Volume of Pyramids, Cones & Spheres

Return to table of contents
Given the same diameter and height for each figure, drag them to arrange in order of smallest to largest volume.

How many filled cones do you think it would take to fill the cylinder?

How many filled spheres do you think it would take to fill the cylinder?
Demonstration comparing volume of Cones & Spheres with volume of Cylinders

click to go to web site
Volume of a Cylinder

A cone is 1/3 the volume of a cylinder with the same base area \((B)\) and height \((h)\).

\[
\text{Volume} = \pi r^2 h
\]
Volume of a Cone

A cone is $1/3$ the volume of a cylinder with the same base area ($B$) and height ($h$).

$$V = \frac{1}{3} \pi r^2 h$$
Volume of a Sphere

A sphere is $\frac{2}{3}$ the volume of a cylinder with the same base area ($B$) and height ($h$).

$$V = \frac{2}{3} \text{(Volume of Cylinder)}$$

$$V = \frac{2}{3} \left( \pi r^2 h \right)$$

or

$$V = \frac{4}{3} \pi r^3$$
If the radius of a sphere is 5.5 cm, what is its volume?

\[
V = \frac{4}{3} \pi r^3
\]
\[
V = \frac{4}{3} (3.14)(5.5)^3
\]
\[
V = 696.6 cm^3
\]
25 What is the volume of a sphere with a radius of 8 ft?
26 What is the volume of a sphere with a diameter of 4.25 in?