

# Section Overview

## Surface Area

Lessons 10-4, 10-5, 10-8

**Why?** Surface area can be used to determine the amount of material needed to cover the outside of an object.

$S$  = surface area     $B$  = base area     $L$  = lateral area     $P$  = base perimeter     $\ell$  = slant height

**Right Prism**  
 $L = Ph$   
 $S = L + 2B$   
 $= Ph + 2B$   
 Cube:  $S = 6s^2$

**Right Cylinder**  
 $L = 2\pi rh$   
 $S = L + 2B$   
 $= 2\pi rh + 2\pi r^2$

**Regular Pyramid**  
 $L = \frac{1}{2}P\ell$   
 $S = L + B$   
 $= \frac{1}{2}P\ell + B$

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

**Sphere**  
 $S = 4\pi r^2$

## Volume

Lessons 10-6, 10-7, 10-8

**Why?** Volume can be used to find the capacity of a swimming pool or the amount of air required to fill a balloon.

$V$  = volume     $B$  = base area     $h$  = height

**Prism**  
 $V = Bh$

Right rectangular prism:  $V = \ell wh$

Cube:  $V = s^3$

**Cylinder**  
 $V = Bh$   
 $= \pi r^2 h$

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

**Pyramid**  
 $V = \frac{1}{3}Bh$

**Sphere**  
 $V = \frac{4}{3}\pi r^3$