

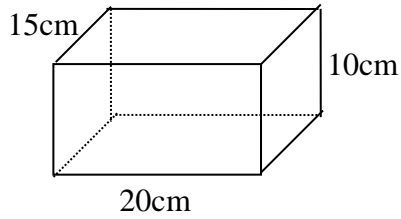
**AMSCO Mathematics**  
**Measurement – Revision Sheet 2**

**Set your work out correctly!**

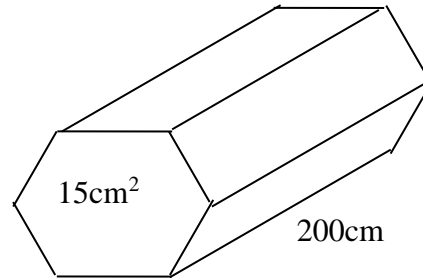
1. Copy and complete: a.  $23 \text{ cm} = \underline{\hspace{1cm}} \text{ mm}$       b.  $434\,000 \text{ m} = \underline{\hspace{1cm}} \text{ km}$ .

2. Find the **volume** of the following solid shapes :

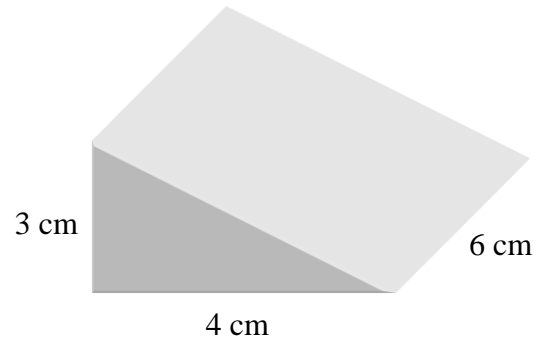
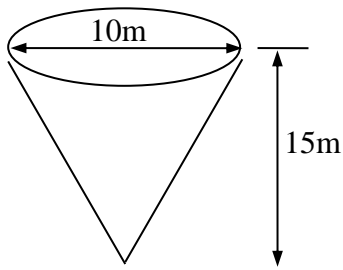
(a)



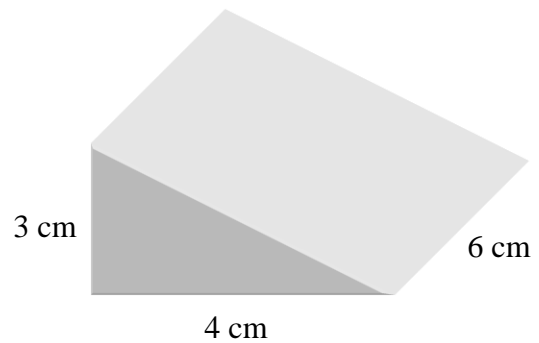
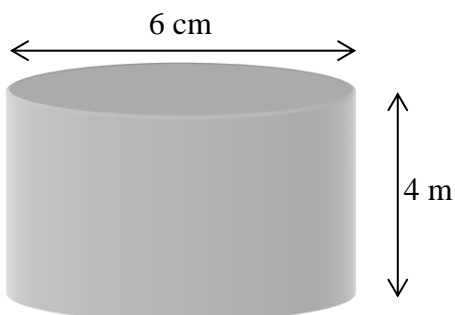
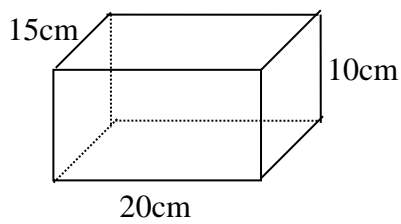
(b)



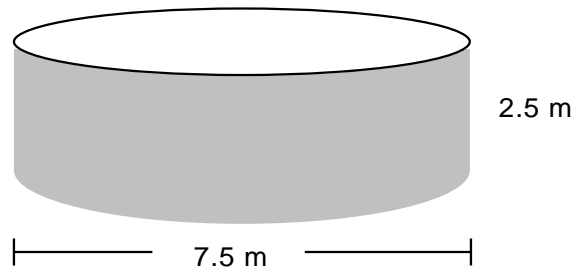
(c)



3. Find the surface area of the following shapes.



4. The water tank shown at the right is partially full of water. If the depth of water is 1.3 m, how many litres of water are in the tank?

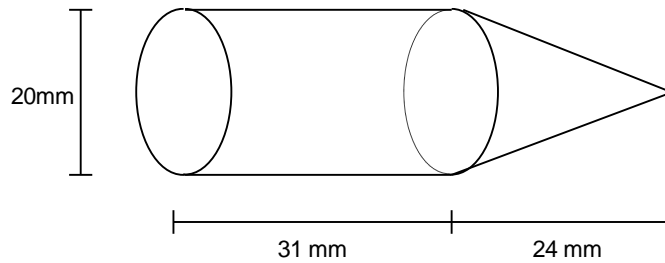


5. After a big storm the previous night, the level of water in the tank has risen to 1.6 m. How many litres of water were collected during the storm?

6. A metal bar is machined as shown below.

- a. Find its volume.

- b. If one cubic centimetre of the metal weighs 4.5 grams, how much does the metal bar weigh?



**Bonus Question – 2 bonus marks!**

7. Find the dimensions of five (5) *different* shapes – a square, rectangle, triangle, parallelogram and trapezium - that have an area of  $16 \text{ cm}^2$ . Sketch a drawing of each one and show that the area is  $16 \text{ cm}^2$ .

**Bonus Question – 1 bonus mark!**

8. Find the diameter of a circle whose area is  $16 \text{ cm}^2$ . *Do not use trial and error.* Show your working.

**Answers**

- 1 a. 230 mm b. 434 km 2. a.  $3000 \text{ cm}^2$  b.  $3000 \text{ cm}^2$  c.  $392.7 \text{ m}^2$  d.  $36 \text{ cm}^2$   
 3. a.  $1300 \text{ cm}^2$  b.  $54 \text{ cm}^2$  c.  $131.9 \text{ m}^2$  4.  $57.4 \text{ m}^2$  5. 13 254 L. 6.  $12252 \text{ mm}^2$  7. square: side length = 34 cm; (note other answers are possible for..) rectangle: Length = 8 cm and Width = 2 cm; triangle: Base = 16 cm and P. Height = 2 cm; Parallelogram: Base = 4 cm and P. Height = 4 cm; Trapezium: a = 3 cm, b = 5 cm, h = 4 cm. 8. 2.26 cm

# Overnight Assignment - Building the Great Pyramid of Giza

Name: \_\_\_\_\_

It is planned to build a full size replica of the Great Pyramid of Giza in Rockhampton, as a tourist attraction. (Well, the idea is no sillier than the Big Prawn or the Big Cow).

You are part of a team of engineers who will tender for the job of supplying the stones for the new pyramid.

*Your job is to determine how many loads each truck must carry if the work is shared equally.*

To get full marks, or for that matter, any marks, you must set your working out clearly!

## POSSIBLY USEFUL INFORMATION

The Pyramid of Giza has a square base with sides of 238 metres, and has a perpendicular height to its apex of 147 metres. The Great Pyramid was built in 300 B.C. Each stone is in the shape of a rectangular prism, measuring 2 metres x 1 metre x 1 metre and weighing 0.75 tonne. The stones are grey in colour, with occasional white flecks in them.

You have a fleet of 20 Toyota trucks, each of which can carry a maximum of 6 tonnes. You also have a dog named Bluey.

# Year 9 Maths - Volume and Surface Area Revision Sheet

For the test you will be allowed to bring in one A4 sheet of paper, with any notes on it that you wish. You can write on both sides of the sheet of paper. It can contain any formulas you wish, worked examples, pictures of the teacher (nice ones), etc. The sheet must be hand-written and be your own work.

A calculator will be necessary for the test.

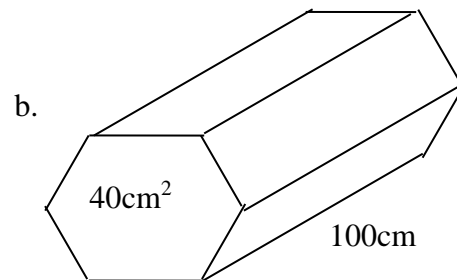
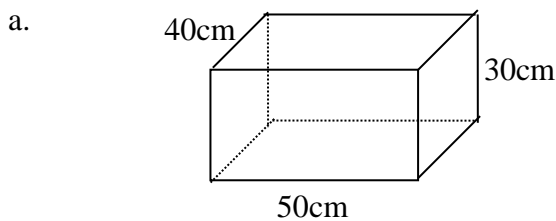
For the test you will need to know how to find the volume of:

- cube                  rectangular prism                  cylinder                  any prism                  cone                  sphere

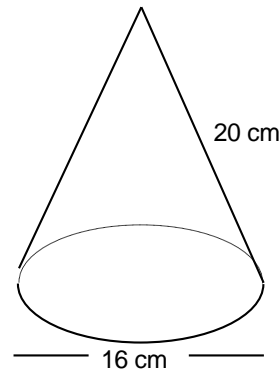
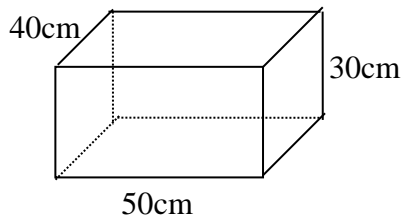
You will need to know how to find the surface area of:

- cube                  rectangular prism                  cylinder                  any prism                  cone                  sphere

1. Find the volume of the following solid shapes.



2. Find the surface area of the following shapes:

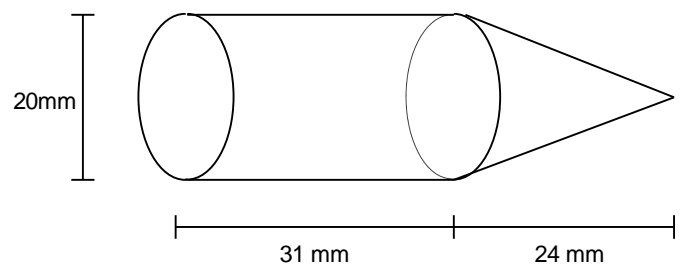


3. A metal bar is machined as shown.

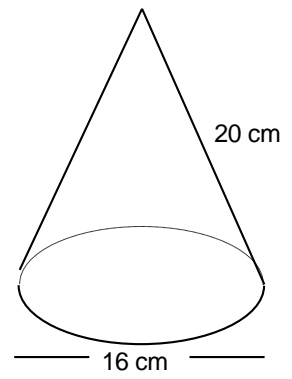
a. Find its surface area.

b. Find its volume.

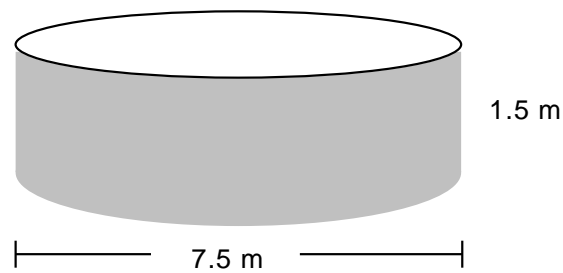
c. If one cubic centimetre of the metal weighs 4.5 grams, how much does the metal bar weigh?



4. A cone has a slant height of 20 cm, and a diameter of 16 cm.
- a. Use Pythagoras' Theorem to find its perpendicular height.
- b. Hence find its volume.



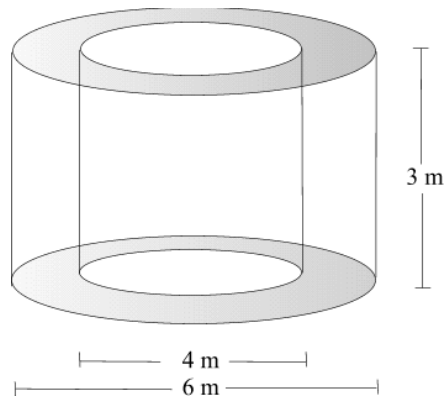
5. A swimming pool as shown below is to be filled with water.



- a. What is volume of water (in cubic metres) if the pool is filled to the brim?
- b. Water flows from a hose at a rate of 25 litres / min. Find how long the pool will take to fill to a depth of 1.5 m.
- c. How much chlorine is needed if it is added at a rate of 20 g per 1000 litres?

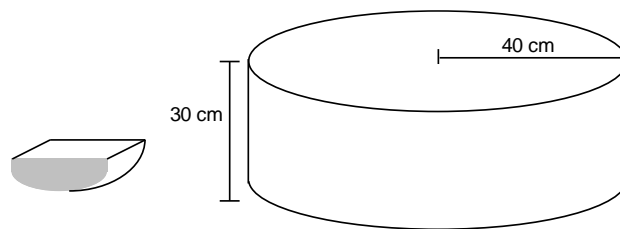
## Extra Questions

1. Given below is a concrete pipe section. What is the volume of concrete needed to make this section?



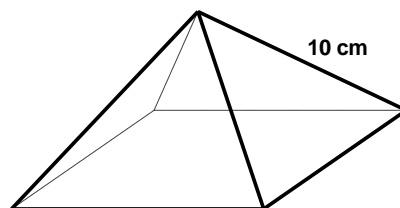
2. One method of finding the volume of an irregular object is to drop it into a tank of water and note how much the water rises. From this you can calculate the volume of the object.

I drop the object on the left into the tank on the right. It raises the water level from 10 cm deep to 12 cm deep. What is the volume of the object?

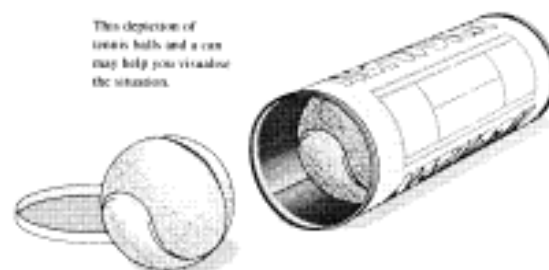


## Super Challenges!

1. In the square-based pyramid below, *all* edges are 10 cm in length. What is the volume of the pyramid?



2. A cylinder of radius 12 cm is just large enough to hold three spheres, also of radius 12 cm. Determine the percentage of the volume of the cylinder occupied in total by the three spheres.



1. Write the formulas for:

- |                            |                         |
|----------------------------|-------------------------|
| a) area of a square        | b) area of a rectangle  |
| c) area of a triangle      | d) area of a circle     |
| e) volume of a right prism | f) volume of a cylinder |
| g) volume of a cone        | h) volume of a pyramid  |

\*4. An Olympic swimming pool is 50 metres long and 25 metres wide. If the pool has a uniform depth of 2 metres, how much water (in litres) is required to fill it?

\*5. A recent TIME magazine article stated that the total weight of gold discovered in the world in 1990 was 2 000 tonnes (up from 1 000 tonnes in 1980).

a) One kilogram of gold occupies about 160 cubic centimetres. What is the volume of the gold in cubic centimetres?

b) There are 1 000 000 cubic centimetres in one cubic metre (100 cm by 100 cm by 100 cm). How many cubic metres does this gold occupy?

c) An average classroom is about 8 metres long, 8 metres wide and about 3 metres high. How many classrooms are needed to store all of this gold, if we fill the rooms right to the ceiling?