

- 1 The diagram shows one face of a wall.

This face is in the shape of a pentagon with exactly one line of symmetry.

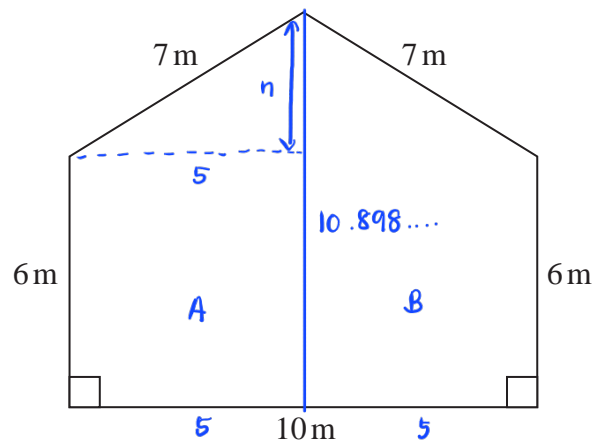


Diagram **NOT** accurately drawn

Omondi is going to paint this face of the wall once.

He has to buy all the paint that he needs to use.

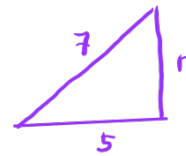
The paint in each tin of paint Omondi is going to buy will cover  $16\text{m}^2$  of the face of the wall.

Work out the least number of tins of paint Omondi will need to buy.

Show your working clearly.

By using Pythagoras' Theorem, finding  $n$  :

$$\begin{aligned} n &= \sqrt{7^2 - 5^2} \\ &= \sqrt{24} \quad (1) \\ &= 4.898 \dots \quad (1) \end{aligned}$$



Area of trapezium A and B :

$$\begin{aligned} &\frac{1}{2} \times (6 + 10.898 \dots) \times (5) \times 2 \\ &= 84.494 \dots \text{m}^2 \quad (1) \end{aligned}$$

↖ 2 trapeziums

$$\frac{84.494 \dots}{16} = 5.28 \quad (1)$$

↖ 5 tins of paint is not enough to cover the whole wall

∴ Omondi needs 6 tins of paint.

(1)

6

(Total for Question 1 is 5 marks)

- 2 The region, shown shaded in the diagram, is a path.

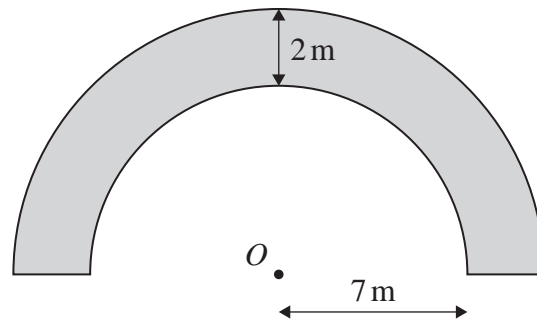


Diagram **NOT**  
accurately drawn

The boundary of the path is formed by two semicircles, with the same centre  $O$ , and two straight lines.

The inner semicircle has a radius of 7 metres.

The path has a width of 2 metres.

Work out the perimeter of the path.

Give your answer correct to one decimal place.

$$\text{Inner semicircle} = \frac{1}{2} \times 2\pi r$$

$$= \pi(7)$$

$$= 7\pi \quad \textcircled{1}$$

$$\text{Outer semicircle} = \frac{1}{2} \times 2\pi r$$

$$= \pi(9)$$

$$= 9\pi$$

$$\text{Perimeter} = 9\pi + 7\pi + 2(2) \quad \textcircled{1}$$

$$= 16\pi + 4$$

$$= 54.3 \text{ (1dp)}$$

①  
 54.3 ..... m

(Total for Question 2 is 3 marks)

- 3 Here is a floor plan of a stage.  
The plan is formed from a triangle and a rectangle.

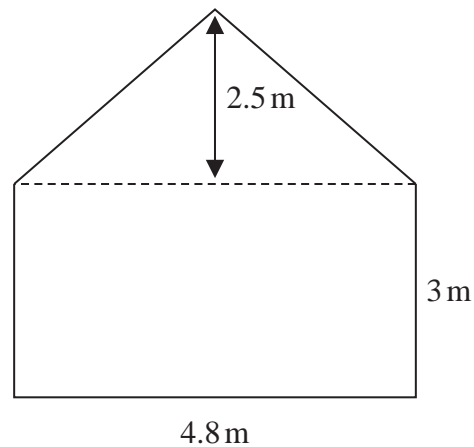


Diagram **NOT**  
accurately drawn

The stage manager is going to paint the floor.

One tin of paint covers an area of  $1.8 \text{ m}^2$

One tin of paint costs \$16.40

Paint can only be bought in full tins.

The stage manager has \$190 to spend.

Does the stage manager have enough money to buy enough tins to paint all of the floor?

Show your working clearly.

$$\text{Area triangle} : \frac{1}{2} \times 4.8 \times 2.5 = 6 \quad (1)$$

$$\text{Area rectangle} : 4.8 \times 3 = 14.4 \quad (1)$$

$$\text{Total area} : 6 + 14.4 = 20.4$$

$$\frac{20.4}{1.8} = 11.3 \dots \quad (1)$$

$\approx 12$  tins are needed

$$12 \times 16.40 = 196.80 \quad (1)$$

$$\text{No. } 196.80 > 190.$$

(1)

(Total for Question 3 is 5 marks)

4 The diagram shows the plan of a garden.

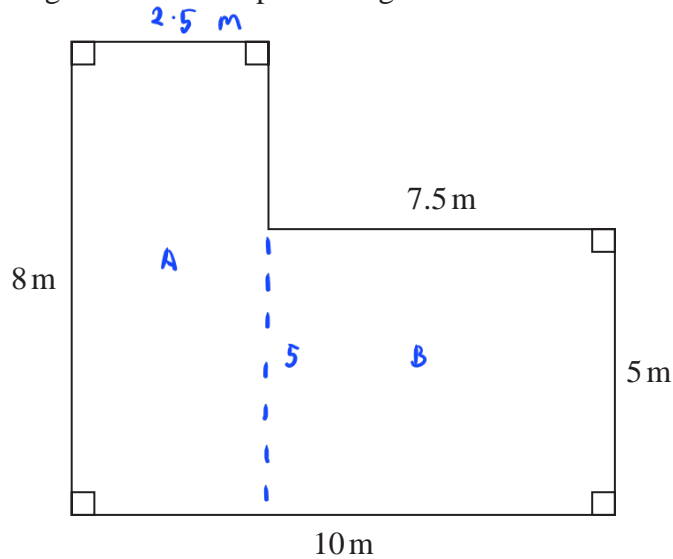
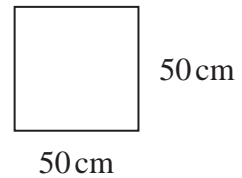


Diagram **NOT**  
accurately drawn



One tile

Martyn covers the garden with square tiles of side length 50 cm.  
There are no gaps between the tiles.

It takes 4 minutes to lay each tile.

Work out how long it takes Martyn to cover the whole garden with tiles.  
Give your answer in hours and minutes.

$$\text{Area A} = 8 \times 2.5 = 20 \text{ m}^2$$

$$\text{Area B} = 7.5 \times 5 = 37.5 \text{ m}^2$$

$$\begin{aligned} \text{Area of one tile} &= 0.5 \times 0.5 \\ &= 0.25 \text{ m}^2 \end{aligned}$$

$$\text{Total area} = 20 + 37.5 = 57.5 \text{ m}^2$$

$$\text{No. of tiles required} = \frac{57.5 \text{ m}^2}{0.25 \text{ m}^2} = 230 \text{ tiles}$$

$$\text{Time taken} = 230 \times 4 \text{ mins} = 920 \text{ mins}$$

$$\begin{aligned} \text{in hours} &= \frac{920}{60} = 15 \frac{1}{3} \text{ hours} \\ &= 15 \text{ hours } 20 \text{ mins} \end{aligned}$$

15 hours 20 minutes

(Total for Question 4 is 5 marks)

5 The diagram shows a rectangle and an isosceles triangle.

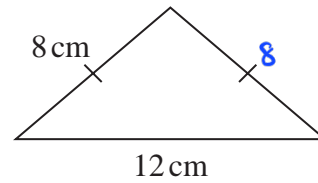


Diagram **NOT**  
accurately drawn

The perimeter of the rectangle is equal to the perimeter of the triangle.

(a) Find the area of the rectangle.

$$\text{Perimeter} = 8 + 8 + 12 = 28 \quad (1)$$

$$\text{side length} = \frac{28 - 5(2)}{2} = 9 \quad (1)$$

$$\text{Area} = 9 \times 5 = 45 \quad (1)$$

$$\frac{45}{(3)} \text{ cm}^2$$

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(Total for Question 5 is 3 marks)