



Aberdare Community School  
Mathematics Department

WJEC GCSE

**Higher – Non Calculator**  
Shape

## **Perimeter, area and volume**

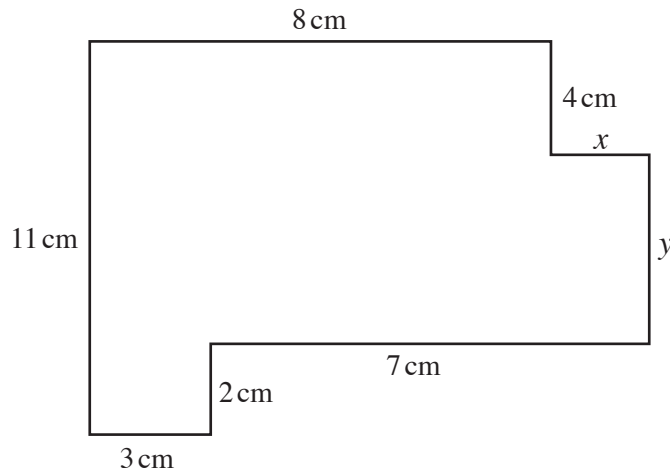
Name: .....

Set: .....

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Teacher: .....

3. The diagram below shows a shape.



*Diagram not drawn to scale.*

(a) Write down the lengths of the sides marked  $x$  and  $y$ .

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$x = \dots\dots\dots \text{ cm}$  and  $y = \dots\dots\dots \text{ cm}$

[2]

(b) Find the perimeter of the shape.

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[2]

(c) Find the area of the shape.

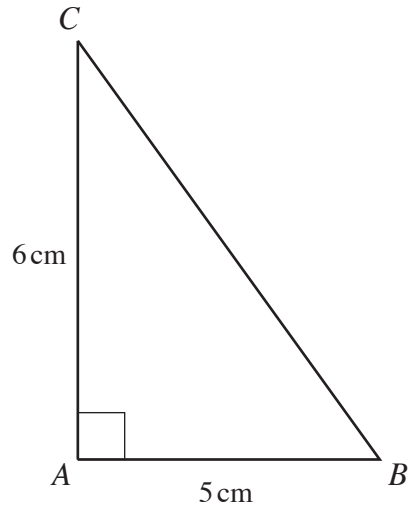
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[3]

5. The diagram shows a right-angled triangle  $ABC$  with  $AB = 5$  cm,  $AC = 6$  cm and  $\widehat{BAC} = 90^\circ$ .



*Diagram not drawn to scale.*

Find the area of the triangle  $ABC$ .

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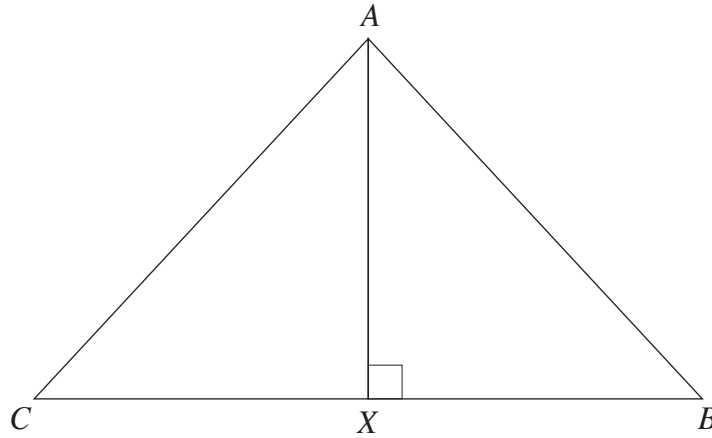
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[2]

4. The diagram shows a triangle  $ABC$  with  $BC = 8$  cm,  $\widehat{AXB} = 90^\circ$  and  $AX = 3$  cm



*Diagram not drawn to scale.*

Find the area of the triangle  $ABC$ . State appropriate units for your answer.

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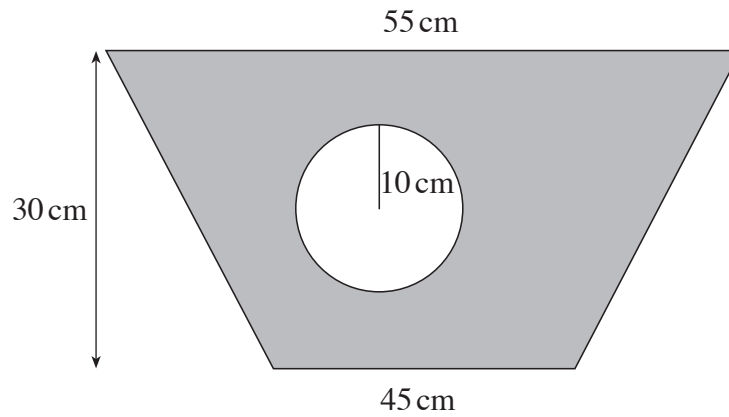
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7. The following diagram shows a card in the shape of a trapezium, with a circular hole of radius 10 cm cut out of the card. The lengths of the parallel sides of the trapezium are 55 cm and 45 cm and the perpendicular distance between the parallel sides is 30 cm.



*Diagram not drawn to scale.*

Using the value of  $\pi$  as 3.14, calculate

- (a) the circumference of the circular hole,

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- (b) the area of the shaded part of the card.

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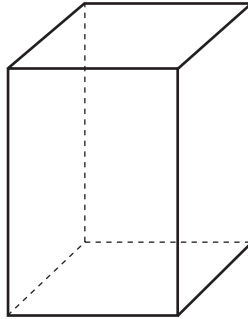
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19. The volume of a square based cuboid is  $150\text{cm}^3$ . The height of the cuboid is 6 cm.



*Diagram not drawn to scale.*

Find the length of the sides of the base of the cuboid.

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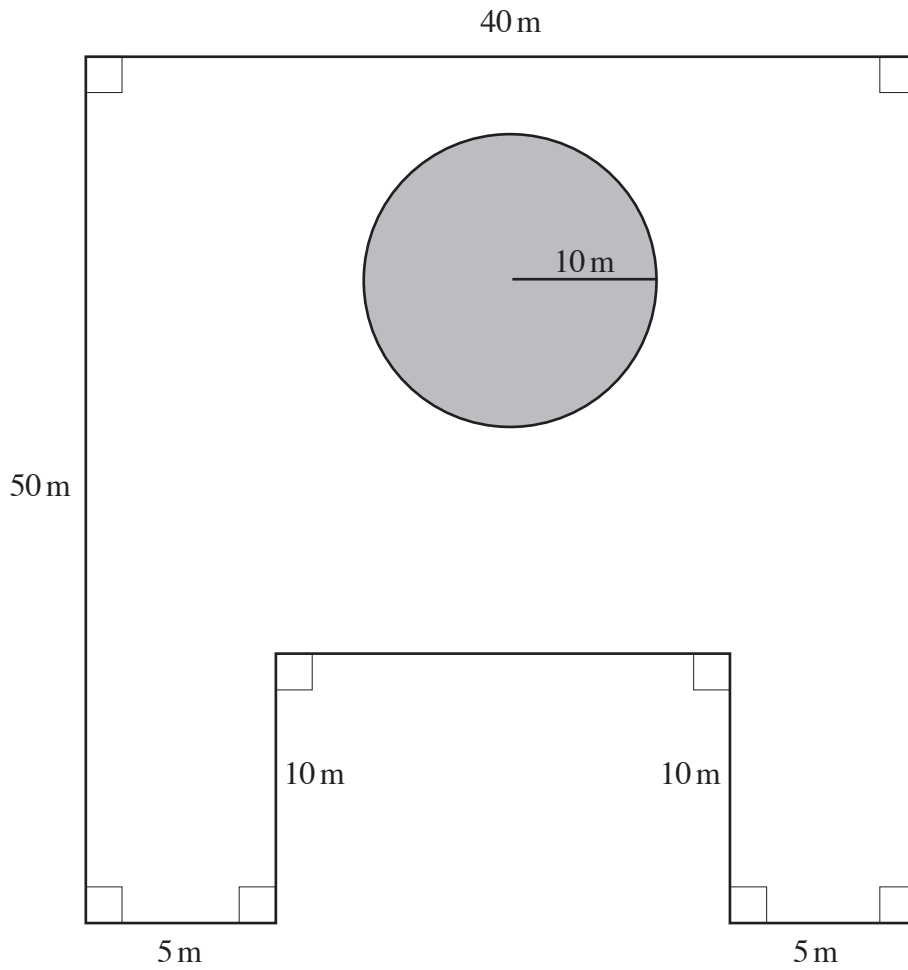
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7. The following diagram shows a paved area with a circular pond of radius 10m.



Using the value of  $\pi$  as 3.14, calculate the area of the paved surface clearly indicating the units of your answer.

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[6]

**6.**

- (b) It takes 50 seconds to fill a 4 litre bucket with water from a hose pipe. It takes 10 minutes to fill a tank with water using the same hose pipe with the same rate of flow. Find the volume of the tank.

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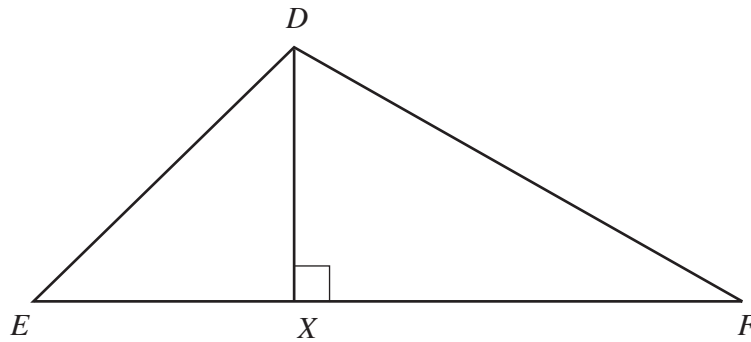
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4. The diagram shows a triangle  $DEF$  with  $EF = 11$  cm,  $\widehat{DXF} = 90^\circ$  and  $DX = 7$  cm.



*Diagram not drawn to scale.*

Find the area of the triangle  $DEF$ . State appropriate units for your answer.

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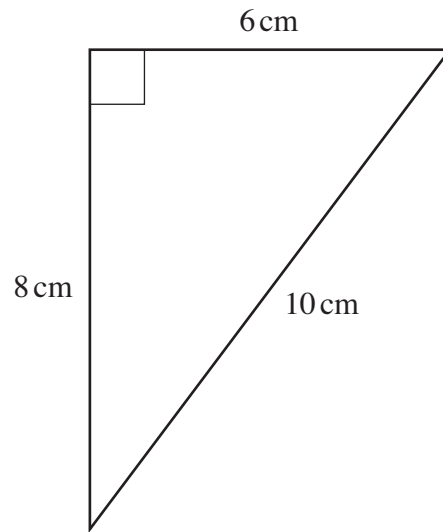
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[3]

2. (a) Calculate the area of the following triangle, stating the units of your answer.



*Diagram not drawn to scale.*

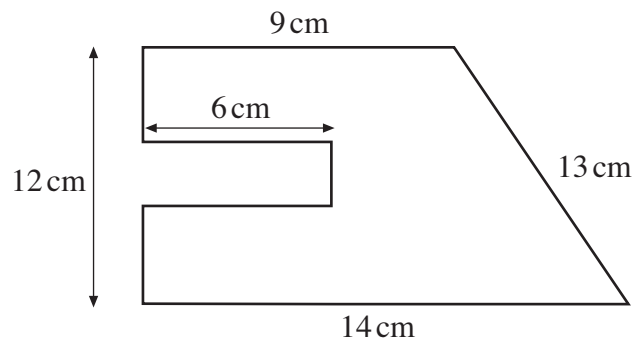
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- (b) Calculate the perimeter of the shape shown in the diagram below.



*Diagram not drawn to scale.*

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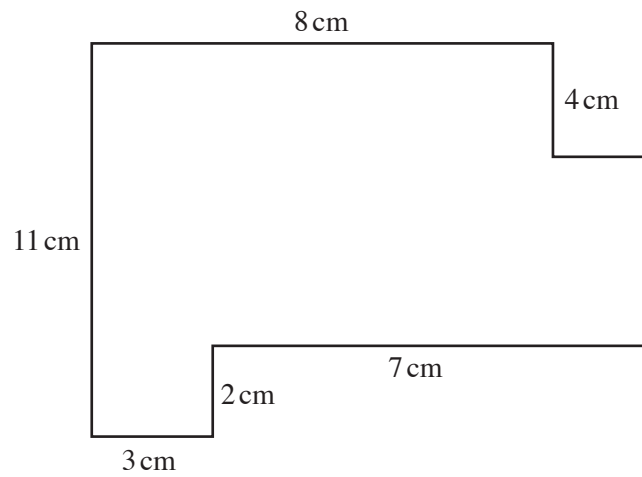
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3. The diagram below shows a shape.



*Diagram not drawn to scale.*

- (a) Find the perimeter of the shape.

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[4]

- (b) Find the area of the shape.

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[3]

9. (a) A hose pipe is used to fill a bucket and a tank.  
The flow of water remains the same for filling the bucket and the tank.  
The bucket has a volume of 6 litres.  
It takes 40 seconds to fill the bucket.  
It takes 3 minutes to fill the tank.

(i) Find the volume of the tank in litres.

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(ii) Write down the volume of the tank in  $\text{cm}^3$ .

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[4]

4. (a) Calculate the circumference of a circle with a radius of 5 cm, using 3.14 as the value of  $\pi$ .

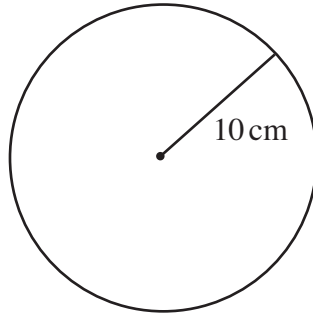
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(b)



*Diagram not drawn to scale.*

Calculate the area of the circle shown in the diagram above, using 3.14 as the value of  $\pi$ .

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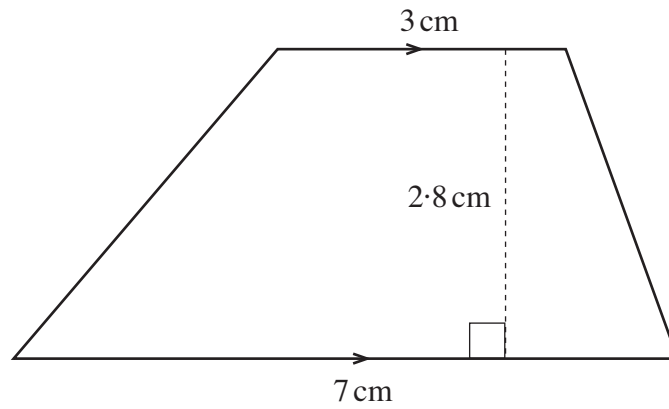
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(c)



*Diagram not drawn to scale.*

Calculate the area of the trapezium shown in the diagram.

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(b) Calculate the area of a semicircle with a radius of 20 cm using  $\pi = 3.14$ .

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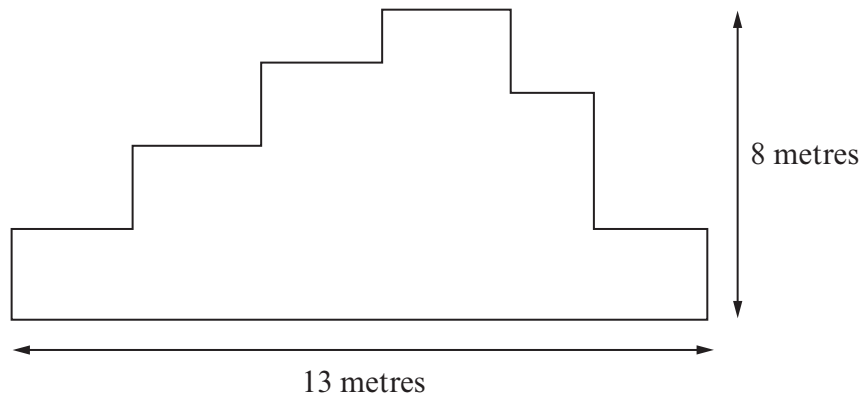
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4. Find the perimeter of the shape below.



*Diagram not drawn to scale*

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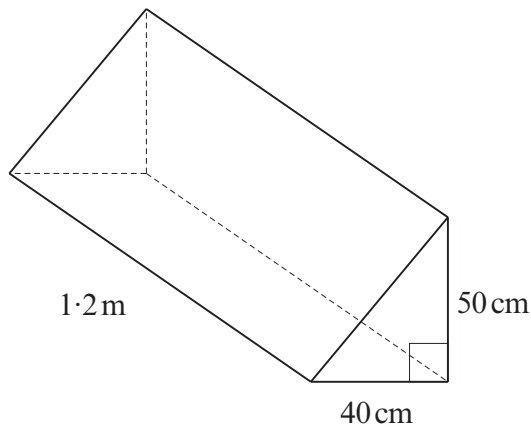
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*Diagram not drawn to scale*

Calculate the volume of the triangular prism, giving your answer in  $\text{cm}^3$ .

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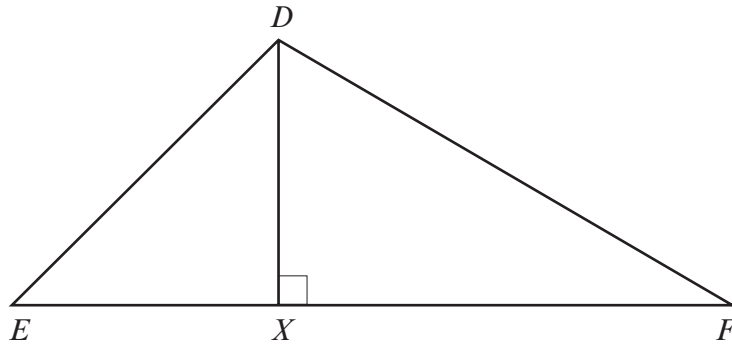
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3. (a) The diagram shows a triangle  $DEF$  with  $EF = 12$  cm,  $\widehat{DXF} = 90^\circ$  and  $DX = 5$  cm.



*Diagram not drawn to scale*

Find the area of the triangle  $DEF$ . State appropriate units for your answer.

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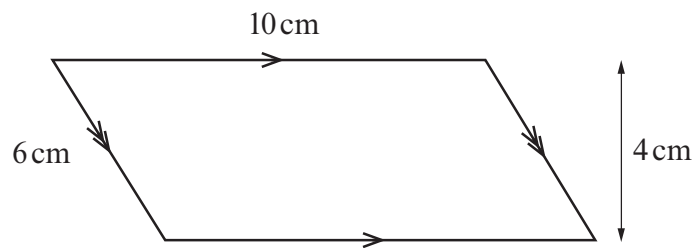
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[3]

(b)



*Diagram not drawn to scale*

Calculate the area of the parallelogram.

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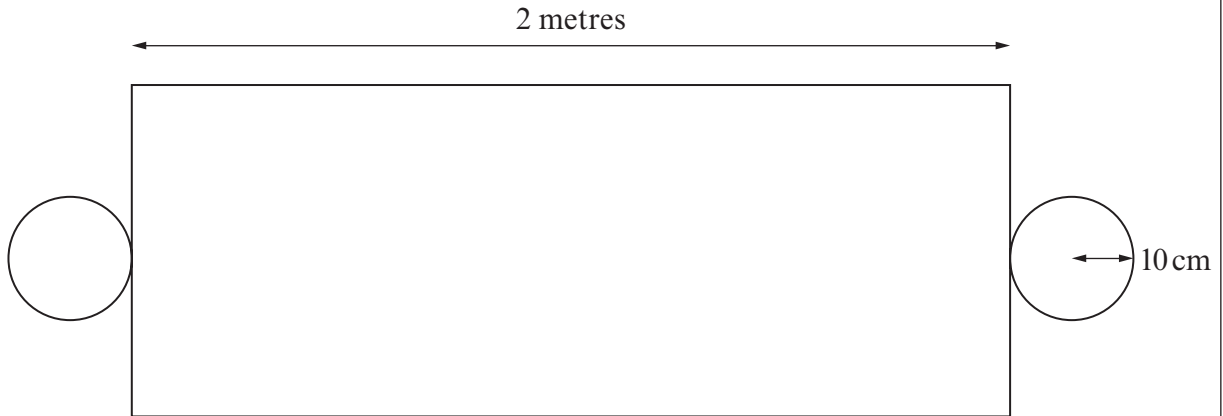
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9. A company is making cylinders to package plastic rods.  
Each cylinder is made using a rectangular piece of card and two circular pieces of metal.  
The net of one of these cylinders is shown below.



*Diagram not drawn to scale*

The radius of each circular end is 10 cm.  
The cylinder is of length 2 metres.  
Taking  $\pi = 3.14$ , calculate the **area of the rectangular piece of card**.  
State the units of your answer.

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[5]



(b) Martha has another flowerbed in the shape of a parallelogram.

The longer sides measure twice the length of the shorter sides of the parallelogram.  
The perimeter of this flowerbed is 24 metres.

Let the length of one of the shorter sides of the flowerbed be  $z$  metres.

**Form an equation in terms of  $z$ .**

Solve your equation to find the length of one of the shorter sides of the parallelogram.

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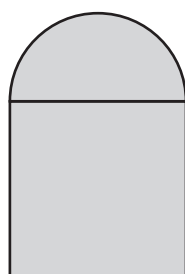
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13. (a) The diagram shows a semicircle joined to a square.



8 cm

*Diagram not drawn to scale*

Calculate the total area of the shaded shape, leaving your answer in terms of  $\pi$ . [2]

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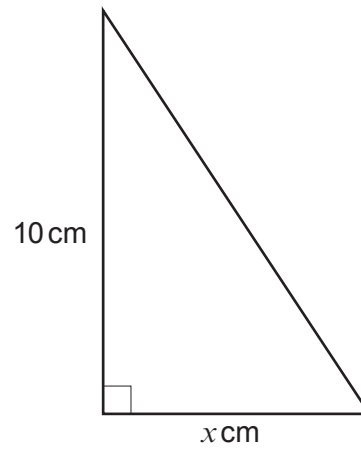
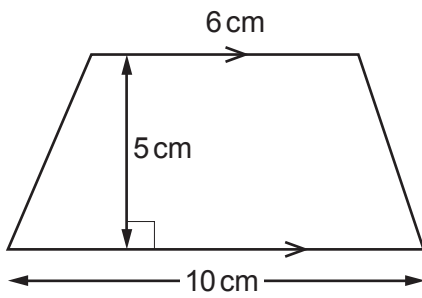
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4. The area of the trapezium is equal to the area of the right-angled triangle.



*Diagrams not drawn to scale*

Calculate the value of  $x$ .

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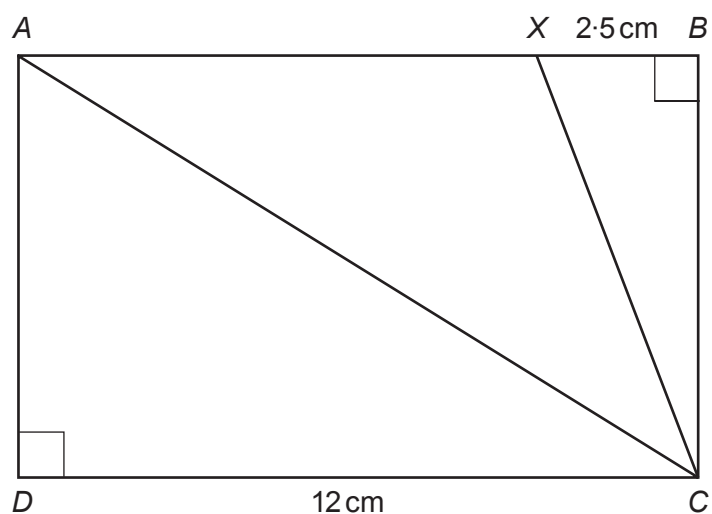
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6. The diagram shows a rectangle  $ABCD$ .



*Diagram not drawn to scale*

Given that  $XB = 2.5$  cm,  $DC = 12$  cm and the area of triangle  $ADC$  is  $60$  cm<sup>2</sup>, calculate the area of triangle  $XBC$ . [4]

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