Area and Volume Q1 Paper 2

Formulae

All the formula are in the tables.
For every question write the formula and put in numbers for attempt marks.

Volume of Cubes and Solids

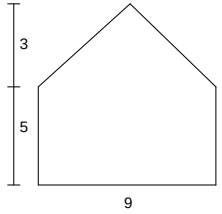
Calculate the volume of a cube of side 3cm.
The volumes of 3D shapes, cubes and solids is found by multiplying the length by the height by the breadth. 3 x 3 x 3 = 27

Areas and Perimeters

Find the perimeter and area of a rectangle of length 8 cm and width 3cm
Perimeter is the distance around the sides.
Here 8 + 3 + 8 + 3 = 22
Area is the length multiplied by the width.
Here 8 x 3 = 24

Can I find the areas/ perimeters of more complex shapes?

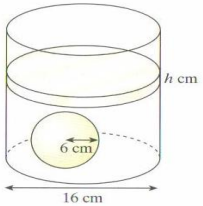
Find the area of this shape



Area of Shape = Area of Triangle + Area of Rectangle
Split shapes up into smaller shapes that you know how to get the area of and then add them together.

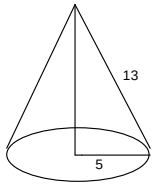
If asked to find a shaded region split the shapes up but take away the area of the smaller shape from the area of the larger shape.

Can I work out the height of water that has been displaced when an object/ objects are placed in a cylinder of water?



Calculate h, the amount the water rises when a sphere of radius 6cm is placed in the cylinder of diameter 16cm.
An object or group of objects is placed into water. The volume of the water that rises is equal to the volume of the object or objects placed in the water.
Write down the volume of the sphere and the volume of water displaced.
Put down the formulae and enter known numbers.
Solve for the missing value h.

Can I use Pythagoras to find the slant height (length), radius or height of a cone?

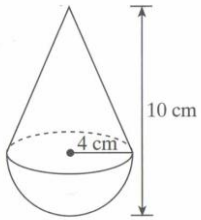


Calculate the height of the following cone.
Observe how a cone forms a triangle between the slant height, the height and the radius.
Put an x next to missing length and use Pythagoras theorem to find it.

Can I let shapes equal one another to find missing lengths?

A cylinder and a sphere have equal volumes. If the radius of the sphere is 6cm and the radius of the cylinder is 8cm, calculate the height of the cylinder.
For this question the volumes of the two shapes will be equal so begin by writing down the relevant formulae and letting them equal one another.
Fill in all the known numbers and then solve for whatever is left.
In this case let the formula for a cylinder equal the formula for a sphere. Fill in all values and solve for h.

Combination Shapes



Find the volume of this shape.
Some shapes such as crayons or buoys are combinations of cylinders, cones and spheres.
Find the volume of each separately and add them together.
In this case the two shapes are a cone and a hemisphere.

Can I use formulae to find the volumes/ surface areas of cones, cylinders, and spheres?

Express in terms of π the
***(i)** volume and **(ii)** total surface area of a cylinder of radius 5cm and height 12cm.*
All the formulae are in the tables. When you see the word for a shape write down its formula for attempt marks. Remember that if it asks to express the answer in terms of π then do **NOT** fill in 3.14 or $\frac{22}{7}$.