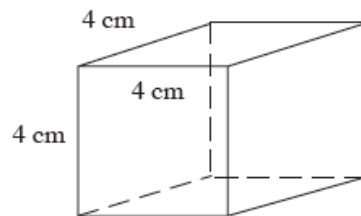


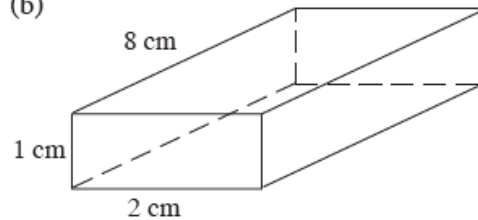
# Volumes of Cubes, Cuboids, Cylinders and Prisms

1. Find the volume of each shape shown below.

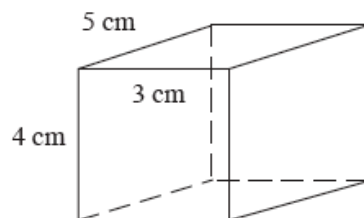
(a)



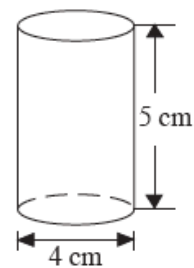
(b)



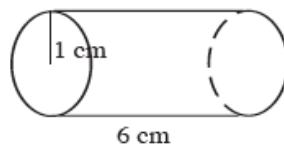
(c)



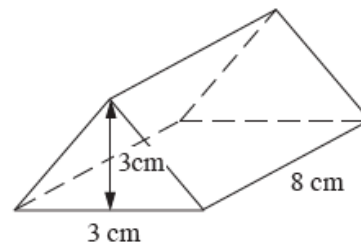
(d)



(e)

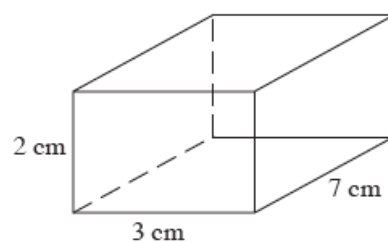


(f)

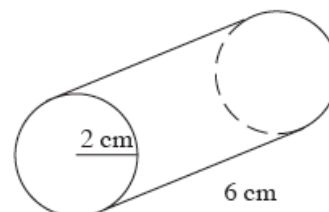


2. Find the volume of each prism below.

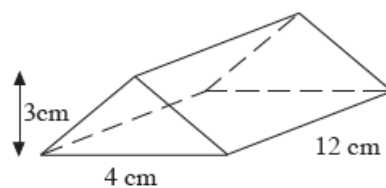
(a)



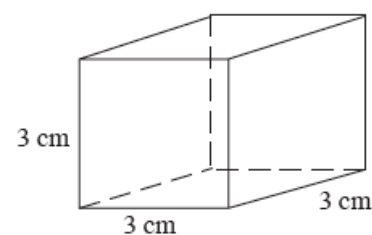
(b)



(c)

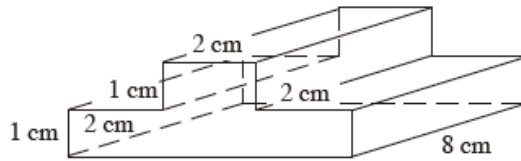


(d)

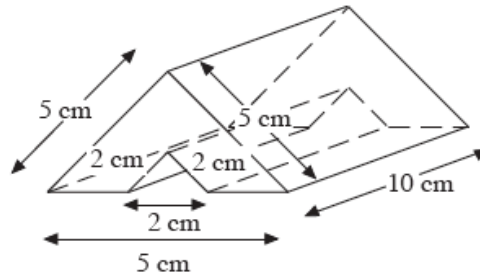


3. Find the volume of each prism below.

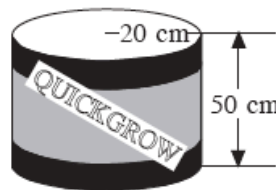
(a)



(b)



4. Quickgrow fertiliser is packed in cylindrical drums.



Not to scale

- (a) One size of drum has a radius of 20 cm and a height of 50 cm.
- Calculate the area of the base of this drum.  
Take  $\pi$  to be 3.14 or use the  $\pi$  key on your calculator.
  - Calculate the volume of this drum.
- (b) Another size of cylindrical drum has a **volume** of  $100\,000\text{ cm}^3$  and a height of 40 cm. Calculate the radius of this drum.

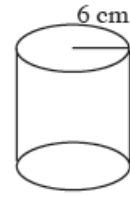
(SEG)

5. A cylindrical can has a radius of 6 centimetres.

- (a) Calculate the area of the circular end of the can.  
(Use the  $\pi$  button on your calculator or  $\pi = 3.14$ )

The capacity of the can is  $2000 \text{ cm}^3$ .

- (b) Calculate the height of the can.  
Give your answer correct to 1 decimal place.

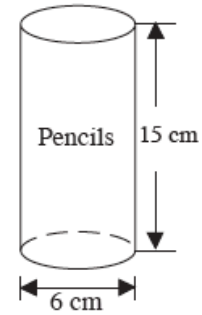


(LON)

6. A cylindrical pencil holder is shown.

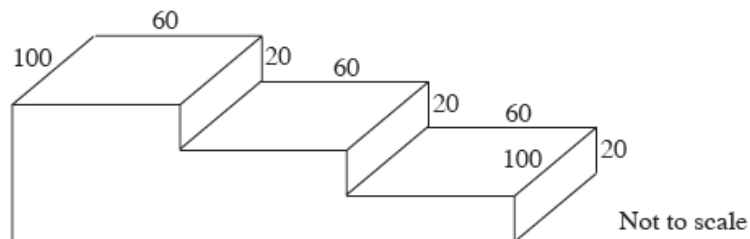
The height is 15 cm and the diameter 6 cm.

- (a) What is the capacity of the pencil holder?  
(b) The outer curved surface area is covered with coloured paper.  
What is the area of the paper?



(SEG)

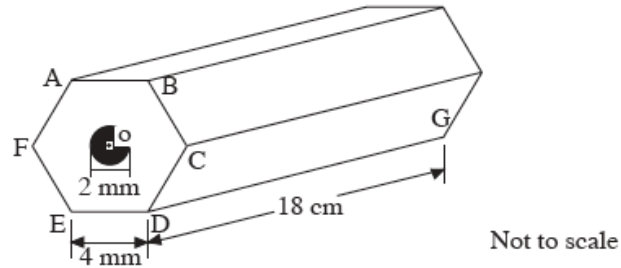
7. Jack makes some concrete steps. The diagram shows their dimensions in centimetres.



- (a) Calculate, in cubic centimetres, the volume of concrete needed.  
(b) There are  $1\,000\,000 \text{ cm}^3$  in  $1 \text{ m}^3$ . Change your answer to (a) into  $\text{m}^3$ .

(SEG)

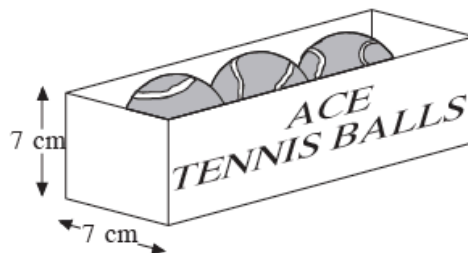
8. A pencil is in the shape of a regular hexagonal prism as shown. The pencil consists of a cylinder of graphite and a wooden surround. O is the centre of the circular end of the graphite. The diameter of the circle is 2 mm. ED = 4 mm. DG = 18 cm.



- Find the size of angle AOB.
- Calculate the area of the regular hexagon ABCDEF.
- Calculate the area of the circle.  
Take  $\pi$  to be 3.14 or use the  $\pi$  key on your calculator.
- Calculate the volume of wood in one pencil.

(SEG)

9. Tennis balls are sold in boxes of three. The balls fit tightly inside the box.



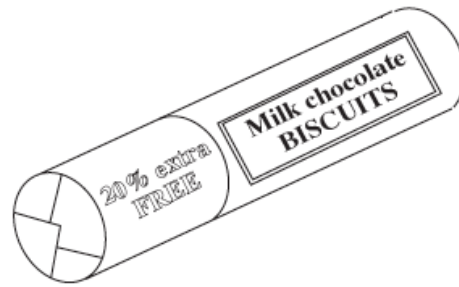
- Calculate the length of the box.
  - Calculate the volume of the box.

The tennis balls do not fill all the space inside the box.

- Give a rough estimate for the volume of one tennis ball. Show your working.

(SEG)

10. Evelyn buys a special offer packet of biscuits marked 20% extra free. It contains 20% more biscuits than a normal packet for the same price.



The normal packet weighs 250 g.

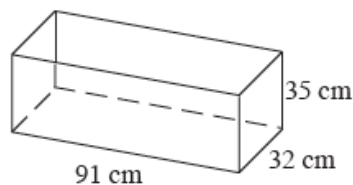
- (a) What is the weight of the special offer packet?

The special offer packet of biscuits is a cylinder with radius 3 cm and length 18 cm.

- (b) Calculate the volume of a special offer packet.  
Take  $\pi$  to be 3.14 or use the  $\pi$  key on your calculator.
- (c) The normal packet is also a cylinder.  
What is the volume of a normal packet?

(SEG)

11. (a) Christopher buys a fish tank.  
The dimensions of the tank are 91 cm by 32 cm by 35 cm.



- (i) Calculate the volume of the tank in  $\text{cm}^3$ .
- (ii) How many litres of water will the tank hold when full?  
(1000  $\text{cm}^3 = 1$  litre)

- (b) Christopher bought the tank from a pet shop.  
He had a choice of four different sizes of tank.



Which size of tank did Christopher buy?

- (c) Christopher needs to put 50 litres of water into the tank.  
He wants to know how deep the water will be in centimetres.  
To do this he needs to work out this calculation:

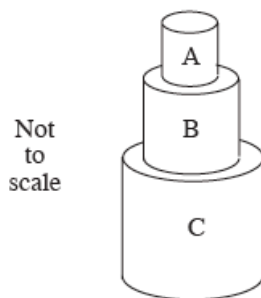
$$\frac{50 \times 1000}{91 \times 32}$$

The answer he gets on his calculator is 17582.418.  
This answer is wrong.

- (i) What mistake did he make when he worked this out?  
(ii) What is the correct answer?

(NEAB)

12.



A child builds a tower from three similar cylindrical blocks.

The smallest block, A, has radius 2.5 cm and height 6 cm.

- (a) Find the volume of the smallest box.  
(b) Block B is an enlargement of A and block C is an enlargement of B, each with a scale factor of  $1\frac{3}{4}$ .  
Find the total height of the tower.

(MEG)