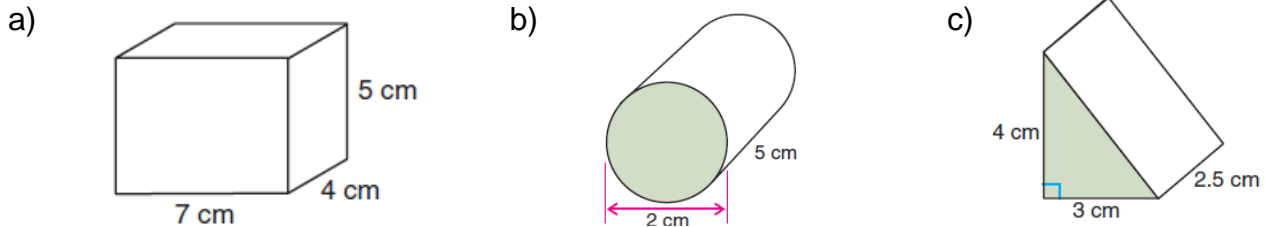# Volume Worksheets

Cuboids, Cylinders and Prisms
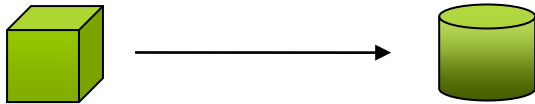
Calculating volume

1. Calculate the volume of the following shapes.

a)

5 cm

4 cm

7 cm

b)

5 cm

2 cm

c)

4 cm

2.5 cm

3 cm

Reverse volume

1. Two cylinders each have a volume of 800cm^3.
   (a) The height of one is 12cm. Calculate its radius to 3 s.f.
   (b) The radius of the other is 7cm. Calculate its height to 3 s.f

2. A cylindrical can holds 160cm^3 of soup. It is 9cm in height. What is the ***diameter*** of the can? Give your answer to 3 s.f

3. Timmy has a cube of plasticine of side 4cm. He rolls it into a cylinder as shown with a base diameter of 5cm. Calculate the height of the cylinder formed. Give your answer to 3 s.f
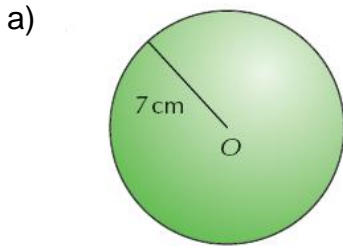
4. Water from a full tank A is transferred to tank B. Find the depth of the water in tank B. Give your answer to 2 s.f
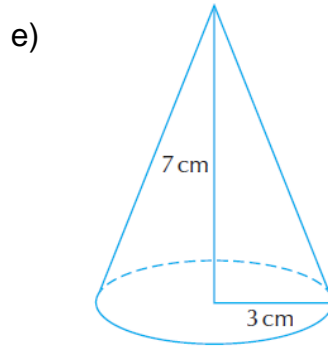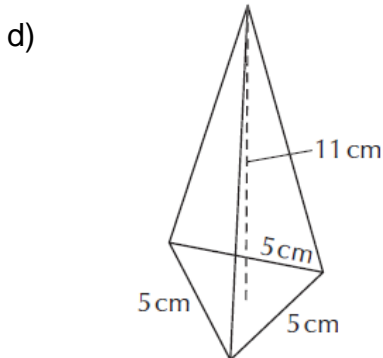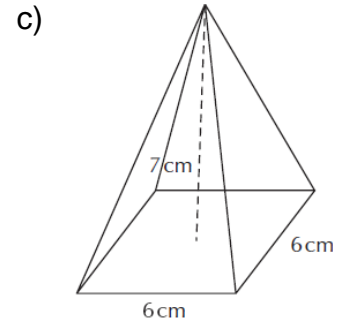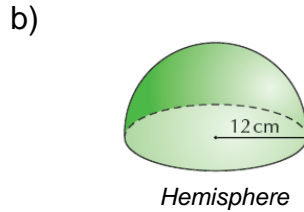
7cm

12cm

10cm

Tank A

14cm

Tank B
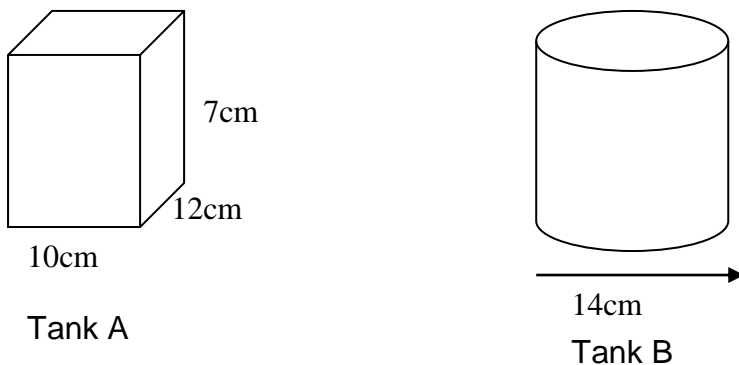
Pyramids, Cones and Spheres

Calculating volume

2. Calculate the volume of the following shapes.

a)

7 cm

O

Sphere

b)

12 cm

Hemisphere

c)

7 cm

6 cm
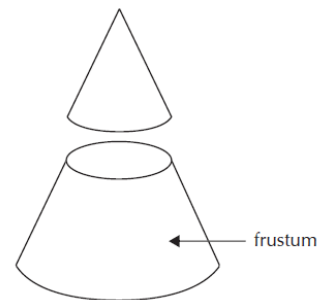
6 cm

d)

11 cm

5 cm

5 cm

5 cm

e)

7 cm

3 cm

f) A frustum is a cone with the top sliced off.

A frustum is created from a cone with height 12 cm and base diameter 8 cm by making a horizontal cut 3 cm from the apex of the cone.

Calculate the volume of the frustum if the diameter of the top of the frustum is 3 cm.

frustum

Reverse volume

1. An ingot of gold in the shape of a cuboid measuring 15cm x 18cm x 13cm is melted down and re-cast as a sphere. Calculate the radius of the sphere correct to 3 s.f

2. Paper cones are provided beside a water cooler in a works canteen. They have a depth of 12cm and a diameter at the top of 6cm. Jane fills a paper cone with water and pours it into her china mug, which is cylindrical with a radius of 4cm. How deep is the water in the cup?

3. The cross section of a bread bin consists of a rectangle 17cm by 12cm and a quarter circle.
   a. Calculate the volume of the bread bin and give your answer to 3 s.f
   b. The design is changed so that the volume remains the same. The cross section is now a rectangle 17cm by 12cm and a right angled triangle. Find the value of x.

17cm

12cm

12cm

28cm

17cm

12cm

xcm

28cm
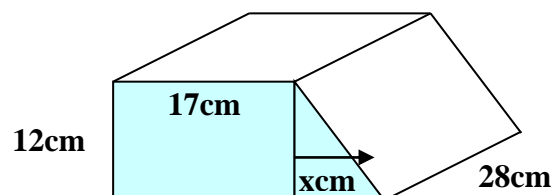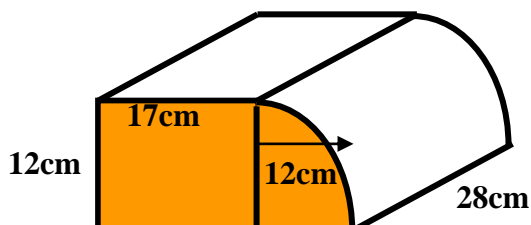
Composite Volume

You may use a calculator for this Exercise and you should round your answers to 1 decimal place unless otherwise stated.

This toy is made from a cone of height 12 cm attached to a hemisphere with diameter 8 cm. Calculate the volume of the toy. Write your answer correct to 3 significant figures.

8 cm

12 cm
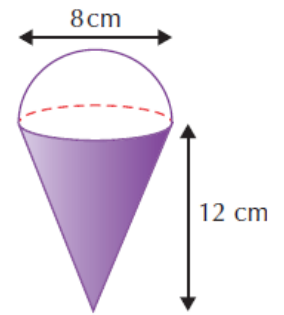
A pharmaceutical company is introducing a capsule to replace the standard pill version of their product. The original pill is in the shape of a cylinder with diameter 16 mm and height 3.375 mm. The new capsule is to be in the shape of a cylinder with two hemispherical ends. The diameter of the capsule cylinder is to be 6 mm. Calculate the total length of the capsule if the volume of the capsule and the pill are the same.

16 cm

8 cm

5 cm
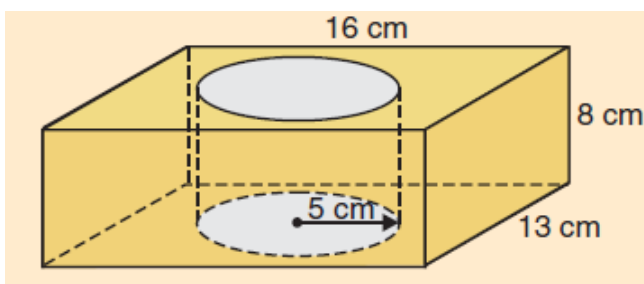
13 cm

The diagram shows a block of wood.
The block is a cuboid measuring 8 cm by 13 cm by 16 cm.
A cylindrical hole of radius 5 cm is drilled through the block of wood.
Find the volume of wood remaining.
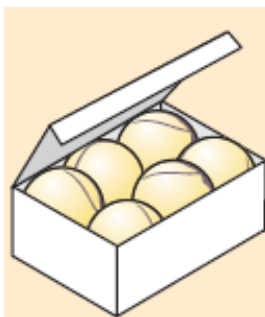
The diagram shows a cuboid which is just big enough to hold six tennis balls.
Each tennis ball has a diameter of 6.8 cm.
Calculate the volume of the cuboid.