

# Grade 3

Unit	Unit Title	Lesson	Day
4.3	<b>Geometric Measurement – Perimeter of Polygons</b>	<b>1 of 3</b>	<b>1 - 4</b>
<b>Lesson Focus</b>			
<b>1. Standards Addressed</b>	<b>2. Content to be Learned</b>	<b>3. Mathematical Practices</b>	<b>4. Essential Question</b>
3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Explore perimeter of polygons by counting units on grid paper.  Estimate and measure perimeter of polygons using inch and centimeter rulers.	<b>SMP2</b> Reason abstractly and quantitatively <b>SMP6.</b> Attend to precision	<ul style="list-style-type: none"> <li>•How can you find perimeter?</li> <li>•How do you measure perimeter?</li> <li>•How can you find the unknown length of a side in a plane shape when you know its perimeter?</li> </ul>
<b>5. Prerequisite Knowledge</b>	<b>6. Essential Vocabulary</b>	<b>7. Possible Misconceptions</b>	<b>8. Necessary Materials</b>
<ul style="list-style-type: none"> <li>•Recognize properties of rectangles and squares.</li> <li>•Find the sum of 4 addends.</li> <li>•Use an inch ruler to measure to the nearest inch.</li> <li>•Understand how to use addition to find perimeter.</li> </ul>	Perimeter Centimeter ruler Inch ruler		<b>OnCore</b> Lessons 92-94 Student pp. 183 - 188
<b>Instruction</b>			
<b>9. Instruction Practices (What are the teachers doing)</b>	<b>10. Learning Practices (What are the students doing)</b>		
<p>Teachers will guide children to explore perimeter of polygons by counting units on grid paper, estimate and measure perimeter of polygons using inch and centimeter rulers, and find the unknown length of a side of a polygon when you know its perimeter following the lesson guidelines in lessons 92 -94 (TM pp. 96-98), teachers will:</p> <p>Elicit from students if they know the length of each side of a rectangular object they can add to find the total distance around the rectangle. Discuss the meeting of perimeter.</p> <p>Develop strategies students can use, such as labeling and marking sides to help avoid making errors when counting them. Review how to measure to the nearest inch. Discuss the difference between cm and in and then select the ruler to use to measure in those units.</p> <p>Have students estimate measurements before they measure the lengths of the sides.</p> <p>Discuss how unknown lengths can be determined by using properties of the shape. For instance, a square has 4 sides of equal length and a rectangle has opposite sides with the same length.</p> <p>Review with students how they used operations to find the perimeter of figures when they were given the lengths of the sides. Tell students they will now reverse how they use the strategies to find an unknown side length given the perimeter.</p>	<p>In OnCore Lessons 92 -94 students will:</p> <ul style="list-style-type: none"> <li>•Explore the perimeter of polygons by counting units on grid paper.</li> <li>•Estimate and measure perimeter of polygons using inch and centimeter rulers.</li> <li>•Find the unknown length of a side of a polygon when you know its perimeter.</li> <li>•Complete Student pp. 183 – 188.</li> </ul>		

# Grade 3

Unit	Unit Title	Lesson	Day
4.3	<b>Geometric Measurement – Perimeter of Polygons</b>	<b>2 of 3</b>	<b>5-6</b>
<b>Lesson Focus</b>			
<b>1. Standards Addressed</b>	<b>2. Content to be Learned</b>	<b>3. Mathematical Practices</b>	<b>4. Essential Question</b>
3.MD.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.		<b>SMP2</b> Reason abstractly and quantitatively <b>SMP6</b> . Attend to precision	<ul style="list-style-type: none"> <li>•How can you use area to compare rectangles that have the same perimeter?</li> <li>•How do you know you have found the largest area of a rectangle with a given perimeter?</li> <li>•How do you use perimeter to compare rectangles with the same area?</li> </ul>
<b>5. Prerequisite Knowledge</b>	<b>6. Essential Vocabulary</b>	<b>7. Possible Misconceptions</b>	<b>8. Necessary Materials</b>
<ul style="list-style-type: none"> <li>•Count units to find the perimeter of a rectangle.</li> <li>•Count unit squares to find the area of a rectangle.</li> </ul>	Perimeter Area	Students often think that if you have two rectangles, the one with the greater area will also have the greater perimeter. They also believe that the greater the perimeter, the greater the area.	<b>OnCore</b> Lessons 95 - 96 Student pp. 189-192 Grid paper Investigations Unit 9 Session 3.4 Resource Master C61 <b>K-5 Math Resources</b> <a href="#">The Perimeter Stays the Same</a> <a href="#">The Area Stays the Same</a>
<b>Instruction</b>			
<b>9. Instruction Practices (What are the teachers doing)</b>	<b>10. Learning Practices (What are the students doing)</b>		
Teachers will guide children to compare areas of rectangles that have the same perimeter and compare perimeters of rectangles that have the same area following the lesson guidelines in lessons 95 -96 (TM pp. 99-100), teachers will:  Review the meanings of perimeter and area. Give students grid paper and have them draw a rectangle with a perimeter of 16 units. Compare the rectangles the students drew. Explain that in this lesson students will explore rectangles that have the same perimeter but different areas. Guide students through the example on page 189 and discuss the difference in the areas of the two rectangles with the same perimeter.  Discuss the operations and methods used to find perimeter and area. Before working on page 191, have student look at the two rectangles and determine which one has a greater perimeter and to tell why. Discuss with students why they can use addition to calculate perimeter; and either addition or multiplication to calculate the area of each of the examples. (Please NOTE: book incorrectly states “discuss why they can use addition or multiplication to calculate perimeter” – can only do that if the rectangle is a square – these examples are not squares.)	In OnCore Lessons 95 – 96 students will: <ul style="list-style-type: none"> <li>•Find the perimeter and area of rectangles and tell which has a greater area.</li> <li>•Find the perimeter and area of rectangles and tell which has a greater perimeter.</li> <li>•Solve problems involving perimeter and area.</li> <li>•Complete Student pp. 189 - 192</li> </ul>		

(NOTE: This lesson is a review from Investigations Unit 4 Snap-In 2.5A that was done in Unit 3.3)

## Grade 3

Unit	Unit Title	Lesson	Day
4.3	<b>Geometric Measurement – Perimeter of Polygons</b>	<b>3 of 3</b>	<b>7-10</b>

### **Lesson Focus**

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
<b>3.MD.8</b> Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	<p>Explore perimeter of polygons by using a ruler to measure and record perimeters of polygons.</p> <p>Make shapes with perimeters of given units and measure their areas.</p> <p>Find all the different rectangular shapes possible using a given amount of fencing.</p> <p>Solve perimeter and area word problems.</p>	<b>SMP2</b> Reason abstractly and quantitatively.  <b>SMP6.</b> Attend to precision.	<ul style="list-style-type: none"> <li>•How do you calculate the perimeter of an object?</li> <li>•How do you explain the area of an object?</li> <li>•How do you know you have found the largest area of a rectangle with a given perimeter?</li> </ul>
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> <li>•Recognize properties of rectangles and squares.</li> <li>•Find the sum of 4 addends.</li> <li>•Understand how to use addition to find perimeter.</li> </ul>	Perimeter Area	<p>Students may think if you cut a rectangle in half the perimeter will be half the original length.</p> <p>Likewise they think that if the perimeter of a rectangle is doubled, the area is doubles.</p> <p>In other words, they think that the area and perimeter change at the same rate.</p>	<b>K-5 Math Resources</b> <a href="#">Measuring Perimeter</a> □ <a href="#">Perimeter on the Geoboard</a> □ <a href="#">Perimeter with Color Tiles</a> □ <a href="#">Designing a Rabbit Enclosure</a> □ <a href="#">Perimeter Word Problems</a> Rulers and various polygons Geoboards and color tiles

### **Instruction**

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<p>Using K-5 Math Resources Grade 3 Measurement activities and word problems teachers will:</p> <p>Supply students with rulers, polygons, geoboards, and color tiles to measure perimeters, make shapes with specified perimeters, find areas of shapes, design a rabbit enclosure using 18 ft of fence, and solve problems involving perimeter and area.</p>	<p>In K-5 Math Resources students will:</p> <ul style="list-style-type: none"> <li>•Measure perimeters of polygons.</li> <li>•Make different polygons on the geoboard with a perimeter of 14 units and find the areas of the shapes they make.</li> <li>•Use color tiles to make a shape and record the perimeter of the shape and then use the tiles to make as many different shapes as they can with the same perimeter.           <ul style="list-style-type: none"> <li>•Find all the possible designs for a rabbit enclosure using 18 feet of fencing and then find the difference between the one with the largest and smallest possible areas.</li> </ul> </li> <li>•Solve word problems involving perimeter and area.</li> </ul>