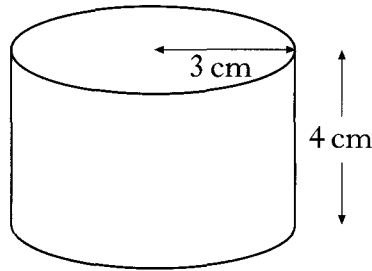


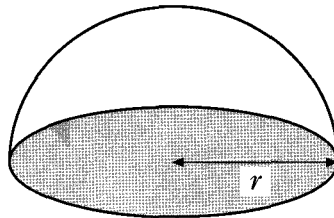
Area & Volume

12. (a) A cylindrical paperweight of radius 3 centimetres and height 4 centimetres is filled with sand.



Calculate the volume of sand in the paperweight.

- (b) Another paperweight, in the shape of a hemisphere, is filled with sand.



It contains the same volume of sand as the first paperweight.

Calculate the radius of the hemisphere.

[The volume of a hemisphere with radius r is given by the formula, $V = \frac{2}{3}\pi r^3$].

2007 P2

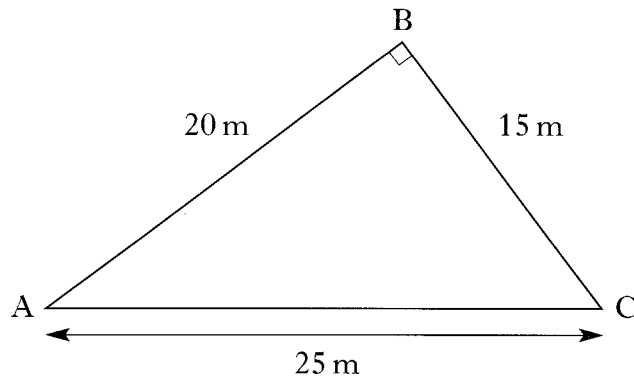
2

3

Ans (a) 113.1cm^2 (b) 3.78cm

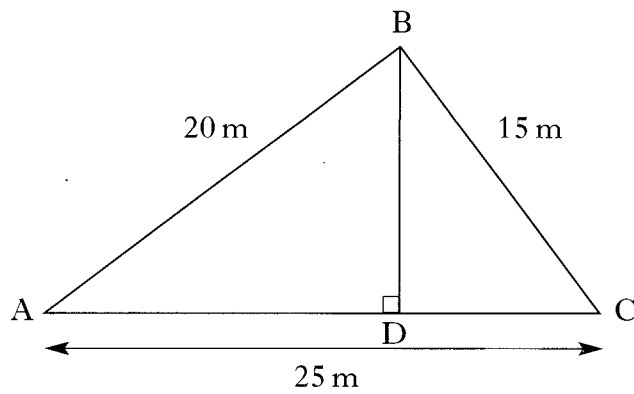
10. Triangle ABC is right-angled at B.

The dimensions are as shown.



(a) Calculate the area of triangle ABC.

(b) BD, the height of triangle ABC, is drawn as shown.



Use your answer to part (a) to calculate the height BD.

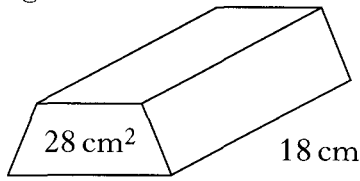
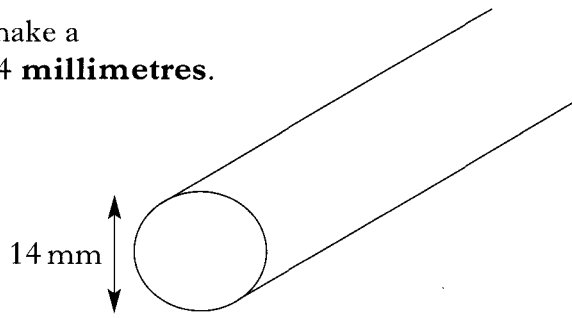
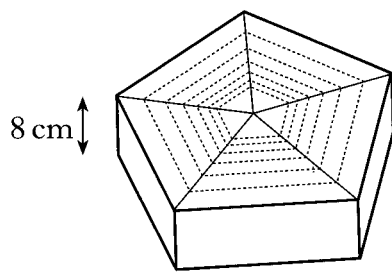
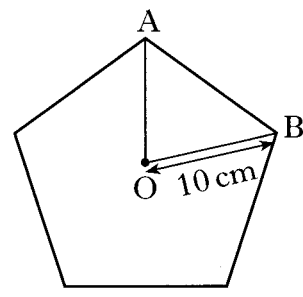
2006 P1

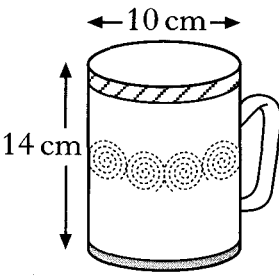
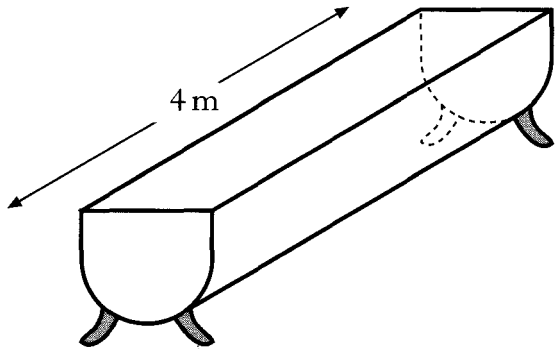
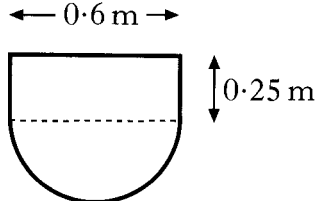
1

3

Ans (a) 150m^2

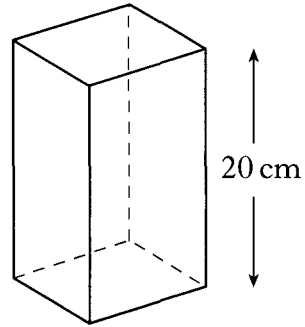
(b) 12metres

2006 P2	<p>7. (a) A block of copper 18 centimetres long is prism shaped as shown.</p> <div style="text-align: right; margin-right: 100px;">  </div> <p style="margin-left: 200px;">The area of its cross section is 28 square centimetres. Find the volume of the block.</p> <p>(b) The block is melted down to make a cylindrical cable of diameter 14 millimetres.</p> <div style="text-align: right; margin-right: 100px;">  </div> <p style="margin-left: 200px;">Calculate the length of the cable.</p>	1	
Ans	(a) 504cm^3 (b) 327 metres		4
2004 P2	<p>9. A gift box, 8 centimetres high, is prism shaped.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="margin-left: 200px;">The uniform cross-section is a regular pentagon. Each vertex of the pentagon is 10 centimetres from the centre O. Calculate the volume of the box.</p>	5	
Ans	1902 cm^3		

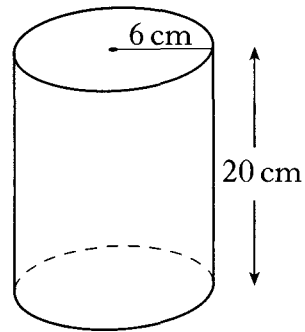
2003 P2	<p>4. A mug is in the shape of a cylinder with diameter 10 centimetres and height 14 centimetres.</p> <div style="text-align: center;">  </div> <p>(a) Calculate the volume of the mug.</p> <p>(b) 600 millilitres of coffee are poured in. Calculate the depth of the coffee in the cup.</p>	2	
Ans	(a) 1099 cm ³ (b) 7.6 cm		
2002 P2	<p>5. A feeding trough, 4 metres long, is prism-shaped. The uniform cross-section is made up of a rectangle and semi-circle as shown below.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p>Find the volume of the trough, correct to 2 significant figures.</p>	5	
Ans	1.2 m ³		

2001 P2	<p>5. A cylindrical soft drinks can is 15 centimetres in height and 6.5 centimetres in diameter.</p> <p>A new cylindrical can holds the same volume but has a reduced height of 12 centimetres.</p> <p>What is the diameter of the new can?</p> <p>Give your answer to 1 decimal place.</p>		4
<i>Ans</i>	7.3 cm		

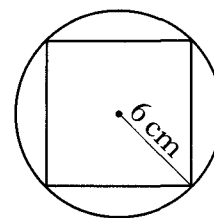
10. A glass vase, in the shape of a cuboid with a square base, is 20 centimetres high.



It is packed in a cardboard cylinder with radius 6 centimetres and height 20 centimetres.



The corners of the vase touch the inside of the cylinder as shown.

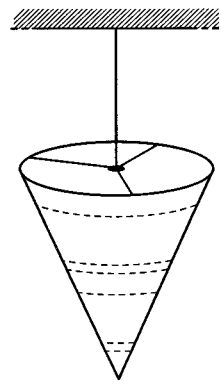


Show that the volume of the space between the vase and the cylinder is $720(\pi - 2)$ cubic centimetres.

2000 P2

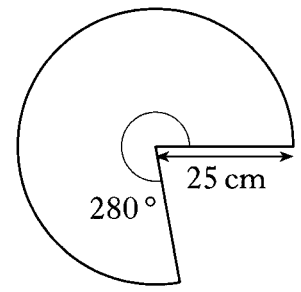
2000 P2

11. A lampshade is made in the shape of a cone, as shown.



The shape of the material used for the lampshade is a sector of a circle.

The circle has radius 25 centimetres and the angle of the sector is 280° .



(a) Find the area of the sector of the circle.

3

Ans (a) 1527.2 cm^2 (b) Minimum is 45 cm.