Unit 4, Lesson 10

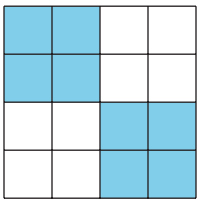
Explore Multiplication Strategies with Rectangles

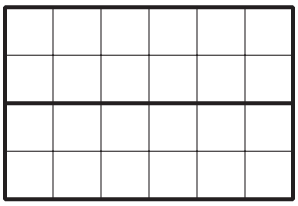
Let's use rectangles to explore multiplication strategies.

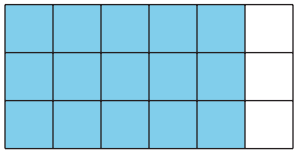
Warm-up

How Many Do You See: Squares

How many do you see? How do you see them?



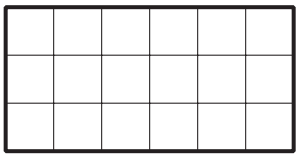




Activity 1

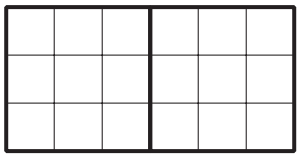
From Diagrams to Expressions

Andre and Elena are finding the area of this rectangle.



Andre writes 6×3.

He marks the rectangle like this:



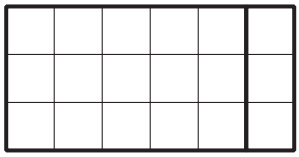
He then writes:

$2 \times (3 \times 3)$
$2 \times 9 = 18$

Area = 18 square units

Elena writes 3×6.

She marks the rectangle like this:



She then writes:

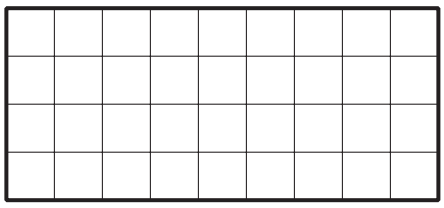
$3 \times (5 + 1)$
$(3 \times 5) + (3 \times 1)$
$15 + 3$
18

Area = 18 square units

1. Discuss with a partner:
   a. How are Andre and Elena's strategies alike? How are they different?
   b. How are the numbers in Andre's expressions related to his diagram?
   c. How are the numbers in Elena's expressions related to her diagram?

2. Here is another rectangle.

   Its area can be found by finding the value of 4×9.



   a. Mark or shade the rectangle in a way that would help you find its area.

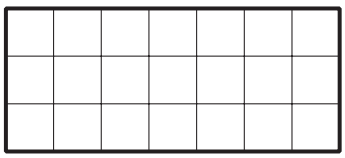
   b. Write 1 or more expressions that can represent your work on the diagram and show how you find the area.

Activity 2

From Expressions to Diagrams

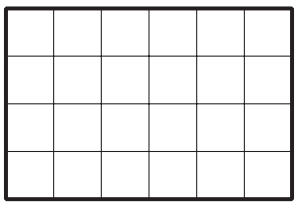
Here are some rectangles and expressions that show how 3 students saw the area of the rectangles.

Noah



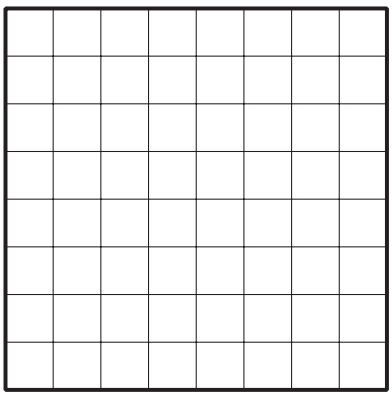
$(5 \times 3) + (2 \times 3)$

Priya



$2 \times (2 \times 6)$

Tyler



$(5 \times 8) + (3 \times 8)$

For each rectangle:

1. Name the 2 factors that can be multiplied to find its area.

2. Mark or shade each rectangle to show how each student saw the area. Be prepared to explain your reasoning.