Lesson 7 Connecting Perimeter and Area

NCTM Standards 1, 2, 6, 7, 8, 9, 10
Common Core State Standards 4.MD 3

Lesson Planner

STUDENT OBJECTIVE
- **To apply the formulas for the perimeter and area of a rectangle in mathematical problems**

2 Teach and Practice

	MATERIALS
Ⓐ **Finding Rectangles Whose Perimeter is 20 Centimeters** (TG pp. 376–377)	
Extended Activity Ⓑ **Calculating Perimeter and Area Without a Grid** (CCRG p. CC 25–CC 26)	• TR: Activity Master, AM47
Ⓒ **Connecting Perimeter and Area** (TG p. 379)	
Ⓓ **Estimating the Perimeters of Right Triangles** (TG p. 380–381)	

Lesson Notes

Replace the current Teach and Practice Activity B in **Lesson 5.7** with this extended activity.

About the Activity

In Activity B, students learn and apply formulas for the perimeter and area of a rectangle.

B Calculating Perimeter and Area Without a Grid

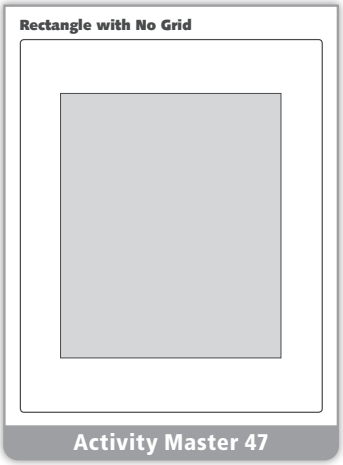
whole class 5 MIN

Materials
- For the teacher: AM47 transparency (optional), inch ruler

NCTM Standards 1, 2, 6, 7, 8, 9, 10
CCSS 4.MD 1

Purpose To find the perimeter and area of a rectangle whose dimensions are not given

Introduce Show a transparency of Activity Master 47: Rectangle With No Grid or a pre-drawn 5-inch-by-6-inch rectangle on the board.



Activity Master 47

Problem **What are the perimeter and area of this rectangle?** To find the perimeter, students will need to measure the sides of the rectangle. Measure (or have a student measure) the length and width of the rectangle with a ruler marked in inches. The dimensions are 6 inches by 5 inches; it doesn't matter which is identified as length and which as width.

After two adjacent sides have been measured, stop and ask the class whether they need to keep measuring to find the perimeter. If necessary, remind them that in the previous lesson they calculated the perimeters of rectangles when only two of the sides were labeled. The other two sides turned out to be the same lengths as the two measured sides. So, the perimeter here is 5 in. + 6 in. + 5 in. + 6 in. = 22 in.

Tell students they could also write a formula to find the perimeter of a rectangle. On the board, write a formula for perimeter such as $P = 2l + 2w$ or $P = l + l + w + w$. Explain to students that, in the formula, l stands for length, w stands for width, and P stands for perimeter. Show students how they can use the formula to find the perimeter of the rectangle.

Now use the length and width to find the area. If students don't suggest multiplying the lengths of the two sides together to find the area, ask them how they would find the area if the rectangle were drawn on a grid of square inches. You may find it helpful to sketch in some or all of the grid lines.

- What would the length and the width that you just measured represent in the grid? The number of rows and the number of columns
- What would the area of each square in the grid be? 1 square inch
- How could you find the area of the rectangle? Count the number of squares in the rectangle.

Help students to see that they can find the area of a rectangle by multiplying its length by its width. Tell students that you can also use a formula to find the area of a rectangle. On the board, write $A = l \times w$. Prompt students to explain what l, w, and A stand for. Guide students to find the area of the rectangle using the formula.

Draw another rectangle on the board and provide lengths for the sides of the rectangle. Have students use formulas to find the perimeter and area of the rectangle. 5 inches × 6 inches = 30 square inches.

Ongoing Assessment
- If students know the lengths of two sides of a rectangle, do they know how to find the perimeter of the rectangle?
- If students know the lengths of two sides of a rectangle, do they know how to find the area of the rectangle?

Talk Math

When finding the perimeter and area of a rectangle not on a grid, how many sides must you measure? Explain. Possible answer: two; possible explanation: since rectangles have two pairs of congruent sides, when you know the length of one side, you know the length of the opposite sides. Just measure two sides that are next to each other and you know all four sides.

Teacher's Notes

Daily Notes . . .

Quick Notes

More Ideas