

Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Forming and Solving Equations 2

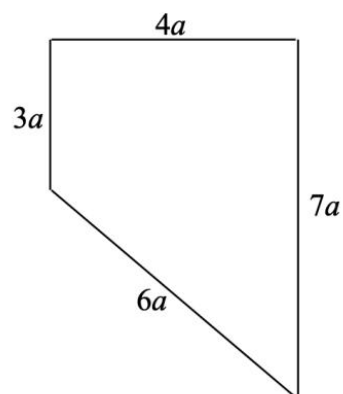
Calculator Allowed

INSTRUCTIONS TO CANDIDATES

- Write your name in the space provided.
- Write your answers in the spaces provided in this question paper.
- Answer ALL questions.
- Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- You should have a ruler, compass and protractor where required.

Total Marks :

- 1) (i) The perimeter of the shape is 160 cm. Form an equation and solve it to find the value of a .



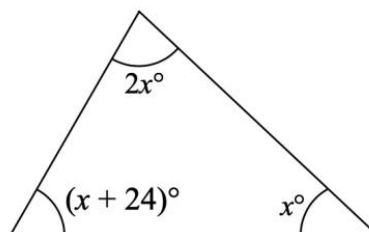
Answer: $a =$ _____

- (ii) Find the length of the shortest side.

Answer: _____ cm

(5 marks)

- 2) (i) Form and simplify an **equation** in x .



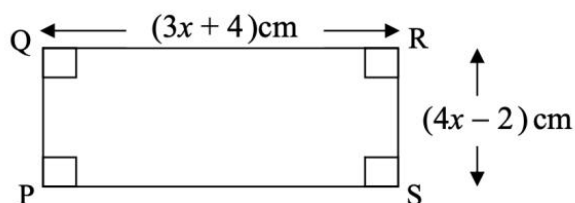
- (ii) Solve this equation.

$x =$ _____ $^\circ$

(5 marks)

3) PQRS is a rectangle.

a) Write, **in terms of x** , an expression for the **perimeter** of the rectangle.



perimeter = _____ cm

b) The perimeter of the rectangle is 32 cm. Find the value x .

x = _____

(4 marks)

4) Ms Brincat pays €52 for 3 blouses and 2 scarves. A scarf costs 6 euro more than a blouse.

Let the cost of a blouse be x euro.

a) Write an expression for the cost in euro of a scarf in terms of x .

Ans: _____

b) Form an equation and solve it to find the cost of one blouse.

Ans: _____

(5 marks)

5)

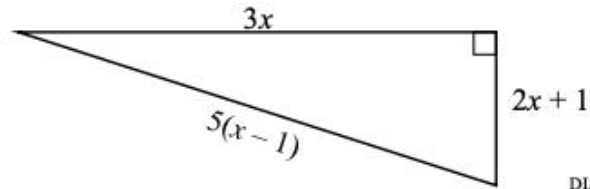


DIAGRAM NOT DRAWN TO SCALE

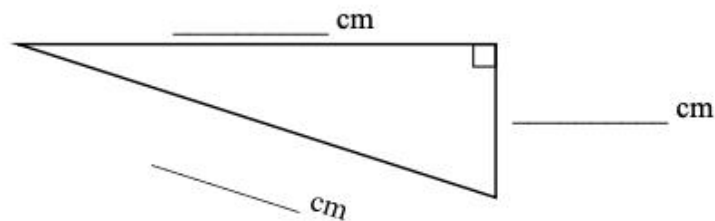
The perimeter of the triangle above is 36 cm.

a) Show that $10x - 4 = 36$.

b) Solve the equation in (a) to find the value of x .

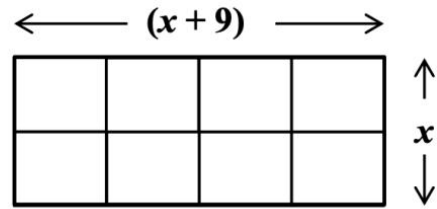
Ans: $x =$ _____

c) Hence work out the length of each of the sides of the triangle above and fill in the blanks.



(8 marks)

- 6) A rectangle is $(x + 9)$ cm long and x cm wide. The rectangle is divided into smaller identical rectangles as shown.



- a) Fill in:

Each of the smaller rectangles is $\frac{x + 9}{\square}$ cm long and $\frac{x}{\square}$ cm wide.

- b) If the perimeter of each of the smaller rectangles is 15 cm, show that $\frac{x + 9}{2} + x = 15$.

- c) Solve the equation $\frac{x + 9}{2} + x = 15$.

Ans $x = \underline{\hspace{2cm}}$
(6 marks)

- 7) Triangle ABC is isosceles. $\angle ABC$ is equal to $2x$ degrees.

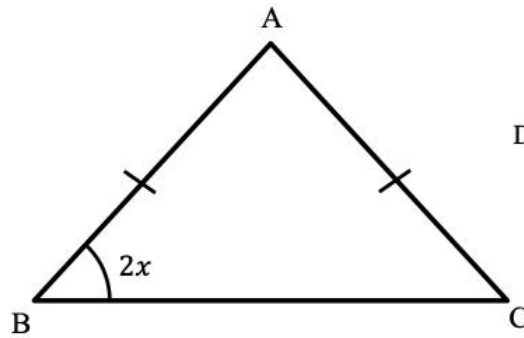


Diagram NOT drawn to scale

- a) Write down an expression for $\angle ACB$ in terms of x .

Ans: _____

- b) $\angle BAC$ is **60 degrees more** than the sum of the other two angles.
Write down an expression for $\angle BAC$ in terms of x .

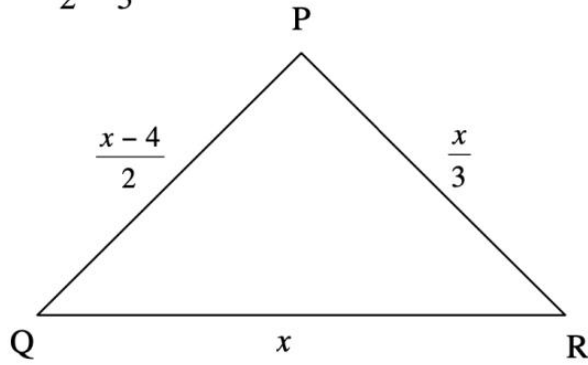
Ans: _____

- c) Use the above information to show that $8x + 60 = 180$.

- d) Solve the equation $8x + 60 = 180$ to find the value of x .

Ans: $x =$ _____
(5 marks)

- 8) The triangle PQR given below is not drawn to scale. Its sides PQ, PR and QR are given as $\frac{x-4}{2}$, $\frac{x}{3}$ and x respectively.



If the perimeter of triangle PQR is 20 cm, form an equation in x and solve it to find the length of side QR.

Answer.....[4]

- 9) In the right-angled triangle, the shortest side is x cm long. The hypotenuse is 6cm longer than the shortest side. The third side is 2 cm shorter than the hypotenuse.
- a) Form a simplified expression for the perimeter in terms of x .

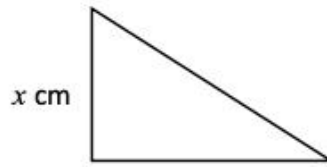


Diagram not drawn to scale

Answer[2]

- b) Given that the perimeter is 40 cm, form an equation, solve it and find the lengths of the 3 sides.

Shortestcm [2]

Hypotenusecm [1]

Othercm [1]

- c) What is the area of the triangle?

Answer[2]

- d) If you doubled the value of x , what would the length of the 3 sides now be?

Shortestcm [1]

Hypotenusecm [1]

Othercm [1]

10) Martina participates in a shooting competition played on two rounds.
In the first round, Martina takes x shots and totals a score of 360 points.
In her second round, Martina takes **two shots more** than in the first round and scores 340 points.

(a) Work out, in terms of x :

i) the **average score per shot** in the first round.

Ans: _____

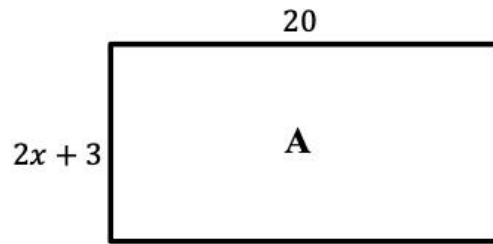
ii) the **average score per shot** in the second round.

Ans: _____

(b) Martina's average score in the second round is **4 points less** than in her first round.
Work out the **number of shots** that Martina takes in the **first round** of the competition.

Answer.....[7]

- 11) The diagram shows a rectangular tile A. The measurements are in centimetres.



- i) Write down an expression, in terms of x , for the area of the tile.

Ans: _____ cm^2

- ii) The actual area of the tile is 300 cm^2 . Form an equation in x and solve it to find x .

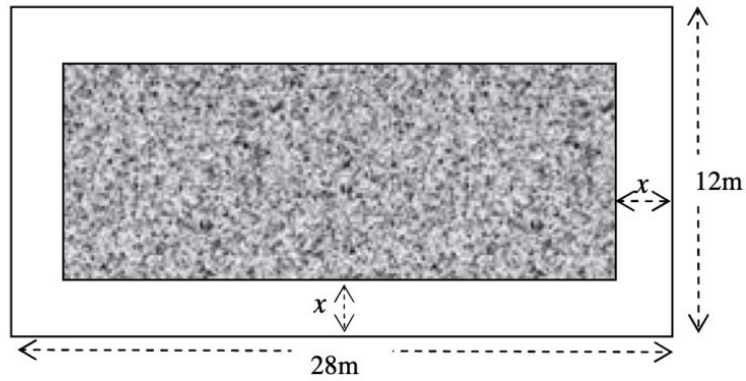
Ans: _____ cm

Another rectangular tile B is **20** cm long and **(2y + 4)** cm wide.
How many tiles of this type fit in a wall of area $(800y + 1600) \text{ cm}^2$?

Ans: _____ tiles

(8 marks)

12) The following diagram (not drawn to scale) shows a garden with a path around a central flower-bed. Let the width of the path be x metres, all around.



Given that the flower-bed has an area of 260m^2 :

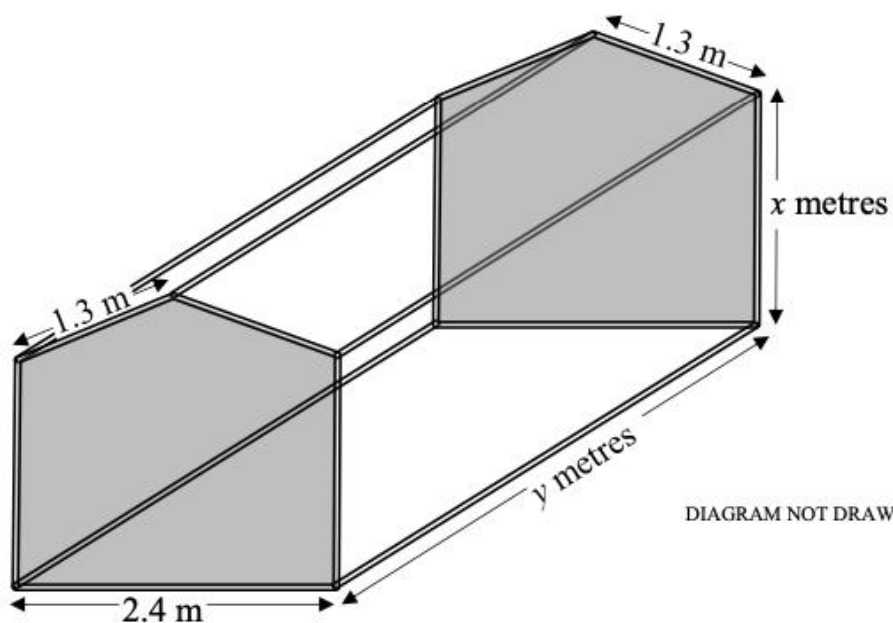
(i) Form an equation in x and solve it to find the width of the path;

Answer.....[6]

(ii) Calculate the length and width of the flower bed.

[3]

13) This tent frame is in the form of a **prism** and is made of aluminium tubing.



The depth, y , is **0.4 m shorter than twice the vertical length x** .

a) Express y in terms of x .

Ans: $y =$ _____

Jason buys a tent which uses **36 m of tubing**.

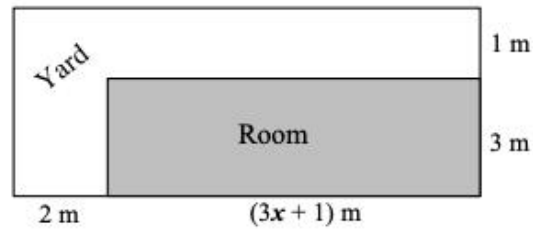
b) i) Show that $14x + 8 = 36$.

ii) Solve this equation to find x .

Ans: $x =$ _____

(7 marks)

- 14) The diagram shows a **plan** consisting of a rectangular room (shaded) and an adjacent L-shaped yard.



- (a) Write an expression, in terms of x , for the **length** of the whole plan.

Ans: Length = _____ m

- (b) Show that the **area** of the room is $(9x + 3)$ m².

- (c) Show that the **area** of the yard is $(3x + 9)$ m².

- (d) The **area** of the yard is **equal** to the area of the room. Work out the value of x .

Ans: $x =$ _____
(7 marks)