

Name: Homework Solutions

Area and Volume

Date:

Time:

Total marks available:

Total marks achieved: _____

Questions

Q1.

* The diagram shows the floor plan of Mary's conservatory.

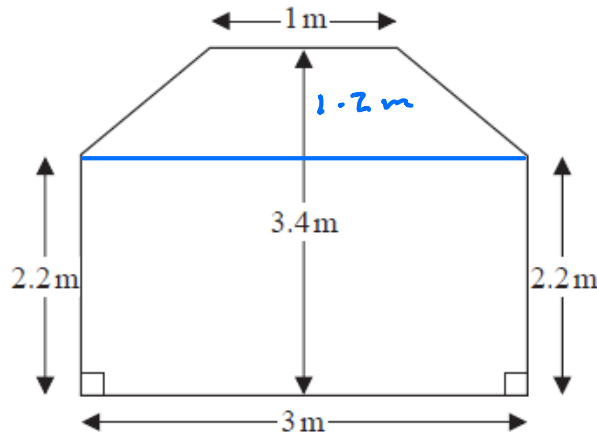


Diagram NOT accurately drawn

Rectangle Area

$$3 \times 2.2 = 6.6 \text{ m}^2$$

Trapezium Area

$$\frac{1}{2} (1+3) \times 1.2 = 2.4 \text{ m}^2$$

Mary is going to cover the floor with tiles.

The tiles are sold in packs.

One pack of tiles will cover 2m^2

A pack of tiles normally costs £24.80

Mary gets a discount of 25% off the cost of the tiles.

Mary has £100

Does Mary have enough money to buy all the tiles she needs?

You must show all your working.

$$£24.80 \div 4 = £6.20 \text{ discount}$$

$$£24.80 - £6.20 = £18.60 \text{ per pack}$$

$$\text{Total Area} = 9 \text{ m}^2$$

Will need 5 packs of tiles

$$£18.60$$

$$\begin{array}{r} 43 \quad 5 \times \\ \hline £93.00 \end{array}$$

So Mary has enough money to buy tiles

(Total for question = 5 marks)

Q2.

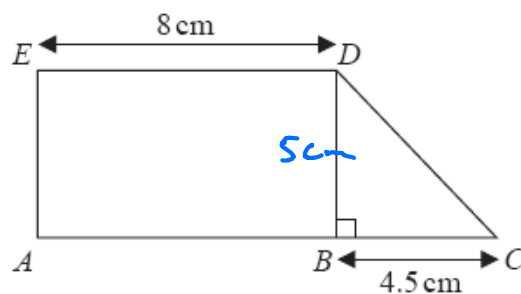


Diagram NOT accurately drawn

Rectangle

$$\begin{aligned} \text{width} &= \frac{\text{Area}}{\text{Length}} = \frac{40}{8} \\ &= 5 \text{ cm} \end{aligned}$$

ABDE is a rectangle.

ED is 8cm.

BDC is a right-angled triangle.

BC is 4.5cm.

ABC is a straight line.

The area of the rectangle ABDE is 40cm^2 .

Triangle Area

$$= \frac{1}{2} \text{ base} \times \text{height}$$

$$= \frac{1}{2} \times 4.5 \times 5$$

$$= 11.25 \text{ cm}^2$$

Work out the area of the triangle BDC .

..... 11.25 cm^2

(Total for question = 3 marks)

Q3.

*

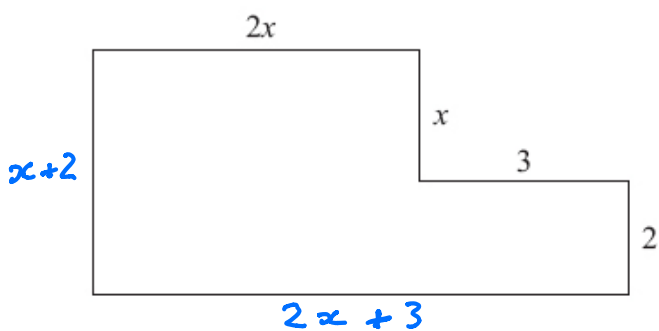


Diagram **NOT** accurately drawn

In the diagram, all measurements are given in centimetres.
All angles are right angles.

Show that the perimeter of the shape can be written as $2(3x + 5)$.

$$\begin{aligned} \text{Perimeter} &= 2x + x + 3 + 2 + 2x + 3 + x + 2 \\ &= 6x + 10 \\ &= 2(3x + 5) \end{aligned}$$

(Total for Question is 4 marks)

Q4.

The diagram shows a semicircle drawn inside a rectangle.

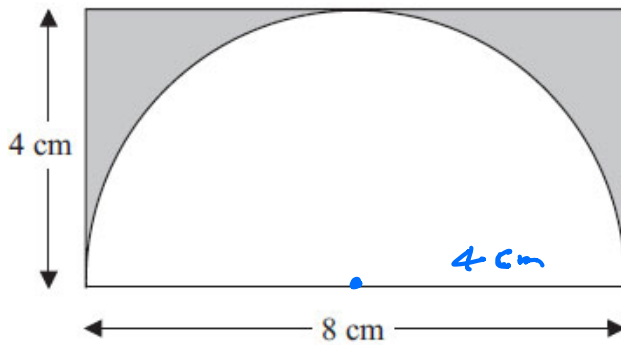


Diagram **NOT**
accurately drawn

$$\text{radius} = 4 \text{ cm}$$

The semicircle has a diameter of 8 cm.

The rectangle is 8 cm by 4 cm.

Work out the area of the shaded region.

Give your answer correct to 3 significant figures.

$$\begin{aligned} \text{Shaded Region} &= \text{Area of Rectangle} - \text{Area of semi-circle} \\ &= 8 \times 4 - \frac{\pi r^2}{2} \\ &= 32 - \frac{\pi \times 4^2}{2} \\ &= 6.87 \text{ cm}^2 \end{aligned}$$

..... 6.87 cm²

(Total for Question is 4 marks)

Q5.

Here is a rectangle.

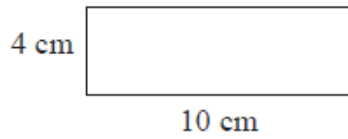
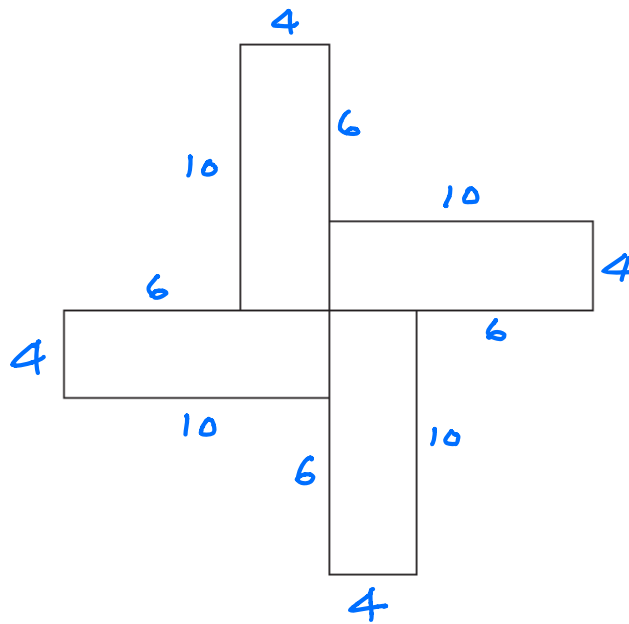


Diagram NOT accurately drawn

The 12-sided shape below is made from 4 of these rectangles.



Work out the perimeter of the shape.

80

..... cm

(Total for Question is 3 marks)

Q6.

Here is a cuboid.

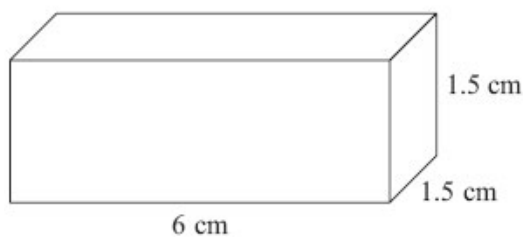


Diagram NOT accurately drawn

The cuboid is 6 cm by 1.5 cm by 1.5 cm.

Work out the total surface area of the cuboid.

$$\begin{array}{rcl} \text{Front} & 6 \times 1.5 & = 9 \\ \text{Back} & & = 9 \\ \text{Top} & & = 9 \\ \text{Bottom} & & = 9 \\ \text{End} & 1.5 \times 1.5 & = 2.25 \\ \text{End} & & = 2.25 \\ & & \hline & & 40.50 \end{array}$$

..... 40.5 cm^2

(Total for Question is 3 marks)