Volume and Surface Area **Family Letter**

Dear Family,

In this module, ***Volume and Surface Area***, students will use their prior knowledge of polygons and area to develop understanding of volume and surface area. Having a solid understanding of volume and surface area will prepare students for their future as they encounter commercial packaging and home improvement projects.

What Did Students Learn Previously?

In previous lessons, students understood how to find the area of triangles and quadrilaterals, and how the area formulas are derived from composition and decomposition of polygons.

For example, the area of a parallelogram can be found by multiplying the base by the height, represented by the formula $A = bh$. Because a parallelogram can be decomposed into two congruent triangles, the area of one triangle can be found by dividing the area of the parallelogram by 2. This is represented by the area formula of a triangle, $A = \frac{1}{2}bh$.

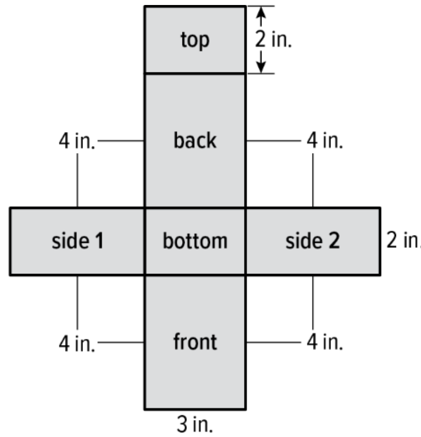
What Will Students Learn in This Module?

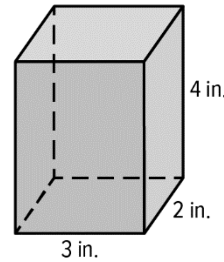
Volume of Rectangular Prisms

- Students will understand that a **three-dimensional figure** has length, width, and height. **Volume** is the amount of space inside the figure and is measured in **cubic units**.
- To find the **volume** of a **rectangular prism**, students may count the number of **unit cubes** used to pack the **prism**, or they may multiply the length, width, and height, as represented by the formula, $V = \ell wh$.

Surface Area of Rectangular and Triangular Prisms and Pyramids

- Students will understand how using a **net** can help deconstruct **prisms** and **pyramids** in order to find the **surface area**.
- To find the surface area of **prisms** and **pyramids**, find the area of each **lateral face** and base using known formulas, then add the areas to find the total **surface area**. **Surface area** is measured in square units.





What Vocabulary Terms Will Students Use?

Term	Definition
cubic units	Used to measure volume. Tells the number of cubes of a given size it will take to fill a three-dimensional figure.
lateral face	Any face that is not a base.
net	A two-dimensional figure that can be used to build a three-dimensional figure.
prism	A three-dimensional figure with at least three rectangular lateral faces and top and bottom faces parallel.
pyramid	A three-dimensional figure with at least three triangular sides that meet at a common vertex and only one base that is a polygon.
rectangular prism	A prism that has rectangular bases.
slant height	The height of each lateral face of a pyramid.
surface area	The sum of the areas of all the surfaces (faces) of a three-dimensional figure.
three-dimensional figure	A figure with length, width, and height.
triangular prism	A prism that has triangular bases.
volume	The amount of space inside a three-dimensional figure. Volume is measured in cubic units.

How You Can Provide Support

1. Support your child's understanding by asking them to explain how volume and surface area are used in everyday life.
   - *Gardening:* Determine the amount of cubic feet of soil needed to fill a garden bed.
   - *Painting:* Determine how many square feet of paint are needed to cover the walls of a room. Extend their thinking by having them determine how many gallons of paint are needed.
2. Encourage your child to have a positive, growth-oriented attitude towards mathematics and their learning.
   - Encourage them to ask questions – both at home and in class. Sometimes, an answer to a question will generate more questions. That's how you know they are learning!
   - Encourage your child to embrace challenges and remind them that every challenge is an opportunity to learn something new.
   - Celebrate successes – both small and large.
3. Contact me to arrange a time to discuss the specifics of your child's performance and how we can work together to help them succeed in this module.

Sincerely,

(Teacher's Name)

(Email/Phone)