

# Volume of Cones, Cylinders and Spheres

8th Grade

Three formulas, and the relationship that links them.

*All three use the radius. Two of them use the height as well.*

| Solid    | Volume                 | Note                            |
|----------|------------------------|---------------------------------|
| Cylinder | $\pi r^2 h$            | circle area $\times$ height     |
| Cone     | $\frac{1}{3}\pi r^2 h$ | exactly a third of the cylinder |
| Sphere   | $\frac{4}{3}\pi r^3$   | no height — only the radius     |

A cone, a hemisphere and a cylinder of the same radius and height are in the ratio 1 : 2 : 3.