

Volume

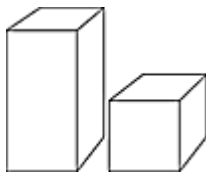
For most geometric solids, one of two formulas will produce the volume. The main exception is the sphere, which has a formula all its own.

Two Bases:

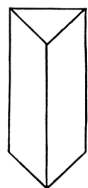
If the figure has two congruent bases, the “master” formula is $V = B \cdot h$.
 V = volume, h = height, and B represents the formula for the area of the base. So if the base is a rectangle, $B = l \cdot w$ and the master formula becomes $V = l \cdot w \cdot h$. Remembering one master formula is easier than memorizing several specific formulas.

$$V = B \cdot h$$

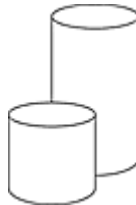
Volume = “Area of Base” times height



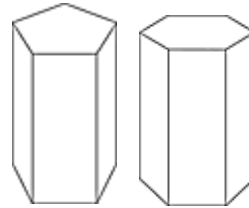
$V = \underline{l \cdot w \cdot h}$
 Rectangle
 l = length
 w = width
 h = height



$V = \underline{\frac{1}{2} a \cdot b \cdot h}$
 Triangle
 a = altitude
 b = base
 h = height



$V = \underline{\pi \cdot r^2 \cdot h}$
 Circle
 r = radius
 h = height



$V = \underline{\frac{1}{2} a \cdot P \cdot h}$
 Regular Polygon
 a = apothem
 P = Perimeter of base
 h = height

One Base:

If the figure comes to a point, as in pyramids and cones, its volume will be only one-third as much as a solid with the same base and height as above.

$$V = \frac{1}{3} B \cdot h$$



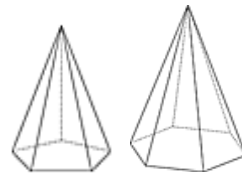
$V = \underline{\frac{1}{3} l \cdot w \cdot h}$



$V = \underline{\frac{1}{6} a \cdot b \cdot h}$



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



$V = \underline{\frac{1}{6} a \cdot P \cdot h}$

No Bases:

For a sphere, the volume formula is: $V = \frac{4}{3} \pi r^3$
 The radius of the sphere is represented by “ r .”

