

3 DISCUSSION

Finding the Area of Rectangles



MATH FOCUS POINT FOR DISCUSSION

- Using a generalizable method to determine the area of a rectangle

This is the third and last discussion in which you will be assessing students on MP6, Attend to precision. Use **Assessment Checklist:** MP6, Attend to precision (A30) to note your observations about how students are articulating their ideas, using math words, and working to clarify their explanations. Pay particular attention to any students you were not able to observe in the two previous discussions.

Post a blank rectangle similar to the shape of the rectangle on *Student Activity Book* page 253, Problem 1. Label the top side “14 inches” and the left side “7 inches.”

MATH WORDS AND IDEAS

MWI Finding Area of a Rectangle

What is the area of the rectangle in Problem 1? How did you figure it out?

Have a few students share how they solved Problem 1.

Many of you used multiplication to solve this problem. Can someone explain why multiplying 7×14 works to find the area? You started out with 14 inches and 7 inches, but you ended up with 98 square inches. How does that work?

Give students a few minutes to talk with a partner and then ask them to share their ideas with the group.

“ STUDENTS MIGHT SAY ”



“The 14 tells you how long a row of squares is. It’s 14 squares. And the 7 tells you how many you have of those rows, so when you multiply, you’re really multiplying the number of rows of squares by the number in each row.”



“It’s like when you say 14, it’s 14 inches across the top, but there’s like a square for each of those inches.”



“The squares are built out from the inches.”

Make sure that students demonstrate their arguments by using the blank rectangle you posted. Students might draw in some of the squares or demonstrate with square tiles.

Can you use multiplication to find the area of any rectangle? If someone asked you how you could determine the area of a rectangle using multiplication, what would you say?

“ STUDENTS MIGHT SAY ”



“You multiply the length by the width and that gives you the area.”



“You multiply one side of the rectangle by the other side.”

Record the strategies they share trying to use their language in your notation of their strategies. Ask clarifying questions and encourage other students to ask clarifying questions, for example, “When you say ‘multiply one side by the other side,’ I see 4 different sides here. How do I know which two sides you mean?”

of rows \times the # in each row

length \times width

side 1 \times side 2

These strategies are all saying the same thing, that you can multiply the dimensions to find the area of a rectangle. Will this strategy, or formula, work for any rectangle? Are there any rectangles for which this strategy will not work? How do you know?

Give students a few minutes to discuss this with a partner and then ask students to share what they think.

“ STUDENTS MIGHT SAY ”



“It always works, because the dimensions tell you about the rows of squares with the same amount in each row, so that is equal groups.”



“The length and the width tell you how to cover a rectangle with squares. If it’s inches, then you get square inches, but if you had centimeters, you’d get square centimeters. If you are covering a rectangle with squares, it is an array and in an array you multiply the number of columns by the number of rows.”



“I think it will work with whole numbers but I am not sure about fractions.”

After some discussion of these questions, ask students to write a rule (or formula) for finding the area of a rectangle:

Is there a general rule, or formula, we can write that would tell someone else clearly how to find the area of a rectangle?

As students offer ways to word their rule (or rules), ask other students to ask questions and to help revise and clarify the students’ statements.