TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

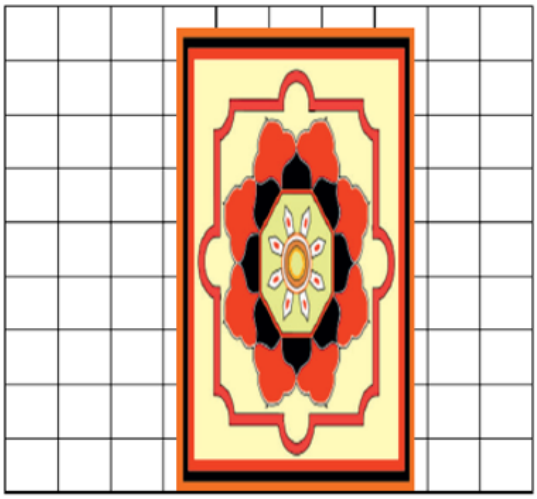
In Lessons 1 through 5, students build rectangles by using square tiles and learn to connect their previous understanding of multiplication to the concept of area.

You can expect to see homework that asks your child to do the following:

- Label the side lengths of rectangles based on the number of square tiles shown.
- Skip-count to find the unknown area and write multiplication sentences that describe an array.
- Find the unknown side length when given an area and one side length of a rectangle.
- Complete an array or determine the number of tiles hidden by an object.
- Determine an area, using only multiplication.

SAMPLE PROBLEM *(From Lesson 3)*

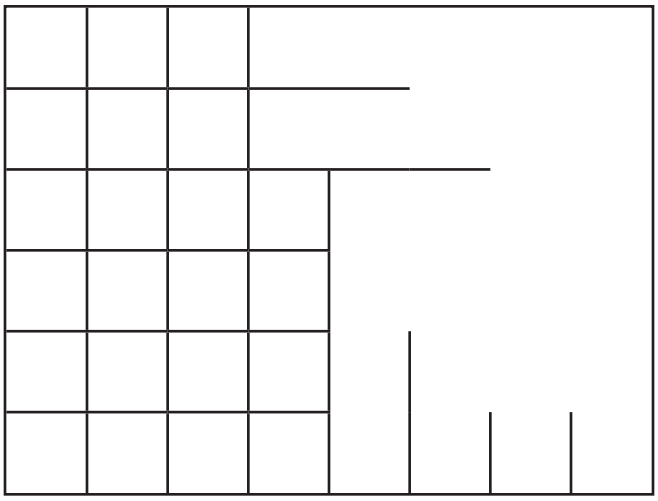
The tile floor in Brandon's living room has a rug on it as shown below. How many square tiles are on the floor, including the tiles under the rug?



Brandon's floor is a rectangular array of tiles. There are 9 rows of tiles and there are 10 tiles in each row. I can skip-count by tens 9 times: 10, 20, 30, 40, 50, 60, 70, 80, 90. I can also multiply 10 × 9 to find that there are 90 square tiles on the floor, including the tiles I cannot see under the rug.

HOW YOU CAN HELP AT HOME

- Cut out a rectangle from a piece of graph paper. (You can find free printable graph paper online.) Use sticky notes to cover up part of the rectangle. Ask your child to find the area of the entire rectangle without removing the sticky note.
- If you have a floor at home with square tiles, use painter's tape to mark off a rectangular area. Cover part of it with a towel or rug. Ask your child to find out how many tiles are in the taped-off area without moving the towel or rug.
- Draw a rectangle on paper. Use a ruler to begin drawing rows and columns inside the rectangle to create a grid of squares, as shown below, but do not complete it. Ask your child to complete the grid. Talk about strategies that would work to complete the array.



TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 6 through 8, students continue to work with areas of rectangles.

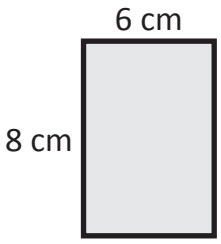
You can expect to see homework that asks your child to do the following:

- Break apart rectangles and reconnect the pieces to form new rectangles, showing that the areas are still the same.
- Use the break apart and distribute strategy to find the area of large rectangles.
- Use multiplication to show how areas of rectangles are the same even though the side lengths are different.

SAMPLE PROBLEM *(From Lesson 8)*

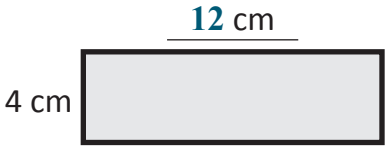
The rectangles below have the same area. Move the parentheses to find the unknown side lengths.

Solve.



Area: 8 x 6 = 48

Area: 48 sq cm



Area: 8 x 6 = (4 x 2) x 6

= 4 x (2 x 6)

= 4 x 12

= 48

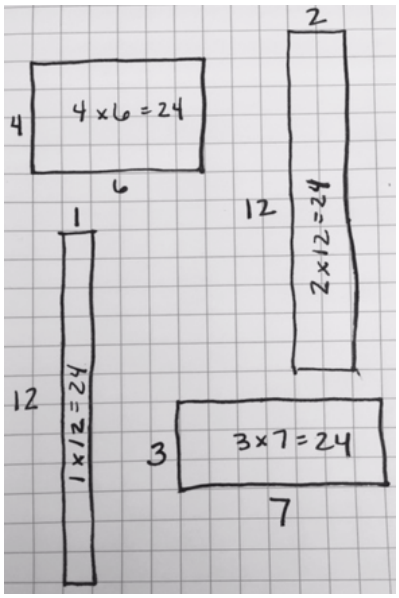
Area: 48 sq cm

HOW YOU CAN HELP AT HOME

Play the How Many Rectangles? game with your child.

1. Remove the jacks, queens, kings, aces, and jokers from a deck of playing cards, and shuffle the deck.
2. One player chooses either to roll one die and pick one card off the top of the deck of playing cards and multiply the numbers together OR to pick two cards off the top of the deck and multiply the numbers together. The product is the "target area."
3. Players have two minutes to draw as many rectangles as they can with the target area measure from Step 2. For each rectangle, players must label side lengths and write a correct multiplication equation for the target area.
4. Players show each other their rectangles and agree on which ones are correct. Correct drawings receive 5 points. (If players draw the same rectangles, each still receives the points.) Incorrect rectangles receive 0 points.
5. Repeat Steps 1–4. The first player to break 100 points wins the game.

For example, your child rolls a 6 on the die. She then picks a 4 from the deck of playing cards. She multiplies 6 × 4 to get 24. All players now have two minutes to draw all the rectangles they can with an area of 24 square units, labeling the side lengths and writing the area multiplication equations. (See image.) Players receive 5 points for each correct rectangle. For the drawings shown, the player would only receive 10 points because two rectangles are correct (4 × 6 and 2 × 12) and two are not (neither 1 × 12 nor 3 × 7 equals 24).



If playing cards are not available, the game may be played by writing the digits 1-9 on small pieces of paper. A random number generator on a smart phone may be used to replace the die.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

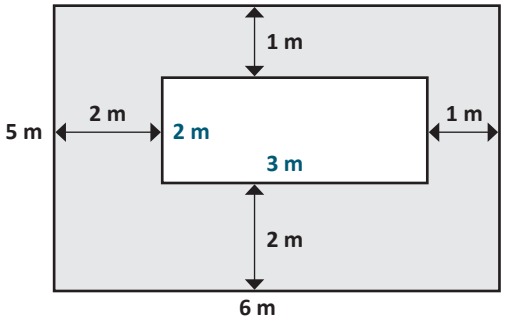
In Lessons 9 through 13, students apply their knowledge of area to real-world situations, such as working with floor plans. Students learn to solve word problems about area by using strategies they learned during their study of multiplication and division.

You can expect to see homework that asks your child to do the following:

- Solve word problems about area concepts.
- Find the area of a shaded region when a rectangular piece is cut out of a larger rectangle.
- Find the total area of combined rectangles when given the dimensions of some of the side lengths.
- Use a ruler to measure side lengths of rectangles, and then calculate the area.

SAMPLE PROBLEM *(From Lesson 11)*

The figure below shows a small rectangle within a big rectangle. Find the area of the shaded part of the figure.



The area of the large rectangle: **5 m × 6 m = 30 sq m**

The area of the small rectangle: **2 m × 3 m = 6 sq m**

I can subtract the areas of the two rectangles. The area of the shaded part is 24 square meters since 30 – 6 = 24.

HOW YOU CAN HELP AT HOME

- Have your child trace the rectangles from the homework in Lessons 10 and 11 onto a separate piece of paper and cut them out. Then your child can physically manipulate them to form the images on the homework page. The physical manipulation of shapes often helps students better understand the joining or separating of the areas. It can also be a good strategy to act out word problems in Lesson 9.
- Give your child some graph paper. (You can find free graph paper online to print, or ask your child's teacher for some.) Ask your child to design a public place of her choice by using rectangles drawn to scale. She might choose to design a skate park, a mall, a community garden, or whatever else sparks her imagination. Help your child determine the side lengths of the rectangles and calculate the area of the design.