

Lesson 4.3: Cones, Pyramids and Spheres

Learning Goal: We are learning to calculate the surface area and volume of cones, square-based pyramids and spheres.

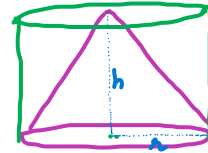
FORMULAS TO REMEMBER:

$$S.A. (CONE) = \pi r s + \pi r^2$$

CURVED SURFACE + CIRCULAR BASE

$$VOLUME (CONE) = \frac{1}{3} \pi r^2 h$$

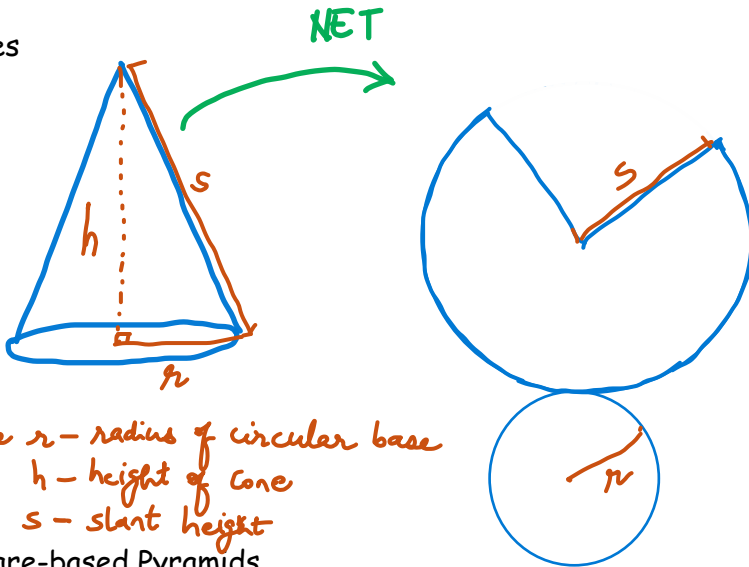
* ANOTHER IMPORTANT NOTE:



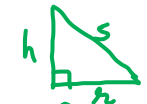
If you fill a cone and a cylinder with same radius r and height h with water, you will observe:
 water in cone = $\frac{1}{3}$ (water in cylinder)

\therefore It is safe to conclude that
 $VOLUME (CONE) = \frac{1}{3} (VOLUME \text{ of } CYLINDER)$

Cones



NOTE:



where r - radius of circular base
 h - height of cone
 s - slant height

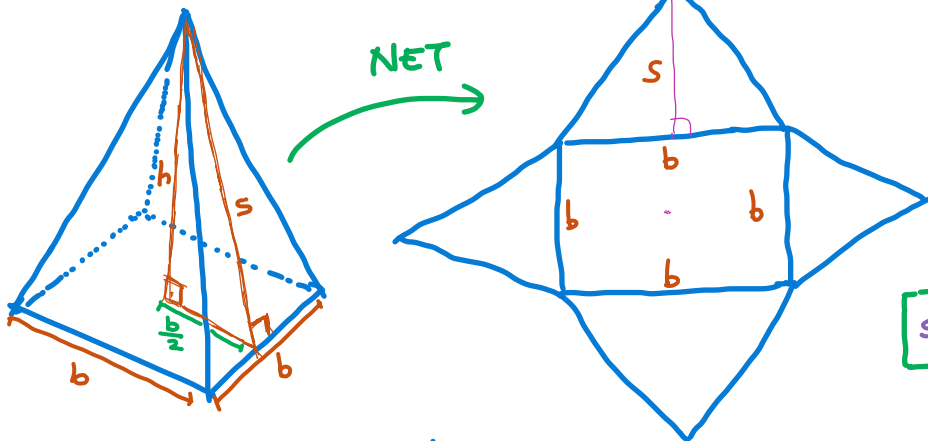
Right Δ
 $s^2 = h^2 + r^2$
 (PYTHAGORAS THEOREM)

Square-based Pyramids

NOTE:



$s^2 = (\frac{b}{2})^2 + h^2$
 (PYTHAGORAS THEOREM)



FORMULAS TO REMEMBER:

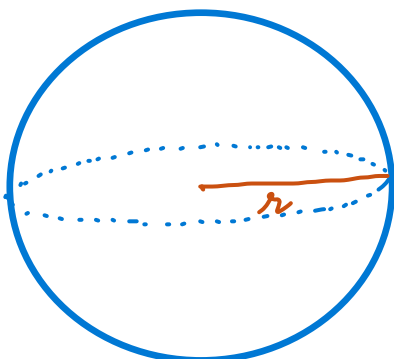
S.A. = Area of 4 identical Δ + Area of \square base

$$SA (SQUARE PYRAMID) = 2bs + b^2$$

THINK HOW?!!

$$VOLUME (SQUARE PYRAMID) = \frac{1}{3} b^2 h$$

Spheres.



FORMULAS TO REMEMBER:

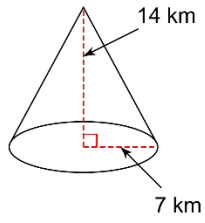
$$S.A. (SPHERE) = 4\pi r^2$$

$$VOLUME (SPHERE) = \frac{4}{3} \pi r^3$$

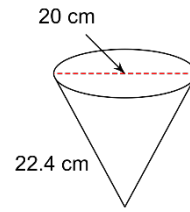
THE NET OF A SPHERE WOULD BE LIKE THE PEEL OF AN ORANGE.

For each new solid, draw a net wherever possible, then calculate the surface area and the volume.

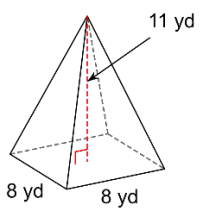
1.



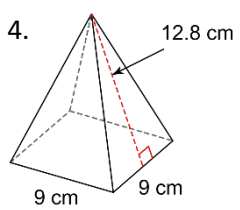
2.

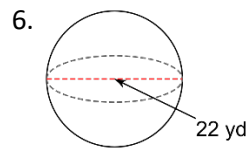
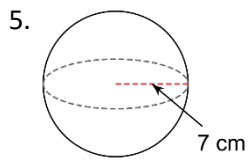


3.



4.





Use the appropriate formula to solve for the missing measurement.

7. A cone has a volume of 2094.4cm^3 with a radius of 10cm . Determine the length of the slant height.

8. A sphere has a volume of 904.78in^3 . Determine the length of the radius.

Success Criteria

- I can use the appropriate formula to find the surface area or volume of a cone, pyramid, or sphere