

# MATH SKILL INFORMATION PAGE

**Pre-Algebra**

**For use with 10-4 through 10-9**

A few definitions:

- **SPACE FIGURE:** better name is “solid.” A **three-dimensional figure**. The solids in chapter 10 are prisms, pyramids, cylinders, cones, and spheres. ***Make sure you recognize all of them!***
- **SURFACE AREA:** All the **outside area of a solid**. It’s almost always found by adding up the separate areas of the base and lateral faces of the solid.
- **LATERAL AREA:** “Lateral” generally means **the sides** of something, and that’s how to think of lateral for surface area. For most solids, it’s helpful to find the area of the laterals (the sides) as the first step in finding the surface area.
- **VOLUME:** This is the **amount of space inside a solid**. It’s normally measured as a cubic, which means it is the result of multiplying 3 sides: the length, the width, and the depth. That’s easy for a rectangular prism, but not so easy with more complicated solids.
- **SPECIAL NOTE:** “**B**” as a capital in a formula in chapter 10 means the **AREA of the base**.
- Don’t forget other common terms: base, height, slant height, altitude, square, rectangle, triangle, radius, diameter, length, width, side.
- **PI ( $\pi$ ):** Symbol for the ratio of circumference to diameter for any circle. Use 3.14 when using  $\pi$  in calculations.

Formulas:

Solid	Surface Area (S.A.)	Volume
<b>Prism</b>	S.A. = Lateral Area + 2 • Base Area <i>Lateral Area = Adding up the area of each side, or                      = multiplying the perimeter of the base and the height: <math>ph</math></i> <b>S.A. = <math>ph + 2B</math></b>	<b><math>V = Bh</math></b> <i>(Remember that B is the area of the base)</i>
<b>Cylinder</b>	S.A. = Lateral Area + 2 • Base Area <i>L.A. = the circumference of the base, times the height: <math>2\pi rh</math></i> <b>S.A. = <math>2\pi rh + 2(\pi r^2)</math></b>	<b><math>V = Bh</math></b>
<b>Pyramid</b>	S.A. = Lateral Area + Base Area <i>L.A.: since each side (or, lateral face) is a triangle, first find the area of one triangular side: <math>1/2b\ell</math>, which means one-half times the base times the slant height, which is <math>\ell</math>. Then, multiply that area by the number of sides (n).                      So, L.A. = <math>n(\frac{1}{2}b\ell)</math></i> <b>S.A. = <math>n(\frac{1}{2}b\ell) + s^2</math></b> (s = one side of the base)	<b><math>V = \frac{1}{3} Bh</math></b> <i>(Note that height for a pyramid—and cone—means the altitude. It is the vertical line from the vertex to the base, and it must make a right angle with the base.)</i>
<b>Cone</b>	S.A. = Lateral Area + Base Area <i>L.A. = there’s a formula for the lateral area of a cone: <math>\pi r\ell</math></i> <b>S.A. = <math>\pi r\ell + \pi r^2</math></b>	<b><math>V = \frac{1}{3} Bh</math></b>
<b>Sphere</b>	<b>S.A. = <math>4\pi r^2</math></b>	<b><math>V = \frac{4}{3} \pi r^3</math></b>

Note: Only the formulas that are in bold in the chart above will be given on the month 8 test.