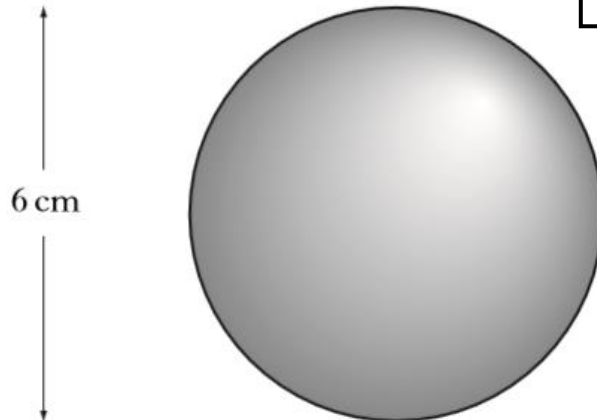


The diagram below represents a sphere.

1



The sphere has a diameter of 6 centimetres.

Calculate its volume.

Take $\pi = 3.14$.

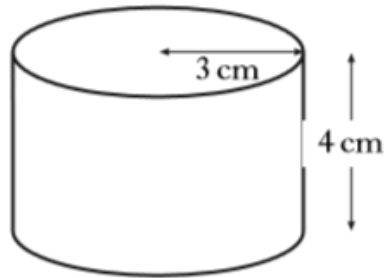
**Now
Revise**

Routine -
Calculator

Volume
Expressions and Formulae 1.4

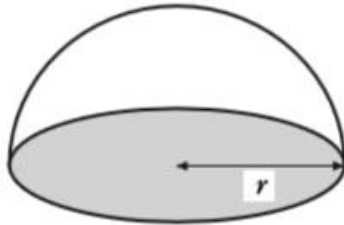
- (a) A cylindrical paperweight of radius 3 centimetres and height 4 centimetres is filled with sand.

2



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.

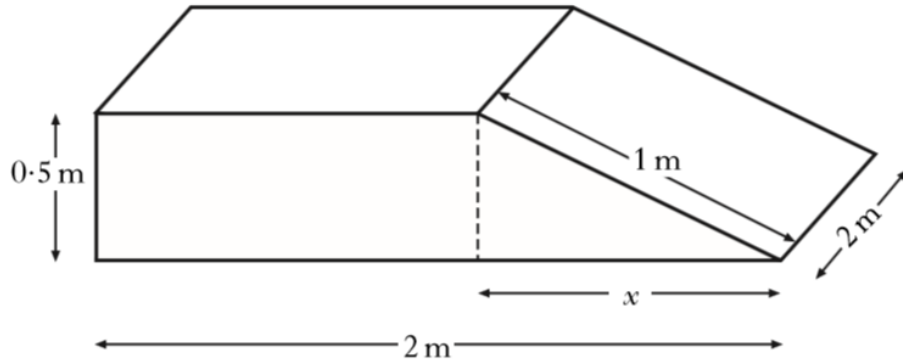
Calculate the radius of the hemisphere.

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

3

A concrete ramp is to be built.

The ramp is in the shape of a cuboid and a triangular prism with dimensions as shown.

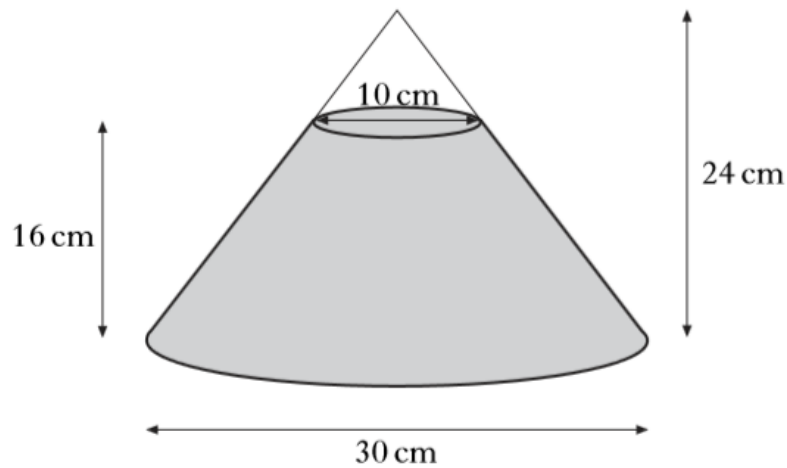


(a) Calculate the value of x .

(b) Calculate the volume of concrete required to build the ramp.

4

A glass ornament in the shape of a cone is partly filled with coloured water.



The cone is 24 centimetres high and has a base of diameter 30 centimetres. The water is 16 centimetres deep and measures 10 centimetres across the top.

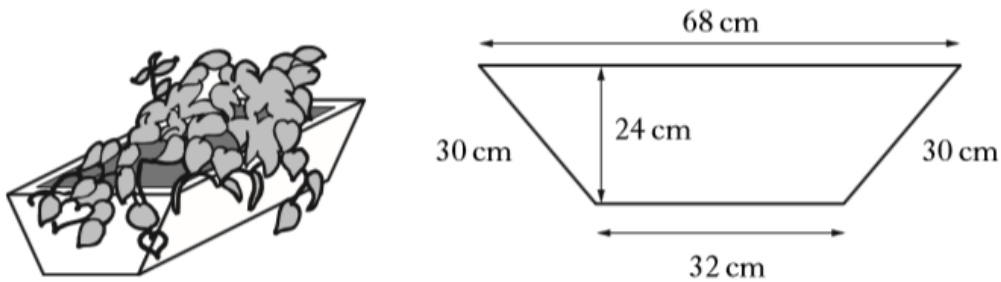
What is the volume of the water?

Give your answer correct to 2 significant figures.

A flower planter is in the shape of a prism.

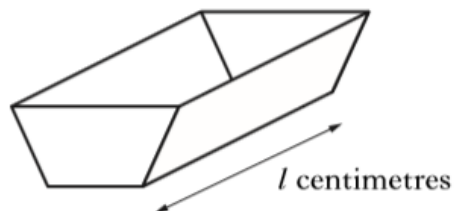
The cross-section is a trapezium with dimensions as shown.

5



(a) Calculate the area of the cross-section of the planter.

(b) The volume of the planter is 156 litres.



Calculate the length, l centimetres, of the planter.

A cylindrical container has a volume of 3260 cubic centimetres.

The radius of the cross section is 6.4 centimetres.

Calculate the height of the cylinder.

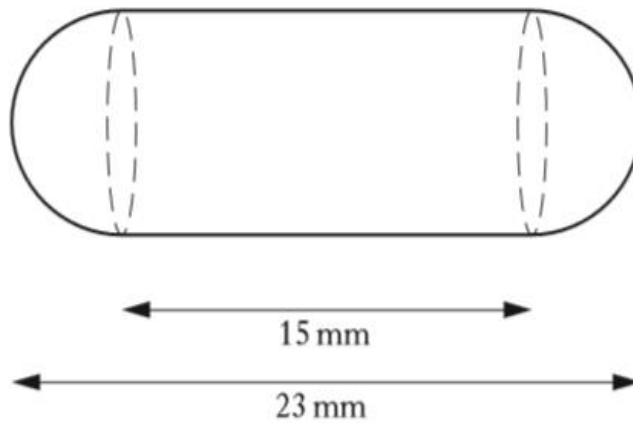


6

7

A health food shop produces cod liver oil capsules for its customers.

Each capsule is in the shape of a cylinder with hemispherical ends as shown in the diagram below.



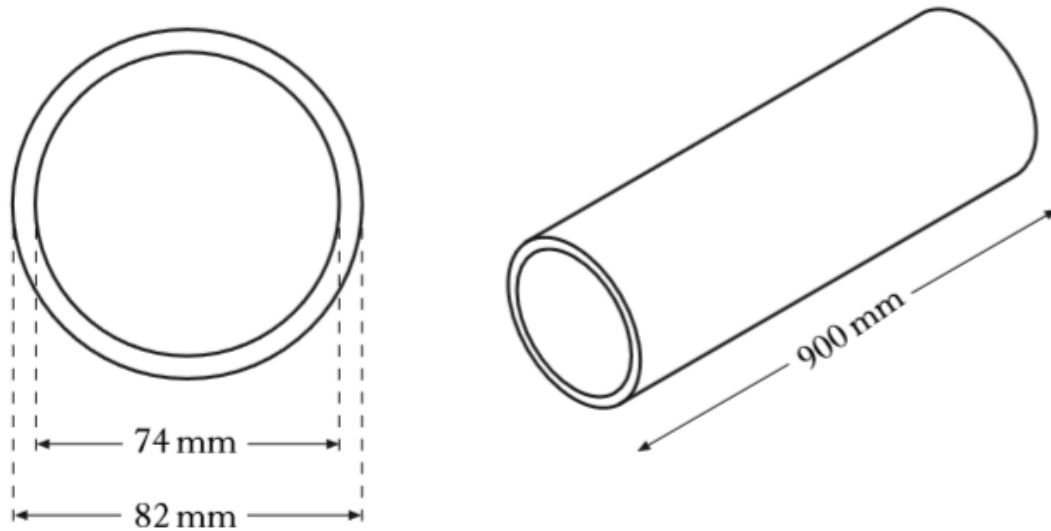
The total length of the capsule is 23 millimetres and the length of the cylinder is 15 millimetres.

Calculate the volume of one cod liver oil capsule.

A company manufactures aluminium tubes.

The cross-section of one of the tubes is shown in the diagram below.

8



The inner diameter is 74 millimetres.

The outer diameter is 82 millimetres.

The tube is 900 millimetres long.

Calculate the volume of aluminium used to make the tube.

Give your answer correct to three significant figures.

Now
Revise

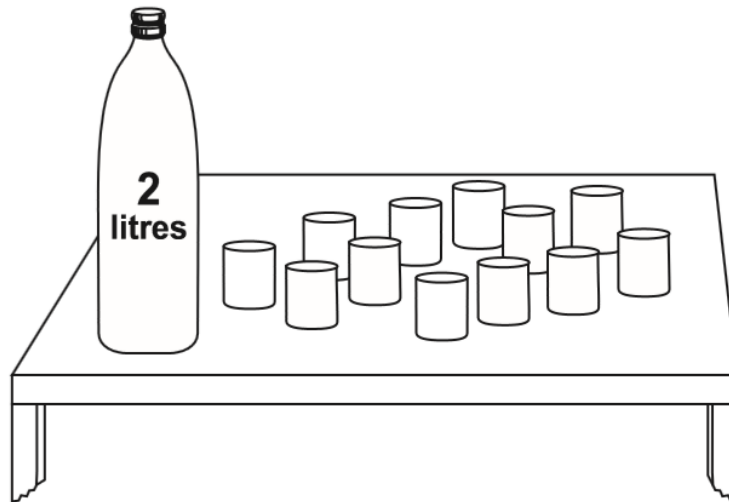
Unseen and
Non Routine

Volume
Expressions and Formulae 1.4

Lemonade is to be poured from a 2 litre bottle into glasses.

9

Each glass is in the shape of a cylinder of radius 3 centimetres and height 8 centimetres.



How many full glasses can be poured from the bottle?

The Battle of Largs in 1263 is commemorated by a monument known as The Pencil.

This monument is in the shape of a cylinder with a cone on top.



10

The cylinder part has diameter 3 metres and height 15 metres.

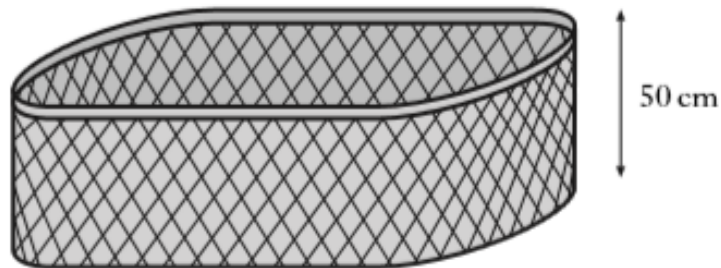
(a) Calculate the volume of the **cylinder** part of The Pencil.

The volume of the **cone** part of The Pencil is 5.7 cubic metres.

(b) Calculate the **total** height of The Pencil.

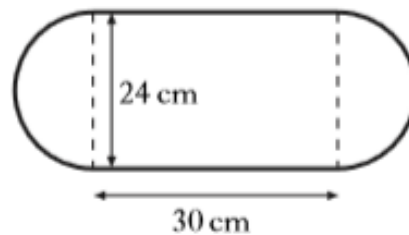
11

Jim Reid keeps his washing in a basket. The basket is in the shape of a prism.



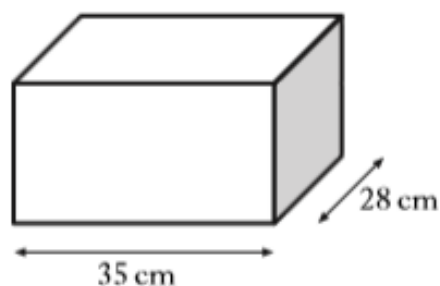
The height of the basket is 50 centimetres.

The cross section of the basket consists of a rectangle and two semi-circles with measurements as shown.



- (a) Find the volume of the basket in cubic centimetres.
Give your answer correct to three significant figures.

Jim keeps his ironing in a storage box which has a volume **half** that of the basket.



The storage box is in the shape of a cuboid, 35 centimetres long and 28 centimetres broad.

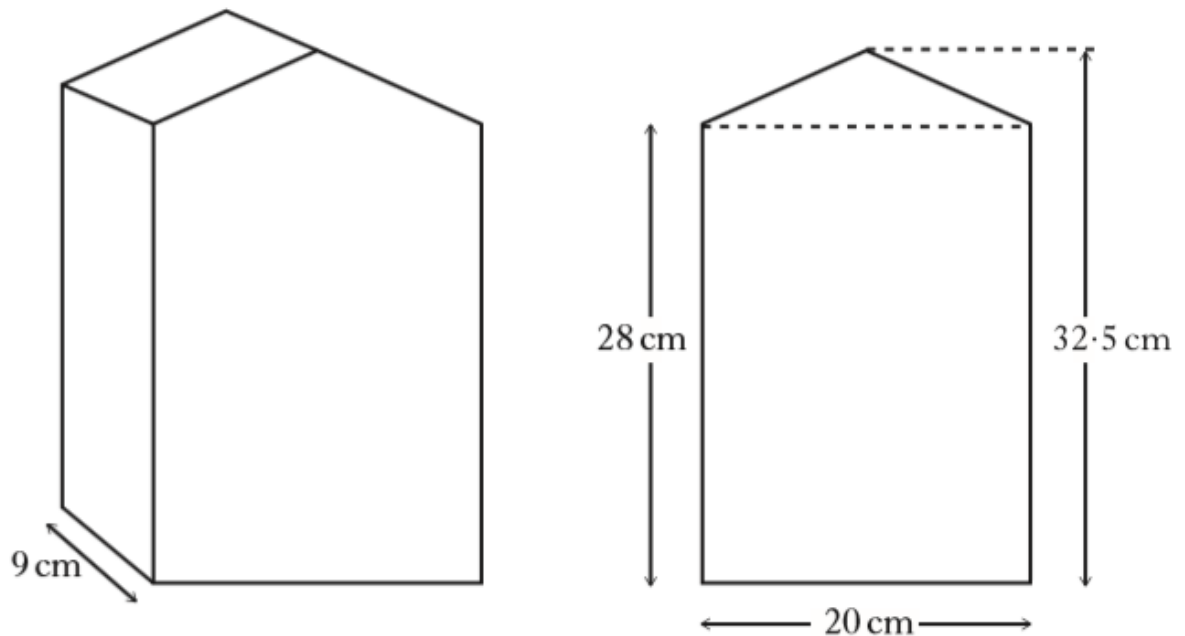
- (b) Find the height of the storage box.

A container for oil is in the shape of a prism.

12

The width of the container is 9 centimetres.

The uniform cross section of the container consists of a rectangle and a triangle with dimensions as shown.



Calculate the volume of the container, **correct to the nearest litre.**