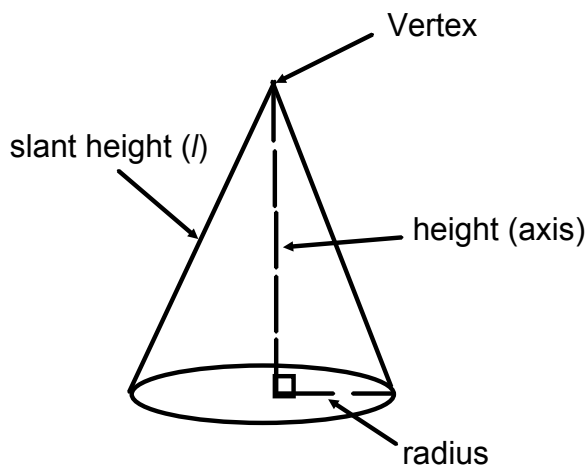


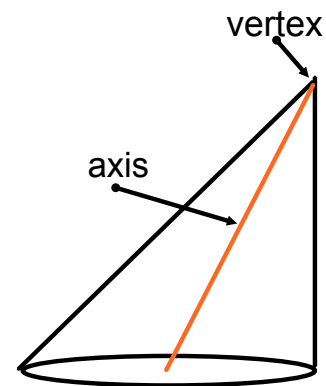
12 -6 Surface Areas of Cones

Cone:

- * Base is a circle, vertex is a point.
- * Axis is a segment with endpoints that are the vertex and the center of the base.
- * When the axis is perpendicular to the base, it is a right cone. The axis is then the altitude (height) of the cone.



Right Cone



Oblique Cone

Slant height: any segment joining the vertex to the edge of the circular base

Lateral Area (L. or L.A.): The area does not include the base.

$$L.A. = \frac{1}{2} P\ell$$

ℓ = slant height

$$L.A. = \frac{1}{2} (2\pi r)\ell$$

P = Perimeter of base

$$L.A. = \pi r\ell$$

change

Surface Area (T. or S.A.) includes the lateral area and the base.

$$S.A. = L.A. + B$$

B = area of base
(circle)

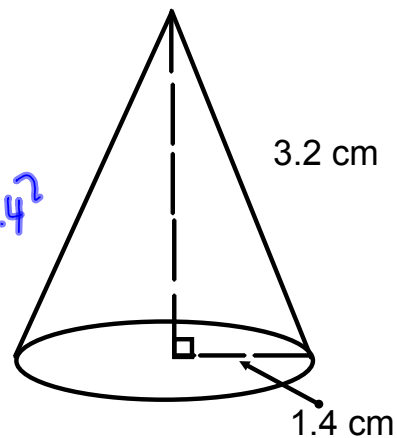
$$S.A. = \pi r\ell + \pi r^2$$

1. A sugar cone has an altitude of 8 inches and a diameter of 2.5 inches. Find the lateral area of the sugar cone.

$L.A. = \pi r l$
 $L.A. = \pi (1.25) ($
 $2.5/2 = 1.25 = r$
 $8^2 + 1.25^2 = l^2$
 $64 + 1.5625 = l^2$
 $65.5625 = l^2$
 $8.097 = l$
 $L.A. = \pi (1.25) (8.097) = 31.8 \text{ in}^2$

2. Find the surface area of the cone. Round to the nearest tenth.

$$\begin{aligned}
 \therefore T &= \pi r l + \pi r^2 \\
 &= \pi (1.4) (3.2) + \pi (1.4)^2 \\
 &= 14.07 + 6.15 \\
 &= 20.22 \text{ cm}^2
 \end{aligned}$$



3. Find the Surface area of the figure shown.

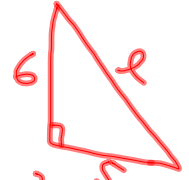
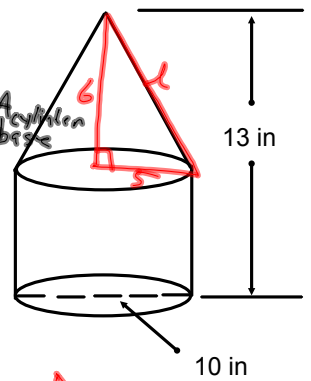
$$S.A. = L.A._{\text{cone}} + L.A._{\text{cylinder}} + A_{\text{cylinder base}}$$

$$S.A. = \pi r l + 2\pi r h + \pi r^2$$

$$S.A. = \pi(5)(7.8102) + 2\pi(5)(7) + \pi(5^2)$$

$$S.A. = 122.68233 + 219.91148 + 78.53981$$

$$S.A. = 421.19 \text{ in}^2$$



$$6^2 + 5^2 = l^2$$

$$36 + 25 = l^2$$

$$\sqrt{61} = l$$

$$7.8102 = l$$