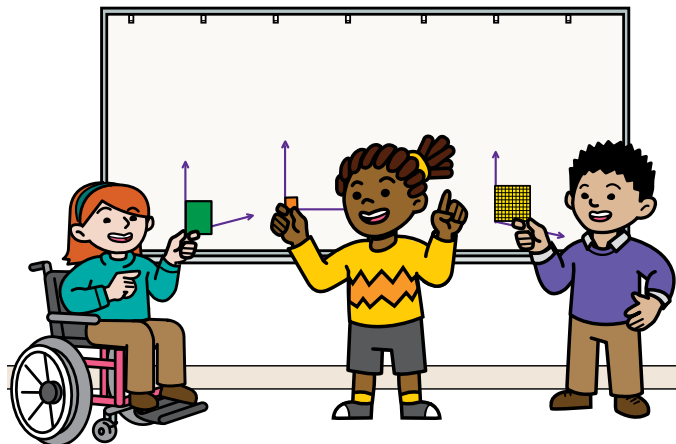**Bridges in Mathematics**
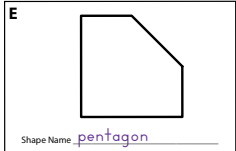**Grade 4 Unit 5**

Geometry & Measurement

In this unit your student will:

- Determine angles of rotation

- Measure angles with protractors

- Identify types of lines and angles

- Sort and classify shapes based on the number and kinds of sides and angles they have

- Calculate the area and perimeter of rectangles

Your student will learn and practice these skills by solving problems such as these:

PROBLEM	COMMENTS
The measure of angle *A* is ___35°___. The measure of angle *B* is ___145°___. 	In class, students use protractors to measure and draw angles. They use benchmark angles, such as straight angles (180˚) and right angles (90˚) to estimate the size of other angles. Students also identify angles as right, acute, or obtuse. Both estimation and angle identification help them choose the number on the protractor's scale for the measurement of an angle. Knowing angle *A* is an acute angle and that an acute angle measures less than 90° tells the student that angle *A* must measure 35°, not 145°.
Find the perimeter and area of this shape. 9 + 42 = 51 The total area is 51 sq. cm. 9 + 7 + 6 + 4 + 3 + 3 = 32 The total perimeter is 32 cm.	When students calculate area and perimeter, they may find it challenging to remember that each measures something different. • *Area* is the total number of square units that can cover a shape. The area of a rectangle is calculated by multiplying the side lengths. • *Perimeter* is the total number of linear units around the shape. The perimeter of a rectangle is found by adding the side lengths. Students use their understanding of composite shapes — shapes made of two or more simple shapes — to determine missing side lengths. This student decomposed the shape into a square and a rectangle.

PROBLEM	COMMENTS
Riddle 1 1. My polygon is not a parallelogram. 2. My polygon is not a quadrilateral. 3. My polygon is not equilateral; the sides are not congruent. 4. My polygon has exactly 1 line of symmetry. 5. My polygon has exactly 5 sides. E Shape Name _pentagon_	Students use the language of geometry to consider the characteristics of shapes. They sort a set of polygon cards to find the shape described in a riddle. In this example, after hearing the first clue, they remove all the parallelograms. After seeing the second clue, they remove all the quadrilaterals. They continue this process of elimination, focusing on one type of shape or characteristic at a time, until only a single shape remains. By the end of this unit, students are able to classify quadrilaterals and triangles by the lengths of their sides and the measure of their angles.

For additional support, you can use the Math Vocabulary Cards app at apps.mathlearningcenter.org.

Frequently Asked Questions About Unit 5

Q: **Sometimes problems ask students to draw shapes. How can I help?**

A: There are many ways to respond correctly to these prompts, as quite a few different shapes fit each description. For help with the vocabulary terms, you could use the Math Vocabulary Cards app or consult any number of online math glossary for children. Then, have your student start drawing, using any dots or lines given to them on the page as a guide. Have them use a pencil so they can erase as needed. Encourage them to use as much of the drawing space as they can; starting with larger shapes will give them more flexibility if they need to revise their shapes.

To further support your student in learning mathematics, you can:
- Visit mathathome.mathlearningcenter.org and work together through some or all of the activities in Grade 4: Set 5. These activities complement the learning taking place in the classroom during Unit 5 and provide fun ways to engage everyone at home in mathematical thinking. This set also includes a game your student might not have played in class—Dots & Polygons. This game provides practice with perimeter and area. The rules are straightforward enough that you and your student can learn the game together.
- If your student would enjoy learning about math concepts through literature, consider looking for math-related books at your local library. Encourage your student to read to you and point out the mathematical relationships they see. Some suggestions include:
  » *The Stone Lions* by Gwen Dandridge
  » *Maryam's Magic: The Story of Mathematician Maryam Mirzakhani* by Megan Reid, illustrated by Aaliya Jaleel
  » *Which One Doesn't Belong? A Shapes Book*, by Christopher Danielson