NALANDA COLLEGE - COLOMBO 10

Grade11

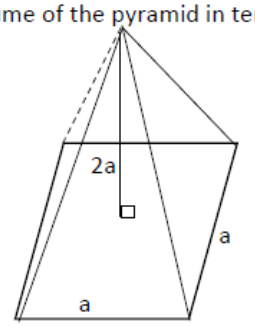
Mathematics

Unit Test

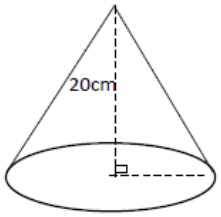
5) Volume of Solids

Part I

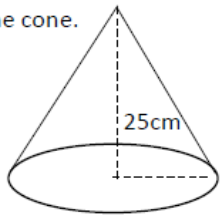
1. Find the volume of a square based right pyramid, of height 8cm and base length 6cm.
2. Shown in the figure is a square based right pyramid of base length a cm and height 2a cm. Find the volume of the pyramid in terms of a.



3. Find the base radius of a cone of height 7cm and slant height $7\sqrt{2}\ cm$.
4. The Circumference of the base of a cone is 66cm. Its perpendicular height is 20cm. Find the volume of the cone.



5. The volume of a square pyramid is 256cm^3. The length of a side of its base is 8cm. Find the height of the pyramid.
6. The height of a cone is 12cm and radius 8cm. Show that slant height of the cone is $4\sqrt{13}\ cm$.
7. Find the volume of a sphere of radius 7cm.
8. Radius of a solid hemisphere is 11cm. The volume 1cm^3 of the substance that made the hemisphere weights 10g. Find the weight of the hemisphere.
9. The area of the circular base of the cone is 1386cm^2 and perpendicular height is 25cm. Find the volume of the cone.



10. The volume of a solid hemisphere is $1527\frac{3}{7}cm^3$. Find the radius of the sphere.

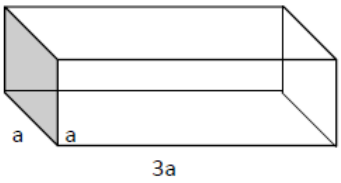
Part II

1) A solid metal sphere of radius a cm was melted and casted into 10 solid spheres of radius $\frac{r}{2}$ cm.

   i. Show that $r = \sqrt[3]{\frac{4}{5}}\, a$ cm.

   ii. Taking a as 3.5cm, find the value of r to the nearest first decimal place using the table of logarithms.

2) A solid metal cone of base radius a and height h was made by melting the given cuboid shaped metal block. (Assume there was no waste of the metal in the molding process)



   i. Find the volume of the metal block in terms of a.

   ii. Find the volume of the cone in terms of a and h.

   iii. Show that $h = \frac{9a}{\pi}$

3) The height of a solid right circular cylinder is $l\ cm$ and base radius 2a cm. This cylinder is melted and 30 identical solid metal spheres of radius a cm each are made without wastage of metal.

   i. Find the volume of the cylinder in terms of $\pi, a\ and\ l$.

   ii. Find the volume of 30 spheres in terms of $\pi\ and\ a$.

   iii. Show that the height of the cylinder is ten times the radius of the sphere.