

# Parent Newsletter

## Chapter 9: Surface Area and Volume

### Students will...

Use two-dimensional nets to represent three-dimensional solids.

Find surface areas of rectangular and triangular prisms.

Find surface areas of regular pyramids.

Find surface areas of cylinders.

Find volumes of prisms.

Find volumes of pyramids.

Describe the intersections of planes and solids.

Solve real-life problems.

### Key Terms

The *lateral surface area* of a prism is the sum of the areas of the lateral faces.

A *regular pyramid* is a pyramid whose base is a regular polygon.

The height of each lateral face of a pyramid is the *slant height* of the pyramid.

A two-dimensional shape formed by the intersection of a plane and a solid is called a *cross section*.

### Standards

#### Common Core:

**7.G.3:** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

**7.G.4:** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

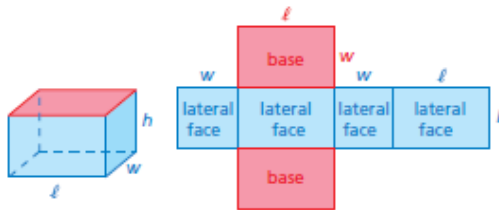
**7.G.6:** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

### Key Ideas

#### Surface Area of a Rectangular Prism

The surface area  $S$  of a rectangular prism is the sum of the areas of the bases and the lateral faces.

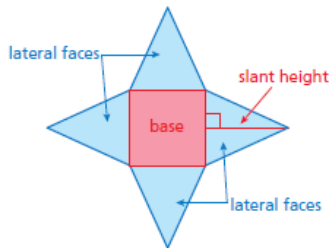
$$S = 2\ell w + 2\ell h + 2wh$$



#### Surface Area of a Pyramid

The surface area  $S$  of a pyramid is the sum of the areas of the base and the lateral faces.

$$S = \text{area of base} + \text{areas of lateral faces}$$



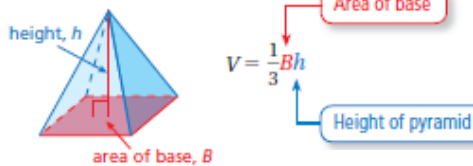
#### Surface Area of a Prism

The surface area  $S$  of any prism is the sum of the areas of the bases and the lateral faces.

$$S = \text{areas of bases} + \text{areas of lateral faces}$$

#### Volume of a Pyramid

The volume  $V$  of a pyramid is one-third the product of the area of the base and the height of the pyramid.



### Essential Questions

How can you find the surface area of a prism?

How can you find the surface area of a pyramid?

How can you find the surface area of a cylinder?

How can you find the volume of a prism?

How can you find the volume of a pyramid?



