

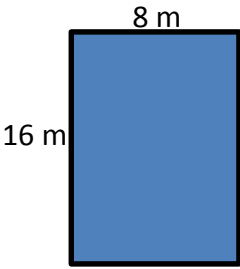
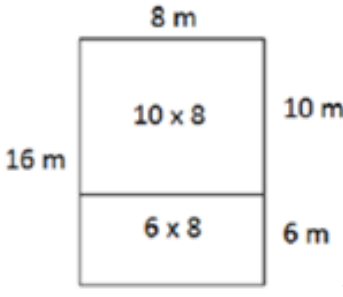
# Grade 4 Important Math Information

## “2-D Geometry, Angles, Area and Perimeter”

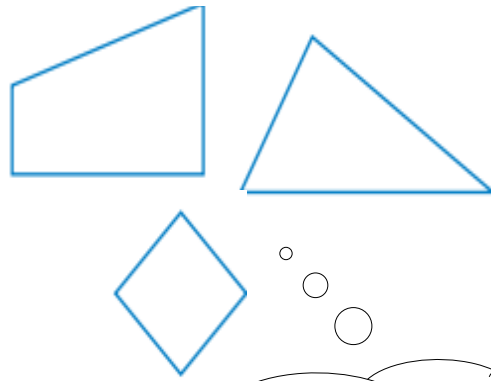

Dear Family,

Our class is beginning a unit of study in mathematics called *2-D Geometry, Angles, Area and Perimeter*. During this unit of study, students solve problems about perimeter (the distance around an object) and area (the two-dimensional measure of the size of a surface). They investigate characteristics of quadrilaterals and other polygons. They estimate the size of angles and find actual angle measures by using protractors. The specific learning goals your student will be working toward are listed below with examples of student work showing understanding of each learning goal.

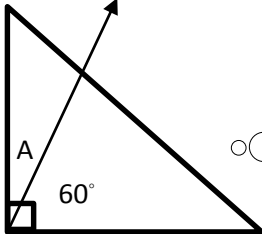
**Learning Goal:** Use formulas to solve real-world and mathematical problems involving area and perimeter of rectangles.

Example Problem	Example Student Solution
<p>What is the area of the pool below?</p> 	 <p>80 + 48 = 128 square meters</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin-left: auto;"> <p><i>“I know that the formula for area is <math>A = l \times w</math>. Since I don’t know what <math>16 \times 8</math> is, I can break 16 into 10 and 6. Then I can multiply <math>10 \times 8 = 80</math> and <math>6 \times 8 = 48</math>. Next I need to add 80 and 48 to find the area.”</i></p> </div>

**Learning Goal:** Draw and identify properties of 2-D figures and classify 2-D figures by their properties, including line symmetry.

Example Problem	Example Student Solution
<p>Draw 3 figures that are polygons and 3 figures that are not polygons.</p>	<div style="display: flex; justify-content: space-around;"> <div> <p>Polygons</p>  </div> <div> <p>Not Polygons</p>  </div> </div> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content; margin-left: auto;"> <p><i>“I know that a <b>polygon</b> is a closed plane figure that has at least three straight sides.”</i></p> </div>

**Learning Goal:** Understand angle concepts, measure angles using a protractor, and use addition and subtraction to solve real-world and mathematical angle problems.

Example Problem	Example Student Solution
What is the measurement of Angle A?	 <p>"I know that a <u>right angle</u> measures <math>90^\circ</math>.</p> <p><math>90^\circ - 60^\circ = 30^\circ</math>. So the measurement of Angle A must be <math>30^\circ</math>."</p>

**Mathematical Thinking and Practices Learning Goal:** Estimate, then choose appropriate tools to help solve problems, and be able to verify results to find possible errors.

### Things you can do at home to support your student throughout this unit of study:

**How Long Is It?** Look for opportunities for you and your student to estimate and measure lengths and distances in real-life contexts, using both U.S. standard and metric units. You might have your own benchmarks to help you estimate. What do you imagine when you think of a centimeter? A yard? A mile? For instance, you might know that your index fingernail is about a centimeter wide, or that it is a mile to the post office. Show your student how you use various measurement tools in your own measurement activities—hobbies like sewing and carpentry are a natural for this. You and your student can go outside to measure larger distances. How many yards is it to the end of the block? What's the distance in feet between two trees? What would that same distance be in meters?

**Building Polygons:** You and your student can use household materials to create two-dimensional figures. You can use toothpicks or straws for the sides of your polygons, and small marshmallows, clay, or jelly beans as fasteners for the vertices. How many different kinds of quadrilaterals can you build? How many different kinds of triangles? What different sized angles can you make?



**Math and Literature:** Here are some suggestions of children's books that contain relevant mathematical ideas about geometry and measurement. Look for these books at your local library.

- [Shape Up!: Fun with Triangles and Other Polygons](#) by David Adler
- [Spaghetti and Meatballs for All! A Mathematical Story](#) by Marilyn Burns
- [The Greedy Triangle](#) by Marilyn Burns
- [A Cloak for the Dreamer](#) by Aileen Friedman
- [Grandfather Tang's Story: A Tale Told with Tangrams](#) by Ann Tompert