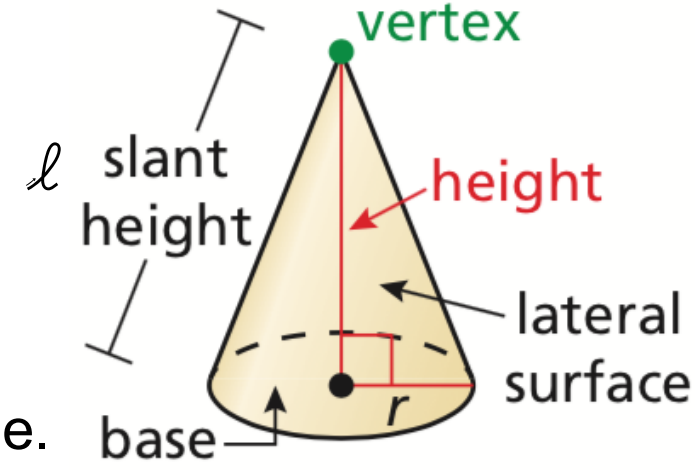
Chapter 11
Circumference, Area, and Volume

11.7 Surface Areas and Volumes of Cones

Cones

- **Base -** Circular face of a cone.
- **Vertex -** The point in which the curved surface meets.
- **Height -** Also called *altitude*, is the perpendicular distance between the vertex and the base. In a *right cone*, the height meets the center of the base.
- **Slant height** (ℓ) **-** The distance between the vertex and the edge of the base.
- **Lateral surface -** The curved surface connecting the vertex to the base edge.

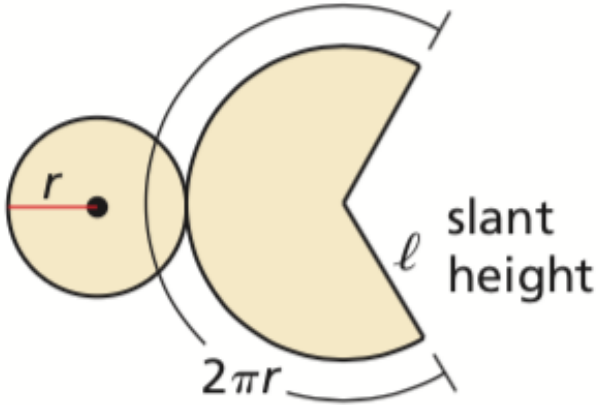


11.7 Surface Areas and Volumes of Cones

Surface Area of a Right Cone

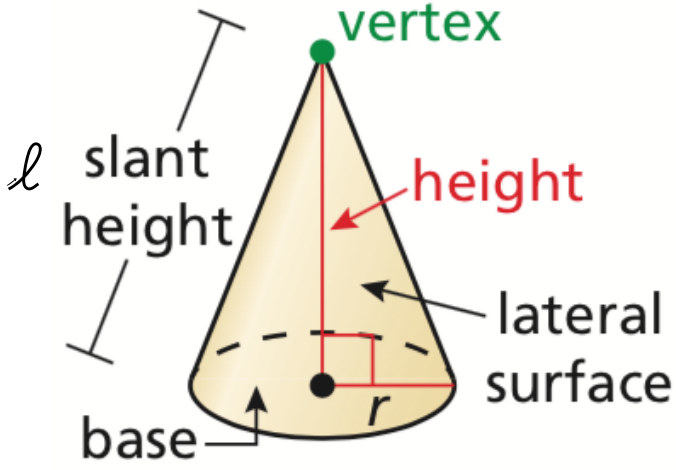
Lateral Surface Area of Cone

$$L = \pi r \ell$$



Surface Area of Cone

$$S = B + L = \pi r^2 + \pi r \ell$$



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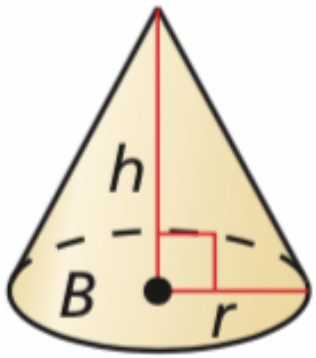
Volume of a Cone

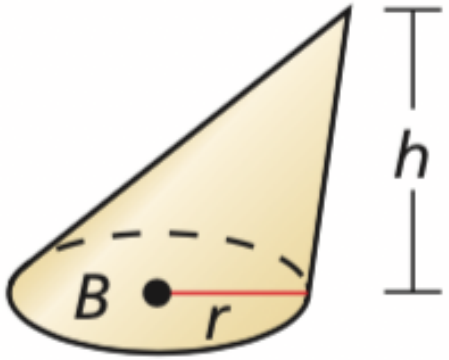
Volume of a Cone

$$V = \frac{1}{3}Bh = \frac{1}{3}\pi r^2 h$$

Right Cone



Oblique Cone



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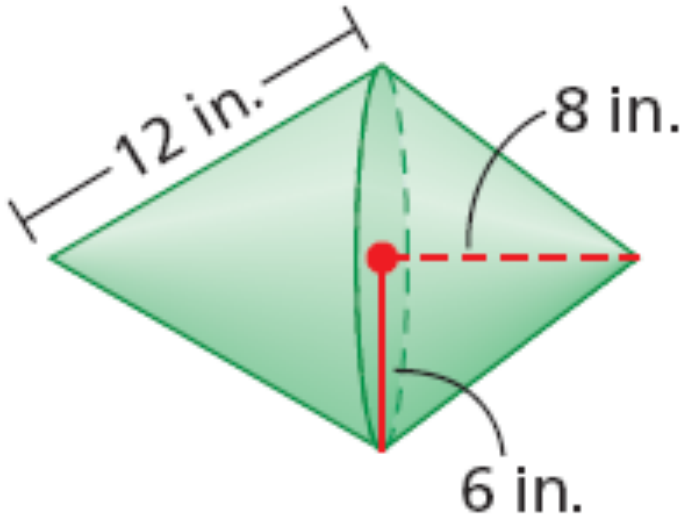
Composite Solid

Example

Compute the surface area and volume of the composite figure.



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Similar Solids

Example

Cones A and B are similar.

a) What is the scale factor?

b) What is the volume of cone B?

Cone A

$V = 15\pi \text{ ft}^3$

Cone B