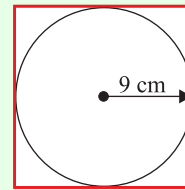


**AREA & VOLUME (Q 1, PAPER 2)**

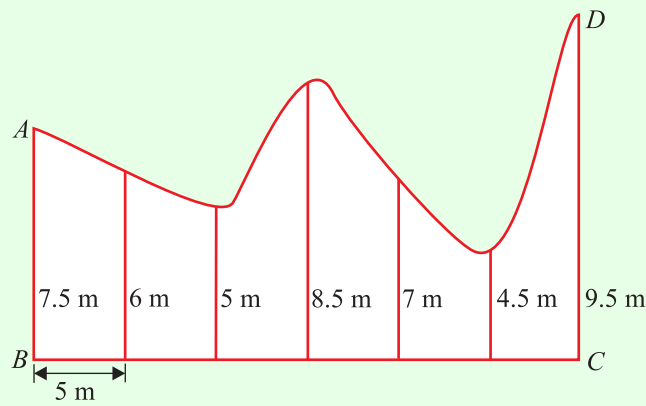
**2010**

- 1 (a) A circle is inscribed in a square as shown.  
The radius of the circle is 9 cm.



- (i) Find the perimeter of the square.  
(ii) Calculate the area of the square.

- (b) The diagram shows a sketch of a field  $ABCD$  that has one uneven edge. At equal intervals of 5 m along  $[BC]$ , perpendicular measurements are made to the uneven edge, as shown on the sketch.

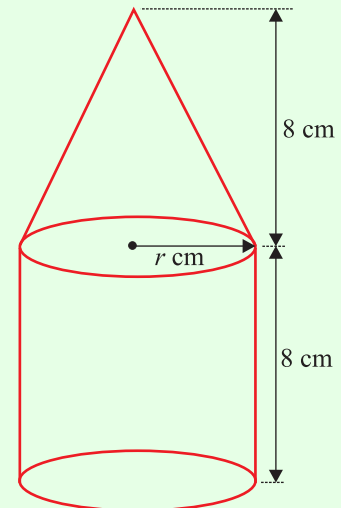


- (i) Use Simpson's rule to estimate the area of the field.  
(ii) The actual area of the field is  $200 \text{ m}^2$ .  
Find the percentage error in the estimate.
- (c) The diameter of a solid metal sphere is 9 cm.

- (i) Find the volume of the sphere in terms of  $\pi$ .

The sphere is melted down. All of the metal is used to make a solid shape which consists of a cone on top of a cylinder, as shown in the diagram.

The cone and the cylinder both have height 8 cm.  
The cylinder and the base of the cone both have radius  $r$  cm.



- (ii) Calculate  $r$ , correct to one decimal place.

**ANSWERS**

- 1 (a) (i) 72 cm (ii)  $324 \text{ cm}^2$   
(b) (i)  $195 \text{ m}^2$  (ii) 2.5%  
(c) (i)  $121.5\pi \text{ cm}^3$  (ii) 3.4 cm