

Objective

Partition rectangles into rows and columns.

Common Core State Standards

- **2.G.2** Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Geometry

Partitioning Rectangles

The concept of area ties together several strands of mathematics, including measurement, geometry, and number skills. As a transition to solving for area, children learn to partition rectangles into arrays of equal squares. This exposes them to the basic notion of area without the need for computation. Understanding attributes of rectangles and squares and having a sense of number will help children visualize area. Moreover, partitioning rectangles into arrays leads to the development of multiplication skills.

Try It! Perform the Try It! activity on the next page.

Talk About It

Discuss the Try It! activity.

- **Ask:** *What shape is the blanket? What do you know about rectangles? Why are there more rows than columns? How many rows are there? How many columns are there?*
- **Ask:** *How many color squares did you count in the rectangle? Elicit that there are 8 rows of 5, and have children count the squares by 5s.*
- **Ask:** *What if Maria and her grandmother decide the blanket is too small or too large? How many squares would there be if they added a row? Added a column? Subtracted a row? Subtracted a column?*

Solve It

With children, reread the problem. Have children draw the blanket with 8 rows of 5 squares. Have children count the total number of squares and write a sentence telling how many squares Maria and her grandmother need for the blanket.

More Ideas

For other ways to teach partitioning rectangles—

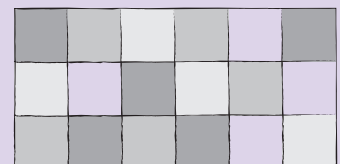
- Have pairs use Geoboards and the Four-Section Spinner (BLM 14) to create rectangles. Have them number the spinner 1–4 and spin twice for the number of squares across and the numbers of squares down for a rectangle. Have children partition the rectangle into rows and columns of squares and count how many squares there are in the rectangle.
- Have children use Geoboards to make various rectangles. Have them exchange boards with a partner and partition the rectangle into as many rows and columns of squares as they can. Then have them count to tell how many squares.

Formative Assessment

Have children try the following problem.

How many small squares are in this rectangle?

- A. 18 B. 12 C. 9



Try It!

30 minutes | Pairs

Here is a problem about partitioning rectangles.

Maria is helping her grandmother make a blanket. She is designing a pattern for the blanket using red, blue, yellow, and green squares. The pattern is 8 rows of squares with 5 squares in each row. All the squares are the same size. How many squares are in the pattern?

Introduce the problem. Then have children do the activity to solve the problem. Distribute Color Tiles to children.

Materials

- Color Tiles (40 per pair)



1. Draw a rectangle on the board and model partitioning the rectangle into rows and columns. Explain that rows run left and right and columns run up and down. Discuss the blanket pattern with children. **Ask:** *How many squares are in each row?* Have children build the first row.



2. Have children add the second row of the pattern to form a 2 by 5 rectangle. Elicit from children that as they add additional rows they will be building larger rectangles. Elicit further that each new rectangle will still be made of equal-size squares.

Look Out!

Watch for children who count the same tiles twice or skip a tile because they are losing track of what they have counted. Suggest that they move the tiles slightly to help them keep track.



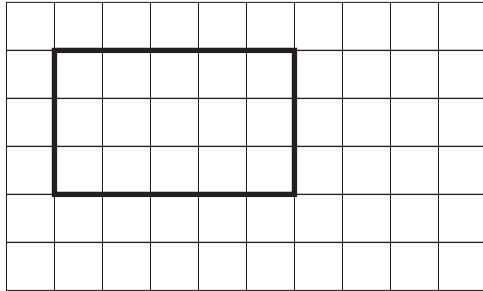
3. Ask: *How many rows are in Maria's design?* Have children finish the blanket design. **Say:** *Let's find out how many squares there are in Maria's blanket pattern. Count the squares.* **Ask:** *How many squares are needed for the blanket?*



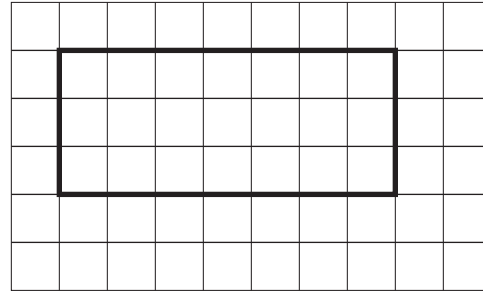
Use Color Tiles. Build each model. Find the number of small squares in each rectangle.

(Check students' work.)

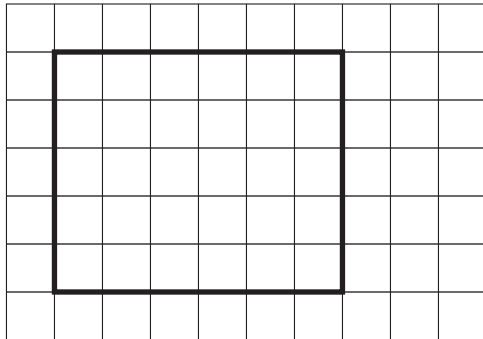
1. 15



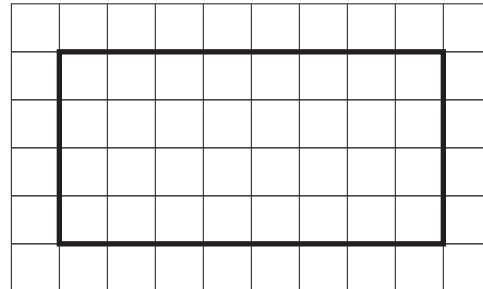
2. 21



3. 30



4. 32



Read the story. Draw the rows and columns. Count the squares.

5. Gary is making a game board. It has 4 rows and 5 columns. It has _____ squares.



4 rows of 5 squares, 20

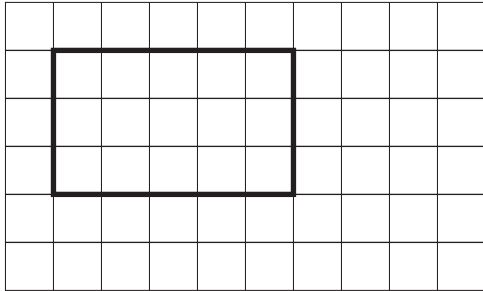
Answer Key

Challenge! Mrs. Chan is making a class quilt. She has 24 children in her class. Each child will design 1 square. If she is making 6 columns on her quilt, how many rows of squares will there be? Draw the quilt to show the rows and columns of squares.

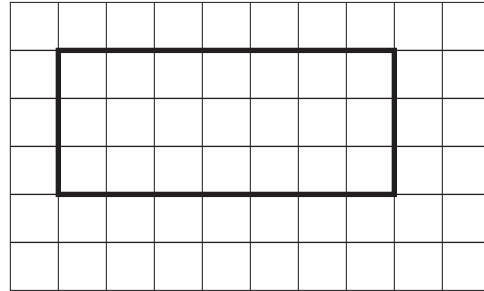
Challenge: 4 rows; Children should draw a rectangle with 4 rows of 6 squares.

Use Color Tiles. Build each model. Find the number of small squares in each rectangle.

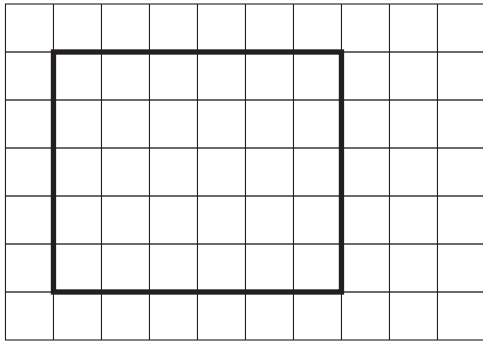
1. _____



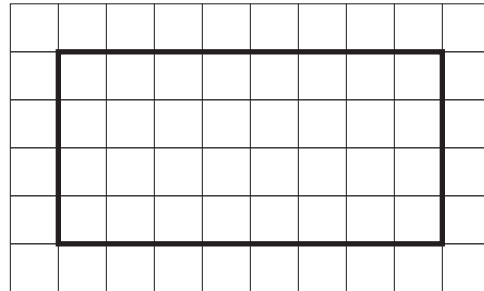
2. _____



3. _____

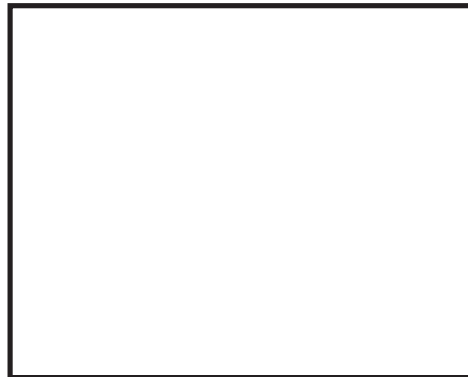


4. _____



**Read the story. Draw the rows and columns.
Count the squares.**

5. Gary is making a game board. It has 4 rows and 5 columns. It has _____ squares.



Name _____

Challenge! Mrs. Chan is making a class quilt. She has 24 children in her class. Each child will design 1 square. If she is making 6 columns on her quilt, how many rows of squares will there be? Draw the quilt to show the rows and columns of squares.
