1) Longest diagonal in a cube is known as Body diagonal

2) In a right cylinder Base is perpendicular to Height

3) Side of a cube is 6cm, find , (I) surface area ,(ii) volume ,(iii) face diagonal and (iv) body diagonal ?

Solution:
Given: Side of the cube = 6 cm.
$\text{Side}^2 = 6 \times 6 = 36$
Surface area = $6\ \text{side}^2$ Sqr unit.
$= 6 \times 36$
$= 216\ \text{cm}^2$
Volume = $\text{Side}^3 = 6 \times 6 \times 6 = 216\ \text{cm}^3$

Face diagonal = $\sqrt{2}$ side
$= 6\sqrt{2}$ cm

Body diagonal = $\sqrt{3}$ side

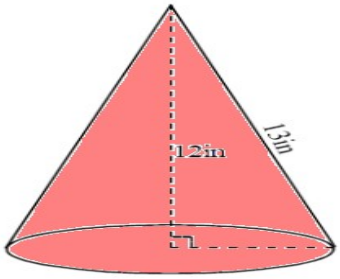
$= 6\sqrt{3}$ cm

4) The volume of a sphere is equal to its surface area. What is its radius?
Solution:
Given: Volume of a sphere is equal to its surface area.
To find: radius of the sphere.
Volume of the sphere = $\frac{4}{3}\pi r^3$ cubic unit.
Surface area = $4\pi r^2$ square unit.

$$\frac{4}{3}\pi r^3 = 4\pi r^2$$

r = 3 units.
Radius of the sphere = 3 units.

5)



Find the volume of the cone?

Solution:

Given:

Slant height of the cone $l = 13$ inches.

Height of the cone $h = 12$ inches.

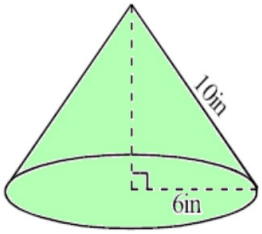
Volume of the cone $V = \frac{1}{3}\pi r^2 h \text{ inch}^2$

radius $r = \sqrt{13^2 - 12^2} = 5$ inches

Volume of the cone $V = \frac{1}{3}\pi 5^2 (12) \text{ inch}^2$

Volume of the cone $V = 100\pi \text{ inch}^3$

6)



Find the height of the cone ?

Solution:

This is a right circular cone.

Given:

Slant height = 10 inches.

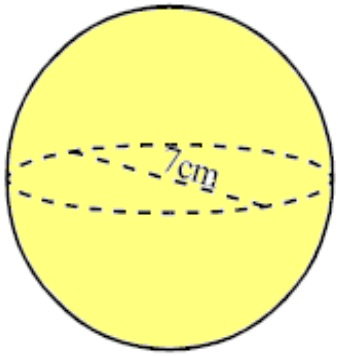
Radius = 6 inches.

Height of the cone $= \sqrt{(\text{slant height})^2 - (\text{radius})^2}$

$= \sqrt{10^2 - 6^2} = 8$ inches.

Height of the cone = 8 inches.

7)



Find the volume of the sphere and its surface area ?

Solution:

Given:

Diameter of the sphere = 7 cm.

Radius of the sphere = 7/2 cm.

Volume of the sphere = $\frac{4}{3}\pi r^3 cm^3$ where, $\pi = \frac{22}{7}$

$= \frac{4}{3} \times \frac{22}{7} \times (\frac{7}{2})^3 cm^3 = \frac{539}{3}$

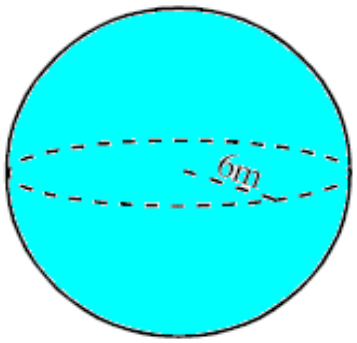
Volume of the sphere = $\frac{539}{3} cm^3$

Surface area = $4\pi r^2 cm^2$

$= 4 \times \frac{22}{7} \times (\frac{7}{2})^2 cm^2 = 154 cm^2$

Surface area of the sphere = $154 cm^2$

8)



Find the volume of the sphere and its surface area ?

Given:

Radius of the sphere = 6 m.

Volume of the sphere = $\frac{4}{3}\pi r^3 m^3$ where, $\pi = \frac{22}{7}$

$= \frac{4}{3} \times \pi \times 6^3 m^3 = 288\pi m^3$

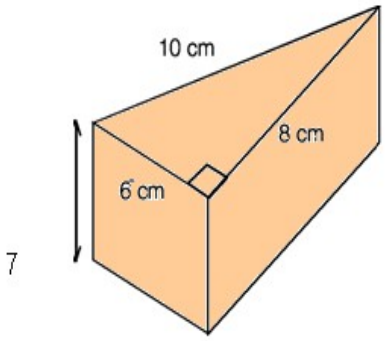
Volume of the sphere = $288\pi m^3$

Surface area = $4\pi r^2 m^2$

$= 4 \times \pi \times 6^2 m^2 = 144\pi m^2$

Surface area of the sphere = $144\pi m^2$

9)



Find the volume and surface area ?

Solution:

In the given figure, triangular prism.

Base of the triangle = 6 cm.

Height of the triangle = 8 cm.

Hypotenuse of the triangle = 10 cm.

Distance between two triangles = 7 cm

Volume of the prism = area of the triangle x distance between two triangles

Area of the triangle = base x height / 2

= 6 x 8 / 2 = 24 cm^2

Volume of the prism = 24 x 7 = $168 cm^3$

Surface area = 2 x area of triangle + area of the base rectangle + area of side rectangles

= 2 x 24 + 7 x 6 + 8 x 7 + 10 x 7

= 48 + 42 + 56 + 70 = 216 cm^2

Surface are of the given prism = 216 cm^2

10)

A sphere has a surface area of 36π cm2. What is its volume?

Solution:

Given: Surface area of sphere = 36π cm^2
Surface area of a sphere = $4\pi r^2 cm^2$

$$4\pi r^2 = 36\pi$$

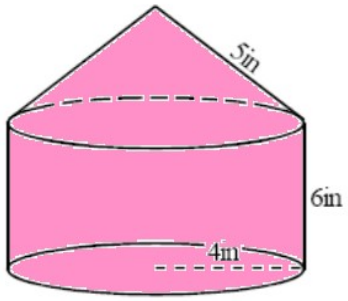
$$r = 3 \text{ cm.}$$

Volume of the sphere = $\frac{4}{3}\pi r^3 cm^3$

$$= \frac{4}{3}\pi 3^3 cm^3 = 36\pi cm^3$$

Volume of the sphere = $36\pi cm^3$

11)



Find the volume of the given figure.

Solution:
In the given figure, a cone of radius 4 in and slant height 5 has been stacked on the cylinder of height 6 inches and radius 4 inches.
To find the volume of the figure.
Volume of the figure = Volume of the cylinder + volume of the cone.
Slant height of the cone $l = 5$ inches.
Radius of the cone $r = 4$ inches.
Volume of the cone $V = \frac{1}{3}\pi r^2 h \text{ inch}^2$

Height $h = \sqrt{5^2 - 4^2} = 3$ inches

Volume of the cone $V = \frac{1}{3}\pi 4^2 (3)$

Volume of the cone $V = 16\pi \text{ inch}^3$
Volume of the cylinder = $\pi r^2 h \text{ inch}^3$

Height of the cylinder $h = 6$ inches.
Radius of the cylinder $r = 6$ inches.

Volume of the cylinder = $\pi 4^2 \times 6 = 96\pi \text{ inch}^3$
Volume of the given figure = $16\pi + 96\pi = 112\pi \text{ inch}^3$
Volume of the given figure = $112\pi \text{ inch}^3$

12)
A cone of height 24 cm and radius of base 6 cm is made up of modeling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.

Solution:
Given:
Height of the cone = 24 cm.
Radius of the cone = 6 cm.

Since no clay is left when it is reshaped, volume of the cone will be equal to the volume of the sphere.

That is,
$\frac{1}{3}\pi r^2 h = \frac{4}{3}\pi r1^3$, where r1 is the radius of the sphere.

$6^2 24 = 4\, r1^3$

$r1^3 = 6^3$

r1 = 6 cm.

Radius of the sphere = 6 cm.