)

9



AQB, CRD and PQRS are straight lines.

AB is parallel to CD.

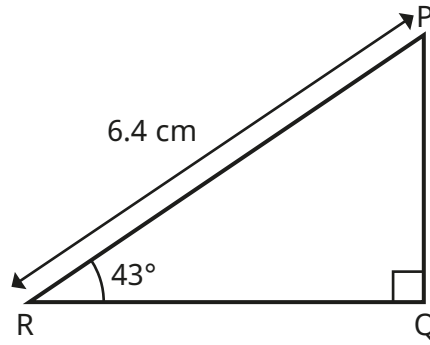
Angle AQR = 73° .

Work out the value of x .

Give reasons for your answer.

(3 marks)

10 a)

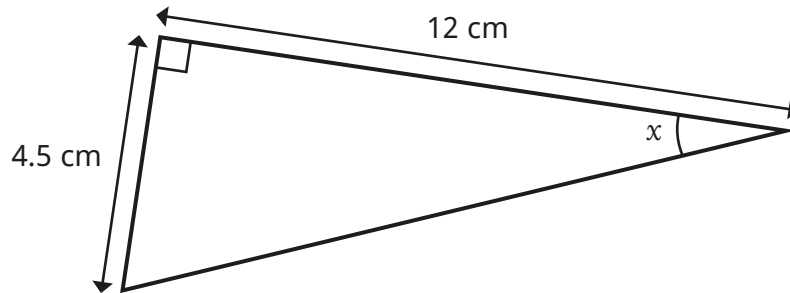


Work out the length of PQ.

Give your answer correct to 3 significant figures.

(2 marks)

b)

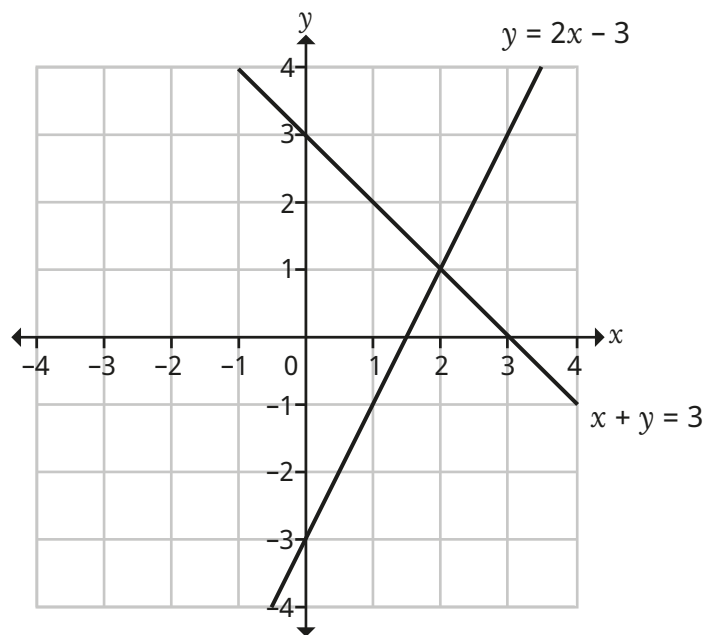


Calculate the value of x .

Give your answer correct to 1 decimal place.

(2 marks)

11 The graphs of the straight lines $y = 2x - 3$ and $x + y = 3$ have been drawn on the grid.



Use the graphs to solve the simultaneous equations.

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

$x =$ _____

$y =$ _____

(2 marks)

12 The areas of two squares are in the ratio 9 : 16

a) Complete the statement with a fraction.

The area of the smaller square is _____ of the area of the larger square.

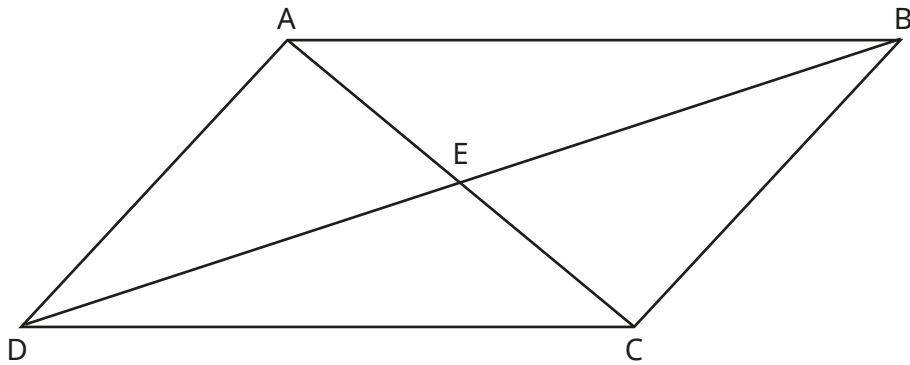
(1 mark)

b) The area of the larger square is 144 cm^2

Find the perimeter of the smaller square.

(2 marks)

13 The diagram shows parallelogram ABCD.



The diagonals of ABCD meet at point E.

Find three different pairs of congruent triangles in the diagram and complete the sentences.

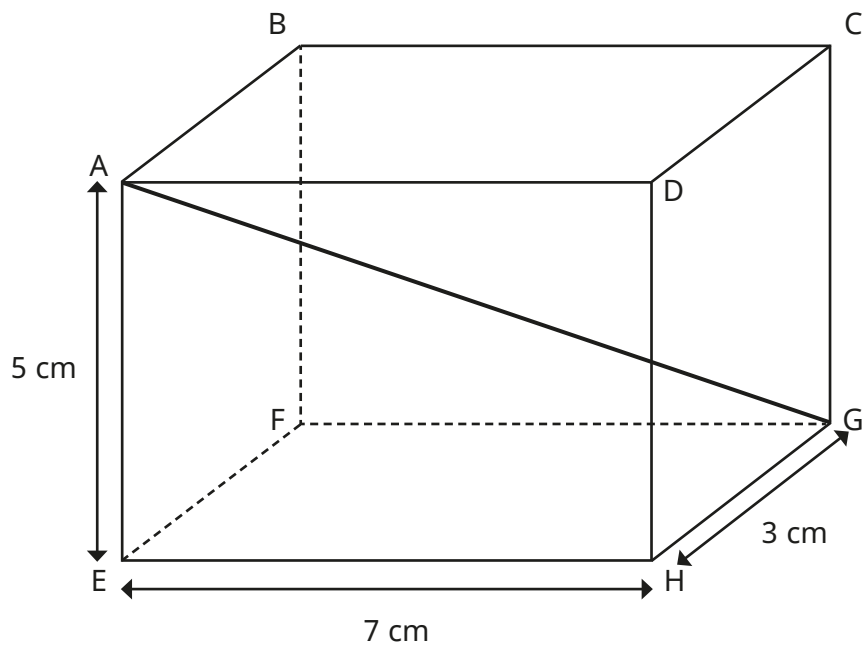
Triangle _____ is congruent to triangle _____

Triangle _____ is congruent to triangle _____

Triangle _____ is congruent to triangle _____

(2 marks)

- 14** The diagram shows a cuboid.
HG = 3 cm, AE = 5 cm and EH = 7 cm.



Work out the length of AG.

(3 marks)

15 Which of the following represents the correct solution set to the inequality

$$-10 < 3x - 1 < 14?$$

Show working to justify your answer.

$$\{x: -3 < x < 5\}$$

$$\{x: -3 < x \cup x < 5\}$$

$$\{x: -3 < x \cap x > 5\}$$

$$\{x: 5 < x < -3\}$$

(3 marks)

16 Solve the simultaneous equations.

$$y = x + 2$$
$$x^2 + y^2 = 10$$

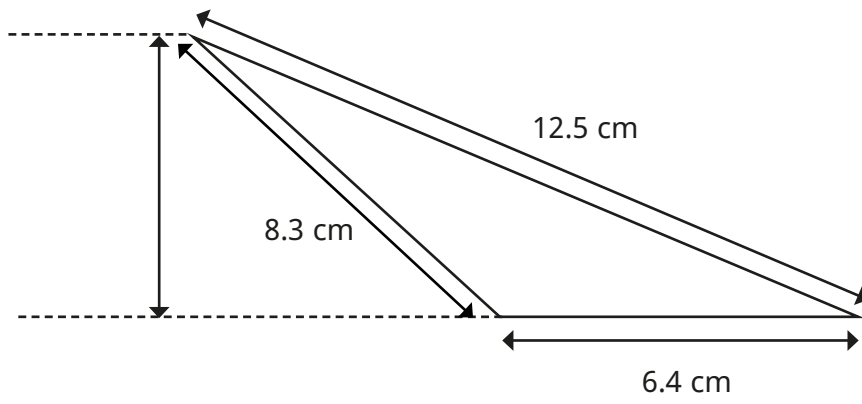
Show clear algebraic working.

$x = \underline{\hspace{10em}}$

$y = \underline{\hspace{10em}}$

(4 marks)

17 Work out the height of the triangle.



_____ (4 marks)