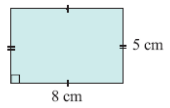
Measurement

QUESTIONS BANK -PERIMETER & AREA

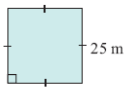
Exercise 1

1 Find the area of the shaded region:

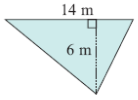
a



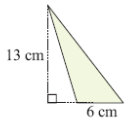
b



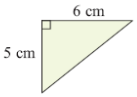
c



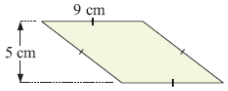
d



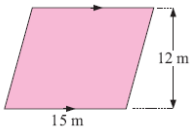
e



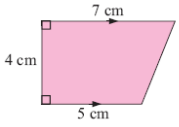
f



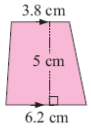
g



h

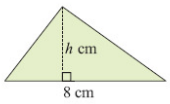


i



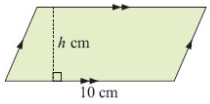
2 Calculate the height h of the following figures:

a



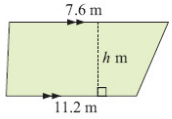
Area $= 24$ cm^2

b



Area $= 36$ cm^2

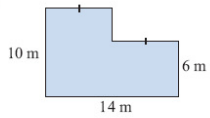
c



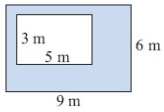
Area $= 47$ m^2

3 Find the area shaded:

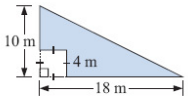
a



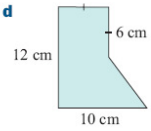
b



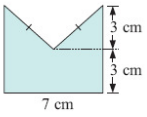
c



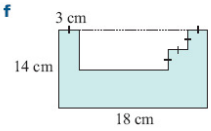
d



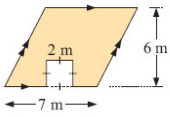
e



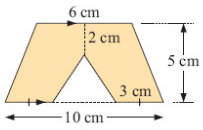
f



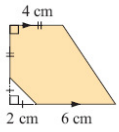
g



h



i



4 A photograph is 6 cm by 4 cm and its border is 12 cm by 10 cm. Calculate the visible area of the border.

5 Instant lawn costs \$15 per square metre. Find the cost of covering a 5.2 m by 3.6 m area with instant lawn.

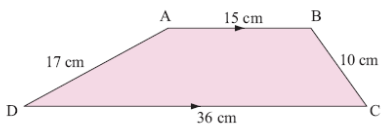
6 A 4.2 m by 3.5 m tablecloth is used to cover a square table with sides of length 3.1 m. Find the area of the tablecloth which overhangs the edges.

7 A square tile has an area of 256 cm^2. How many tiles are needed for a floor $4 \text{ m} \times 2.4$ m?

8 **a** Find the area of a rhombus which has diagonals of length 12 cm and 8 cm.

b One diagonal of a rhombus is twice as long as the other diagonal. If the rhombus has area 32 cm^2, find the length of the shorter diagonal.

9 The area of trapezium ABCD is 204 cm^2.
Find the area of triangle DBC.



Measurement

Exercise 2

1 Calculate, correct to 3 significant figures, the circumference of a circle with:

a radius 8 cm **b** radius 0.54 m **c** diameter 11 cm.

2 Calculate, correct to 3 significant figures, the area of a circle with:

a radius 10 cm **b** radius 12.2 m **c** diameter 9.7 cm.

3 Calculate the length of the arc of a circle if:

a the radius is 12.5 cm and the angle at the centre is 60^o

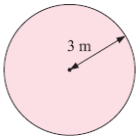
b the radius is 8.4 m and the angle at the centre is 120^o.

4 Calculate the area of a sector of:

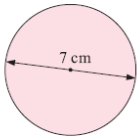
a radius 5.62 m and angle 80^o **b** radius 8.7 cm and angle 210^o.

5 Find the area shaded:

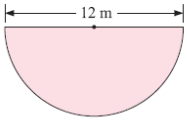
a



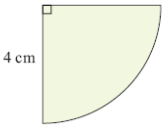
b



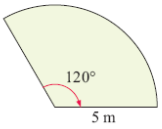
c



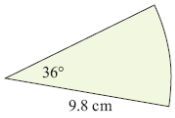
d



e



f

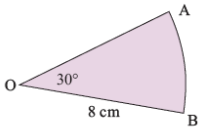


7 Find, in terms of π:

a the length of arc AB

b the perimeter of sector OAB

c the area of sector OAB.



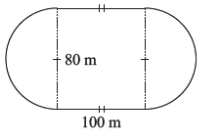
8 **a** Find the circumference of a circle of radius 13.4 cm.

b Find the length of an arc of a circle of radius 8 cm and angle 120^o.

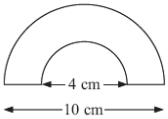
c Find the perimeter of a sector of a circle of radius 9 cm and sector angle 80^o.

9 Find the perimeter and area of the following shapes:

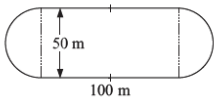
a



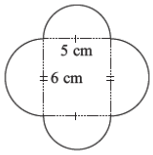
b



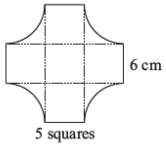
c



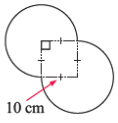
d



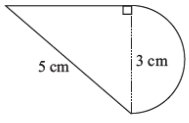
e



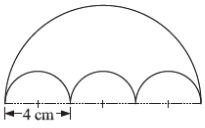
f



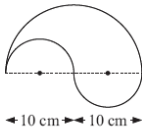
g



h



i



Measurement

MEASUREMENT – SURFACE AREA & VOLUME

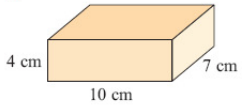
Exercise 1

1 Find the surface area of a cube with sides:

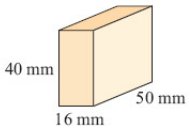
a 3 cm **b** 4.5 cm **c** 9.8 mm

2 Find the surface area of the following rectangular prisms:

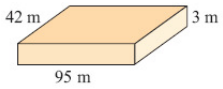
a



b

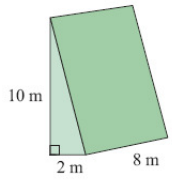


c

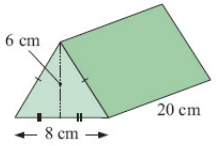


3 Find the surface area of the following triangular prisms:

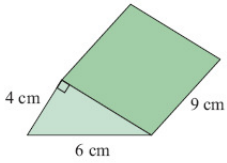
a



b

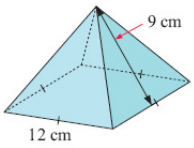


c

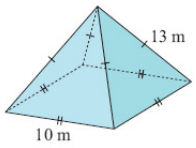


4 Find the surface area of the following square-based pyramids:

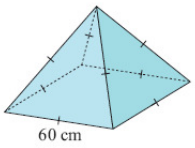
a



b

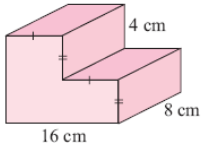


c

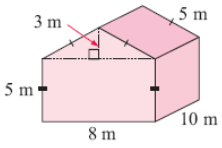


5 Find the surface area of the following prisms:

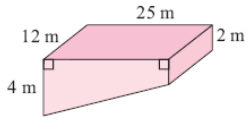
a



b

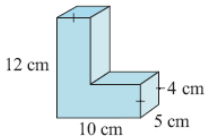


c



6 A metal pencil box is 20 cm by 15 cm by 8 cm high. Find the total area of metal used to make the pencil box.

7

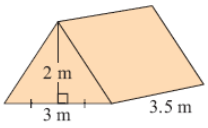


Tracy owns 8 wooden bookends like the one illustrated.

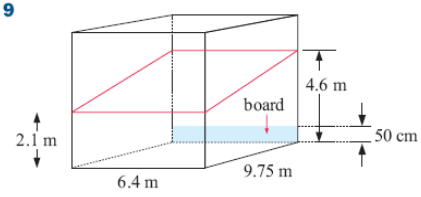
a Calculate the total surface area of the bookends.

b If 50 ml of varnish covers an area of 2000 cm^2, how much varnish is needed to coat all 8 bookends?

8 Calculate the area of material needed to make this tent. Do not forget the floor.



9



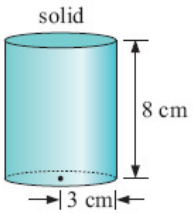
A squash court has the dimensions given. Each shot may strike the floor, or the walls below the red line and excluding the board on the front wall. Calculate the total surface playing area of the walls and the floor. Give your answer correct to 4 significant figures.

Measurement

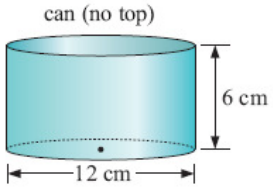
Exercise 2

1 Find the outer surface area of the following:

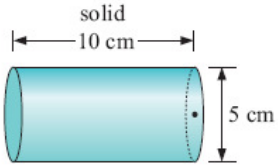
a



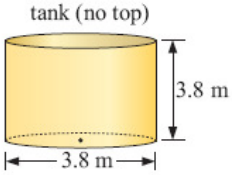
b



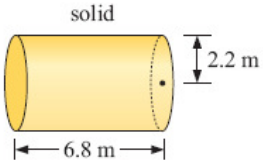
c



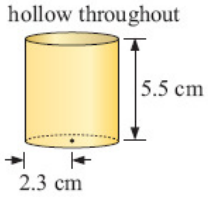
d



e

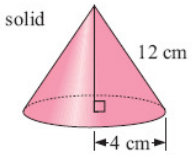


f

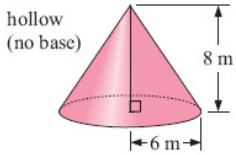


2 Find the total surface area of the following cones, giving your answers in terms of π:

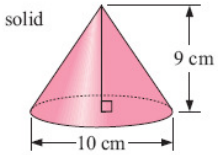
a



b

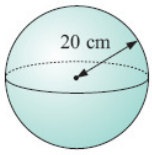


c

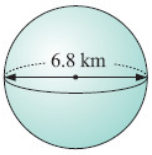


3 Find the total surface area of the following:

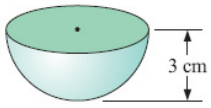
a



b



c



4 Find the total surface area of:

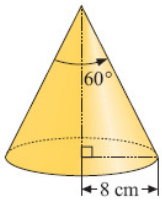
a a cylinder of base radius 9 cm and height 20 cm

b a cone of base radius and perpendicular height both 10 cm

c a sphere of radius 6 cm

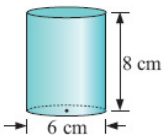
d a hemisphere of base radius 10 m

e a cone of base radius 8 cm and vertical angle 60°.



5 A ball bearing has a radius of 1.2 cm. Find the surface area of the ball bearing.

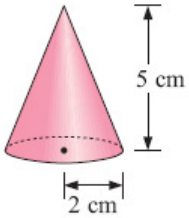
6 Find the area of metal required to make the can illustrated alongside. Include the top and bottom in your answer.



Measurement

7 How many spheres of 15 cm diameter can be covered by 10 m^2 of material?

8 A conical piece of filter paper has a base radius of 2 cm, and is 5 cm high.
Find the surface area of the filter paper, correct to 3 significant figures.



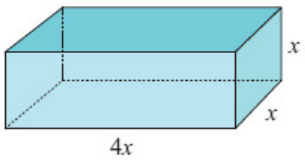
9 Find: **a** the radius of a sphere of surface area 400 m^2

b the height of a solid cylinder of radius 10 cm and surface area 2000 cm^2

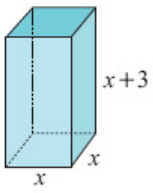
c the slant height of a solid cone of base radius 8 m and surface area 850 m^2.

10 Find a formula for the surface area A of the following solids:

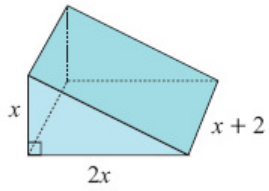
a



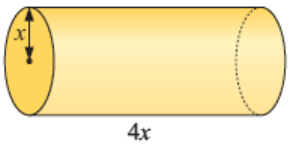
b



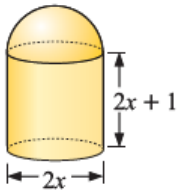
c



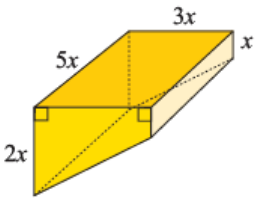
d



e

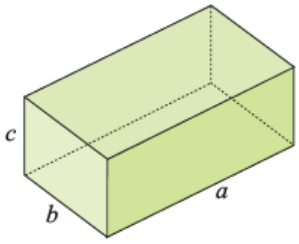


f

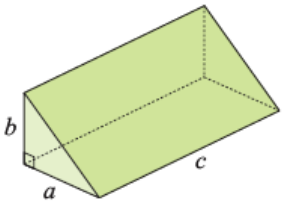


11 Find a formula for the total surface area of:

a



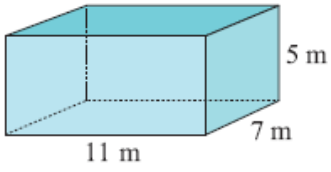
b



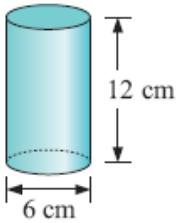
Exercise 3

1 Find the volume of the following:

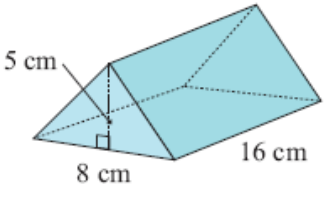
a



b

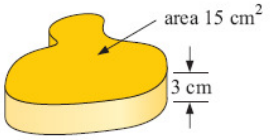


c

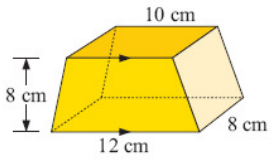


Measurement

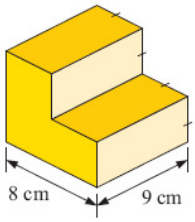
d



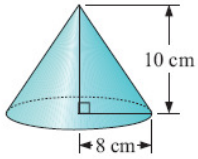
e



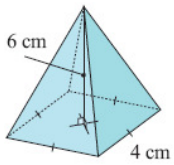
f



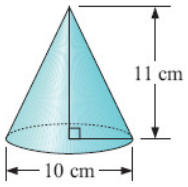
g



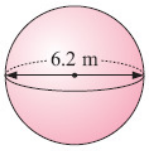
h



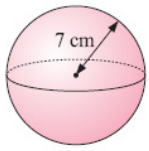
i



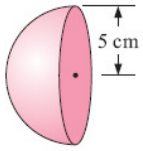
j



k



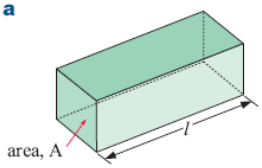
l



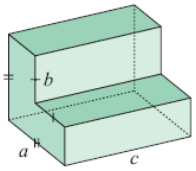
tf

2 Find formula for the volume V of the following objects:

a

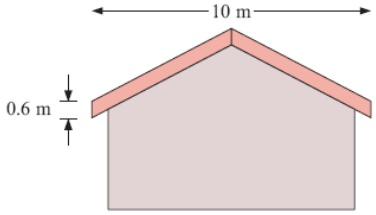


b

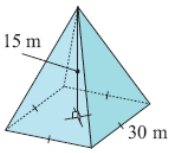


3 A beach ball has a diameter of 1.2 m. Find the volume of air inside the ball.

4 The roof timber at the end of a building has the dimensions given. If the timber is 10 cm thick, find the volume of timber used for making one end.

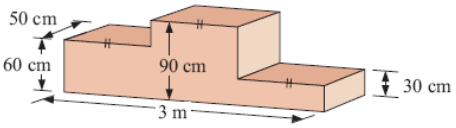


5



The conservatory for tropical plants at the Botanic gardens is a square-based pyramid with sides 30 metres long and height 15 metres. Calculate the volume of air in this building.

6 Calculate the volume of wood needed to make the podium illustrated.



7 How many spherical fishing sinkers with diameter 1 cm could be made by melting a rectangular block of lead 20 cm by 5 cm by 6 cm and casting the molten product?

8 A conical heap of garden soil is dumped on a flat surface. If the diameter of the heap equals its height, and its volume is 1.5 m^3, how high is the heap?

9 A half-pipe for skating is made with the dimensions shown. Show that the volume of concrete used is given by the formula: $V = l(2h^2 - \frac{1}{2}\pi r^2)$