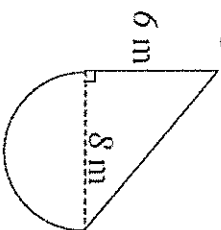


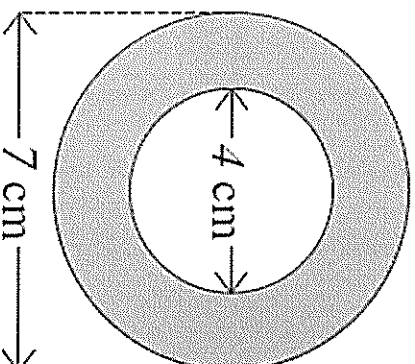
- 1 A balcony is in the shape of a right triangle and a semicircle, as shown in the diagram.



NOT TO SCALE

Calculate the area of the balcony correct to the nearest square metre.

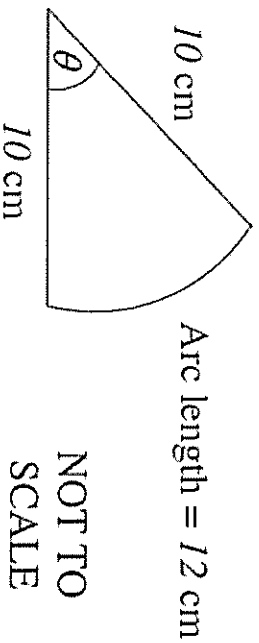
- (A) 49 m^2 (B) 73 m^2 (C) 125 m^2 (D) 149 m^2



- 2 Calculate the area of the shaded part between the two circles.

- (A) 9.42 cm^2 (B) 25.92 cm^2
 (C) 28.27 cm^2 (D) 103.67 cm^2

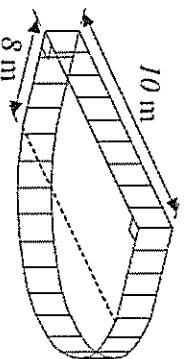
- 3 This is a sketch of a sector of a circle.



Find the value of θ to the nearest degree.

- (A) 47° (B) 48° (C) 68° (D) 69°

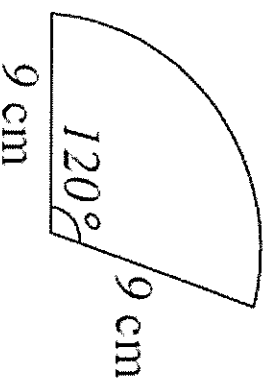
4



The paddock enclosed by the fence shown in the diagram consists of a rectangle and a semicircle. What is the area of the paddock to the nearest square metre?

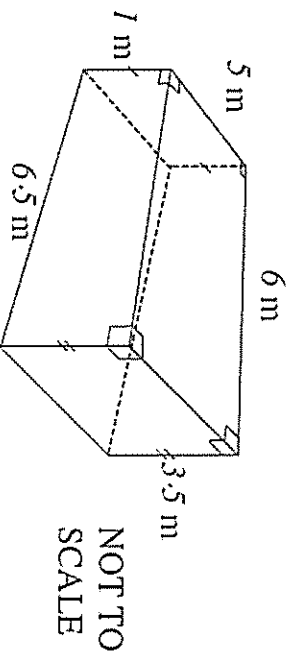
- (A) 119 (B) 159 (C) 237 (D) 394

- 5 This is a sketch of a sector of a circle.



- Calculate the area of this sector (correct to one decimal place).
- (A) 9.4 m^2 (B) 18.8 m^2 (C) 36.8 m^2 (D) 84.8 m^2

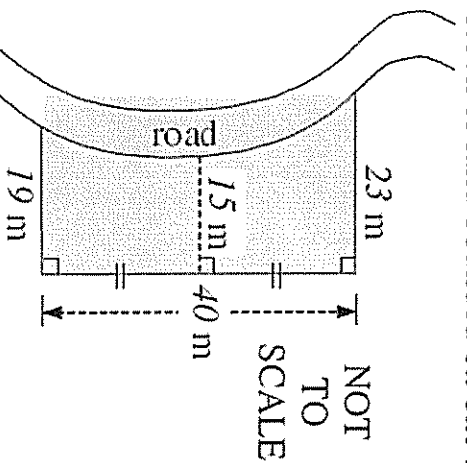
- 6 A swimming pool has a length of 6 m and a width of 5 m. The depth of the pool is 1 m at one end and 3.5 m at the other end, as shown in the diagram.



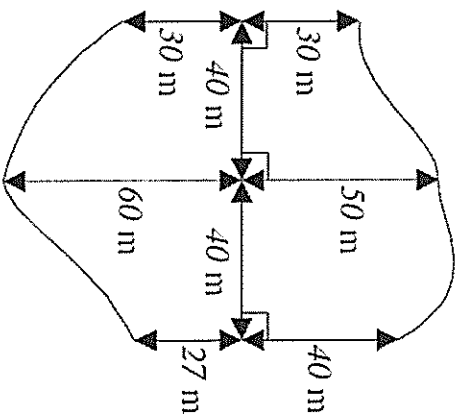
- What is the volume of this pool in cubic metres?
- (A) 67.5 (B) 105 (C) 109.375 (D) 113.75x

- 7 George measures the breadth and length of a rectangle to the nearest centimetre. His answers are 10 cm and 15 cm. Between what lower and upper values must the actual area of the rectangle lie?
- (A) $10 \times 15 \text{ cm}^2$ (lower) and $11 \times 16 \text{ cm}^2$ (upper)
 (B) $10 \times 15 \text{ cm}^2$ (lower) and $10.5 \times 15.5 \text{ cm}^2$ (upper)
 (C) $9.5 \times 14.5 \text{ cm}^2$ (lower) and $10 \times 15 \text{ cm}^2$ (upper)
 (D) $9.5 \times 14.5 \text{ cm}^2$ (lower) and $10.5 \times 15.5 \text{ cm}^2$ (upper) x

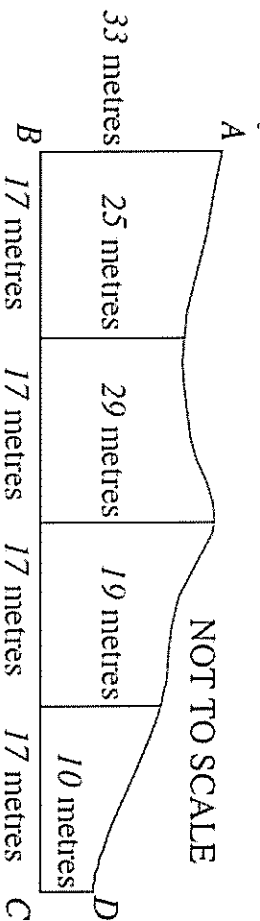
- 8 The shaded region represents a block of land bounded on one side by a road.



- What is the approximate area of the block of land, using Simpson's rule?
- (A) 680 m^2 (B) 760 m^2 (C) 840 m^2 (D) 1360 m^2 x

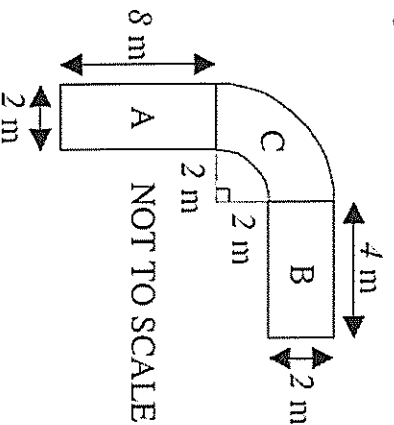


The diagram above shows an irregular plot of land with measurements given in metres. Use Simpson's rule to find an estimate for the area of the plot of land. $[Area \approx \frac{h}{3} (d_f + d_L + 4d_M)]$ α



Use Simpson's Rule $[Area \approx \frac{h}{3} (d_f + d_L + 4d_M)]$ twice to estimate the area of $ABCD$ to the nearest square metre. α

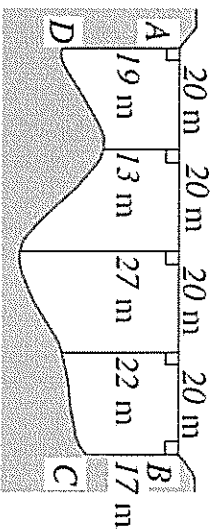
The Conti family want to pave their driveway which consists of two rectangular sections A and B and a further section C . The curved edges of C are circular arcs with centre O as shown in the diagram.



- Calculate the total area of A and B .
- Calculate the area of C . (The area of a circle is given by $A = \pi R^2$.)
- Find the total area of the driveway.
- The driveway is to be concreted to an average depth of 9 centimetres. Find, to the nearest metre, the volume of concrete required. (Volume of a prism = Area of base \times Height.)
- Find the total cost of the concrete if ready mixed concrete is used which costs \$65 per cubic metre and an additional delivery fee of \$50 is charged. α

12

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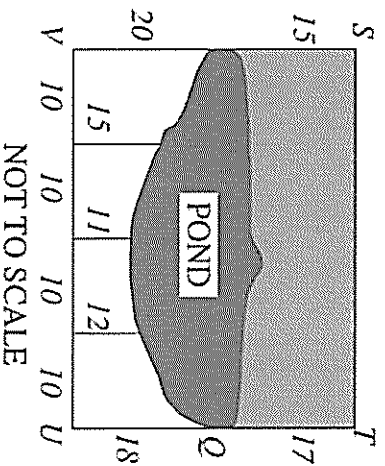
$ABCD$ is the cross-section of a dam wall which is of uniform thickness.

- i. Calculate the area $ABCD$ in square metres, using Simpson's Rule. Give your answer to one decimal place.

$$[\text{Area} \approx \frac{h}{3} (d_j + d_L + 4d_M)]$$

- ii. Calculate the number of cubic metres of concrete required if the dam wall is 10 metres thick.

13. A surveyor sketched this diagram of a pond in a rectangular field.



- i. Calculate the area of the rectangle $STUV$.
- ii. Use Simpson's Rule to calculate the area of the unshaded region $PVUQ$.

$$[\text{Area} \approx \frac{h}{3} (d_j + d_L + 4d_M)]$$
- iii. The surveyor calculated the area of the shaded region $STQP$ to be 430 m^2 . Use this result and your calculations to find the area of the pond.