InsightMath

Discovering Perimeter and Exploring Area

Family Guide | Grade 3 | Unit 4

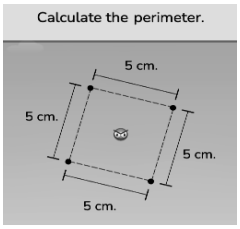
Your student is exploring how 2-D shapes can be described by many different attributes, some of which can be quantified (perimeter and area), and some of which define what the shape is called (quadrilateral).

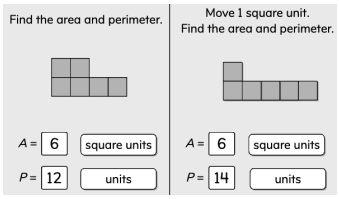
Key Math Ideas

In a previous unit, your student explored area as a measurable attribute of two-dimensional shapes. In this unit, they will learn about another measurable attribute of two-dimensional shapes: perimeter (the sum of the sides of a shape). Your student will connect multiplication and division to finding area and perimeter and will explore the relationship between the two attributes. Later in the unit, your student will also deepen their understanding of the attributes of two-dimensional shapes that help us define and name shapes.

→ In the beginning of the unit, your student will learn to

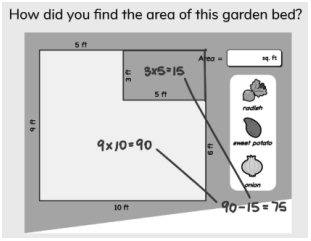
- describe perimeter as the total length around a 2-D shape;
- use tools such as string or a ruler to find the perimeter of a 2-D shape in inches and centimeters;
- calculate the perimeter of polygons by adding side lengths;
- find the missing side length of polygons given the perimeter and other side lengths.

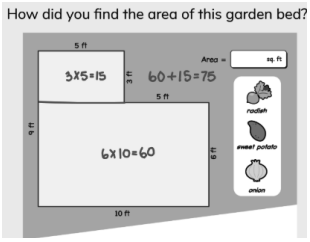




→ In the middle of the unit, your student will learn to

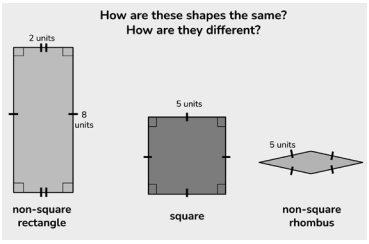
- describe that 2-D shapes with the same area do not necessarily have the same perimeter and vice versa;
- describe that changing the area of a 2-D shape does not necessarily change its perimeter and vice versa;
- find the area of shapes made up of
- rectangles using strategies including counting on a grid and composing and decomposing the shape into rectangles.





→ At the end of the unit, your student will learn to

- describe the defining attributes of quadrilaterals,
- rectangles, squares, and rhombuses;
- sort quadrilaterals into categories and subcategories
- based on defining attributes;
- categorize squares as a special type of rectangle and rhombus.



Helpful Hint

In this unit, your student will start to explore how squares are a special type of rectangle and rhombus. Sometimes students see a square as its own, unrelated category of quadrilaterals, or they see rectangles as shapes with two "long sides" and two "shorts sides." As a result, they may have difficulty recognizing that a square is a special type of rectangle because it has four equal sides. Look for examples of squares, rectangles, and rhombuses in the world around you. Having conversations about what is the same and different about the shapes will support students to recognize attributes and make connections.

Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the beginning of the unit:

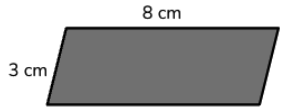
- How can you use a string to find the perimeter of the shape?
- How do you find the perimeter of the shape using the side lengths?
- How can you find the missing side length of the shape using the perimeter?

→ In the middle of the unit:

- What strategies can you use to compare the area and perimeter of two different shapes?
- Do shapes with the same area always have the same perimeter? How do you know?
- How does changing the area or perimeter of a shape affect the other measurement?
- How can you find the area of a shape made up of rectangles?

→ By the end of the unit:

- What is similar and different between squares and a rectangle?
- What is similar and different between a square and a rhombus?

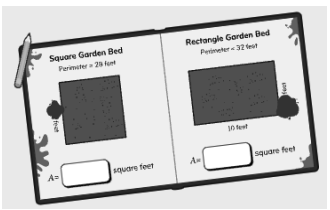
If...	Try...
your student ignores unlabeled information, only adding the lengths of sides that are labeled to find the perimeter such as adding 8 + 3 to obtain a perimeter of 11 cm in the example below . . . 	asking your student to draw or highlight each side of the shape in a different color to recognize how many sides they need to combine to find the perimeter. Suggest that they try again once they have labeled the lengths of the other two sides.

Student Strengths Spotlight

I make a plan to solve a problem and adapt my plan if I need to.	Making a plan to solve the problem and adapting if needed supports your students' ability to make sense of problems and think flexibly.
I am careful about the words I use to explain thinking.	In this unit, students are precise when describing perimeter and area, telling units of measurement and describing the attributes of shapes, which allows them to solidify their mathematical understanding.
I use math to describe what is happening around me.	Students see shapes all around them in the real world. Having the tools to measure and/or describe them helps them to become well-rounded mathematicians.

Try This Together!

- **Plan a Pretend Garden!** Have your student plan a pretend garden by first drawing a rectangle and labeling how long each side will need to be. Have them label or draw in which vegetables they would like to grow in smaller sections. Ask your student to find the area and perimeter of their garden. Ask, "How did you find the area of the garden?" and "How did you find the perimeter?" Extend by asking "If your garden was 2 feet more on each side, what would the new area and perimeter be?"



- **Sorting Quadrilaterals.** For this activity, use cut-out paper or drawings. Have your student sort them based on their attributes. For example, if given triangles and quadrilaterals, they may sort them by number of sides. Then ask your student to sort the quadrilaterals further. They may sort them into groups of squares, rectangles, and rhombuses. Ask your student to explain if they would group the squares with the rectangles or rhombus and support them to explain why they may go in either category.