Area   Family Letter

Dear Family,

In this module, *Area*, students will use their prior knowledge of polygons, basic computation, and the coordinate plane to develop understanding of area. Having a solid understanding of area will prepare students for their future as they calculate area for landscaping or home improvement projects.

What Did Students Learn Previously?

In elementary grades, students understood classifications of two-dimensional figures such as triangles and quadrilaterals. Students also calculated area and perimeter of rectangles.

For example, a quadrilateral is a two-dimensional, closed figure with four straight sides. Rectangles are a type of quadrilateral having opposite sides parallel. The perimeter of a rectangle is found by adding the lengths of the four sides, and the area is found by multiplying the length and width of the sides of the rectangle. The area is measured in square units.

What Will Students Learn in This Module?

Area of Parallelograms, Triangles, and Trapezoids

- Students will understand how the area of **parallelograms**, triangles, and **trapezoids** can be determined by composing and decomposing into other two-dimensional figures.
- Areas of **parallelograms**, triangles, and **trapezoids** can be found using the following formulas, where *A* represents the area, *b* represents the **base**, and *h* represents the **height**.

Area of a Parallelogram	$A = bh$
Area of a Triangle	$A = \frac{1}{2}bh$
Area of a Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$

Area of Regular Polygons

- Students will understand how the area of a **regular polygon** can be determined by first decomposing the polygon into **parallelograms**, triangles, and **trapezoids**, calculating the areas of the decomposed figures, and then finding the sum of the areas of the decomposed figures.

Polygons on the Coordinate Plane

- Students will graph vertices of a polygon, draw the shape represented by the points, then use the graphed polygon to find its perimeter and area.
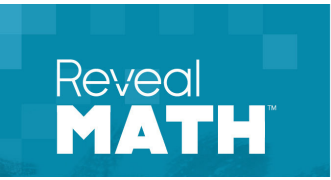
What Vocabulary Terms Will Students Use?

Term	Definition
base	Any side of a parallelogram or any side of a triangle.
congruent figures	Figures that have the same shape and size.
height (parallelogram)	The perpendicular distance between the base and its opposite side.
height (triangle)	The perpendicular distance from the base to the opposite vertex.
height (trapezoid)	The perpendicular distance between the two bases.
parallelogram	A quadrilateral with opposite sides that are parallel and have the same length.
regular polygon	A polygon in which all sides and angles are congruent.
trapezoid	A quadrilateral with one pair of parallel sides.

How You Can Provide Support

1. Support your child's understanding of area by involving them in the planning of projects in everyday life.
   - *Landscaping:* Design a garden or flower bed and measure the dimensions to find the area in square feet. Provide additional challenge by researching the cost per square foot of landscaping material and determine the total cost of materials needed for the project.
   - *Home Improvement:* Look around the home for furniture, sectional walls, or other design features in the shapes of parallelograms, triangles, or trapezoids. Measure the dimensions and calculate the area of the object(s). Extend the activity by researching the cost per square unit of paint or other building materials and then determine the total cost of materials needed for the project. Alternatively, you can research home blueprints or building or crafting projects online to view dimensions of objects and then determine the area.
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,

Reveal MATH

_____   _____
(Teacher's Name)   (Email/Phone)