

UNIT 14 *Volumes*

Introduction to SIM

Learning objectives

This unit, the final one in Strand E, deals with the important topic of *volume*. After completing this unit of STUDENT INSTRUCTIONAL MATERIAL (SIM) you should be able to

- use the volume formulae for cubes, cuboids, cylinders and prisms
- calculate the density of an object, given its mass and volume (*not examined*)
- use the volume formulae for pyramids, cones and spheres
- apply the volume formulae for cubes, cuboids, cylinders, prisms, pyramids, cones and spheres to solve real life problems.

Key points and principles

- There are formulae for volumes of many solids such as cubes, cuboids, cylinders and spheres.

Glossary of terms

- Volume of 3D solids
- Density $\left(= \frac{\text{Mass}}{\text{Volume}} \right)$

 denotes that the topic is not on the current CXC/CSEC Mathematics syllabus and therefore not examined, but is of relevance to the content of the Unit.

UNIT 14 *Volumes*

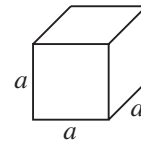
Introduction to SIM

Facts to remember

Volume :

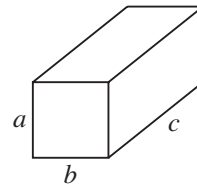
Cube

$$V = a^3$$



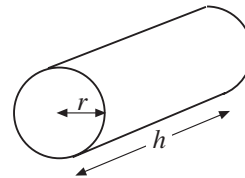
Cuboid

$$V = abc$$



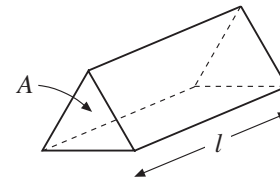
Cylinder

$$V = \pi^2 h$$



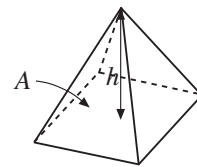
Prism

$$V = Al$$



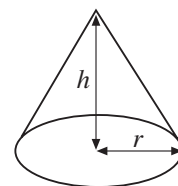
Pyramid

$$V = \frac{1}{3} Ah$$



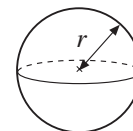
Cone

$$V = \frac{1}{3} \pi r^2 h$$



Sphere

$$V = \frac{4}{3} \pi r^3$$



where a , b and c represent side lengths; A , area; h , height; r , radius and V , volume.