

Chapter Summary

- The list below summarizes area and volume formulas for solids. The cylinder formulas are special cases of the prism formulas with $p = 2\pi r$ and $B = \pi r^2$. Also the cone formulas are special cases of the pyramid formulas with the same substitutions for p and B . To find the total area of each of the four solids, add lateral area to the area of the base(s).

Right prism	L.A. = ph	$V = Bh$
Right cylinder	L.A. = $2\pi rh$	$V = \pi r^2 h$
Regular pyramid	L.A. = $\frac{1}{2}pl$	$V = \frac{1}{3}Bh$
Right cone	L.A. = πrl	$V = \frac{1}{3}\pi r^2 h$
Sphere	$A = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$

- If the scale factor of two similar solids is $a:b$, then
 - the ratio of corresponding perimeters is $a:b$.
 - the ratio of corresponding areas is $a^2:b^2$.
 - the ratio of the volumes is $a^3:b^3$.

Chapter Review

- In a right prism, each is also an altitude. 12-1
- Find the lateral area of a right octagonal prism with height 12 and base edge 7.
- Find the total area and volume of a rectangular solid with dimensions 8, 6, and 5.
- A right square prism has base edge 9 and volume 891. Find the total area.
- Find the volume of a regular triangular pyramid with base edge 8 and height 10. 12-2
- A regular pentagonal pyramid has base edge 6 and lateral edge 5. Find the slant height and the lateral area.

A regular square pyramid has base edge 30 and total area 1920.

- Find the area of the base, the lateral area, and the slant height.
- Find the height and the volume of the pyramid.
- Find the lateral area and the total area of a cylinder with radius 4 and height 3. 12-3
- Find the lateral area, total area, and volume of a cone with radius 6 cm and slant height 10 cm.
- A cone has volume $8\pi \text{ cm}^3$ and height 6 cm. Find its slant height.
- The radius of a cylinder is doubled and its height is halved. How does the volume change?