



Bridging for Math Strength Resources

[Standards of Learning Curriculum Framework](#)

Standard of Learning (SOL) 3.8a Measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units.



Student Strengths	Bridging Concepts	Standard of Learning
Students will estimate and then measure the length of various line segments and objects to the nearest inch using a ruler.	Students have experience using a ruler to the nearest inch to measure lines. Students can describe plane figures.	Students can measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units.

Understanding the Learning Trajectory

Big Ideas:

- Measurement involves a comparison of an attribute of an item or situation with a unit that has the same attribute. Lengths are compared to units of length and areas to units of area. Before anything can be measured meaningfully, it is necessary to understand the attribute to be measured. (Van de Walle et al., 2018)
- Meaningfully measurement and estimation of measurements depend on a personal familiarity with the unit of measure being used. (Van de Walle et al., 2018)
- To measure something, one must decide on the attribute to be measured, select a unit that has that attribute, then compare the units with the attribute of what is being measured. (Van de Walle et al., 2018)
- Perimeter is the path or distance around any plane figure. (Grade 3 VDOE Curriculum Framework)
- The unit of measure used to find the perimeter is stated along with the numerical value when expressing the perimeter of a figure (e.g., the perimeter of the book cover is 38 inches). (Grade 3 VDOE Curriculum Framework)
- Opportunities to explore the concept of perimeter should involve hands-on experiences (e.g., placing toothpicks (units) around a polygon and counting the number of toothpicks to determine its perimeter. (Grade 3 VDOE Curriculum Framework)

Formative Assessment:

- VDOE Just in time Quick Check [PDF](#) / [Google slides](#)

Important Assessment Look Fors:

- The student correctly calculates perimeter.

- The student accurately measures distance with a ruler.
- The student correctly combines the lengths of all of the sides.
- The student measures all of the sides of a figure when measuring the sides of the concave figure.

Purposeful Questions:

- What do we mean by perimeter?
- What is the perimeter of a polygon and how is it determined?
- How can we measure the perimeter of a polygon?
- How can measurements of perimeter be estimated?
- Why is it important to measure all sides of a polygon when measuring perimeter?

Bridging Activity to Support Standard	Instructional Tips
<p>Routine Same but Different-Rectangles Same and Different: Comparing Shapes Which One Doesn't Belong? Colorful Calculations</p>	<p>For the Same & Different routine, display pictures A and B and ask students to think about how they are the same and how they are different. Provide students with time to think. Then have the students share their thinking while the teacher records students' ideas on the board using a T-chart. Click here for more information about this routine: Same and Different routine.</p> <p>Students are presented with a set of four images and are encouraged to decide which one doesn't belong. There are many answers when exploring this routine, so students should provide justification when explaining which one doesn't belong. Since this routine allows for a variety of answers, students are engaged and excited to participate.</p>
<p>Rich Tasks Ladybugs Garden (Math Learning Center, pp. 17-21)</p>	<p style="text-align: center;">Ladybugs Garden</p> <p>The Ladybugs are planning their spring garden. They have exactly 25 centimeters of fencing and they want to make a rectangular garden. Students investigate relationships between area and perimeter as they develop the best plan for ladybugs garden.</p> <p>Observation notes during the task:</p> <ul style="list-style-type: none"> • Observe how students are generating new rectangles. Are they using some systematic way (e.g., changing the length of the rectangle by one each time) to ensure they have found all the rectangles? Are they haphazardly finding rectangles with no apparent strategy? • How are they measuring the perimeter? Do they count or measure all four sides, or do they double the sum of length and width? Are they aware that the perimeters change? • Do students realize that the areas must remain the same since all rectangles use 25 tiles? <p>Questions to ask after the task:</p> <ul style="list-style-type: none"> • What did you find out about perimeter and area? • Did the perimeter stay the same? Is that what you expected? • When is the perimeter big and when is the perimeter small? • How can you be sure that you have all possible rectangles?
<p>Games/Tech Desmos 3.8ab Area and Perimeter</p>	<p>In this activity, students will explore the area and perimeter for a variety of figures.</p>

Area or Perimeter (Keep the Perimeter)	In this activity, players will roll to get 2 numbers and determine the product. They will then count out tiles that are equal to the product of the 2 numbers they rolled. Players will then work together to create different rectangles with the same perimeter. <i>Note: Some products will not work as perimeters of rectangles. In that case, plays will write “impossible.”</i>
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Other Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [3.8ab - Measuring Area and Perimeter](#) (Word) / [PDF Version](#)
 - [3.8a - Determining Perimeter](#) (Word) / [PDF Version](#)
- VDOE Word Wall Cards: Grade 3 ([Word](#)) | ([PDF](#))
- Virtual Manipulatives
 - [Area Perimeter Explorer](#)
 - [Color Tiles](#)
 - [Area Builder](#)
 - [Geoboard](#)
- Desmos Activity:
 - [3.8 Vocabulary Review](#)

Learning Trajectory Resources:

Charles, R. (2005). Big ideas and understandings as the foundation for elementary and middle school mathematics. *Journal of Mathematics Education Leadership*, 7(3), NCSM.

Clements, D. H., & Sarama, J. (2019). Learning and teaching with learning trajectories [LT]2. Marsico Institute, Morgridge College of Education, University of Denver. <https://www.learningtrajectories.org/>

Common Core Standards Writing Team. (2019). [Progressions for the Common Core State Standards for Mathematics](#). Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Richardson, K. (2012). How Children Learn Number Concepts: A Guide to Critical Learning Phases. Bellingham: Math Perspectives Teacher Development Center.

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally*. (10th edition) New York: Pearson (2019:9780134802084)

VDOE Curriculum Framework for All Grades - [Standard of Learning Curriculum Framework \(SOL\)](#)