

Rectangle Detectives

Find area, perimeter, and patterns in rectangles.

GRADE 4 • 4.MG.3

4.MG.3 "The student will use multiple representations to develop and use formulas to solve problems, including those in context, involving area and perimeter limited to rectangles and squares (in both U.S. Customary and metric units)..."

NAME _____

DATE _____

AREA AND PERIMETER

To find the area of a rectangle, multiply the length by the width. To find the perimeter, add all four side lengths, or add the length and width and double the sum. A square has four equal sides, so multiply one side by itself for area and multiply one side by 4 for perimeter.

WORKED EXAMPLE

A rectangle is 11 cm long and 8 cm wide. Find its area and perimeter.

1. Area = 11×8

2. Area = 88 square cm

3. Perimeter = $11 + 8 + 11 + 8 = 38$ cm

Answer: Area: 88 square cm; Perimeter: 38 cm

PRACTICE 6 problems

- 1** A rectangle has 6 rows with 2 equal squares in each row. What is its area?

ANSWER _____

- 2** A rectangle is 13 cm long and 3 cm wide. What is its perimeter?

ANSWER _____

- 3** A square has a side length of 7 m. Find its area and perimeter.

ANSWER _____

- 4** A rectangle is 12 in. long and 2 in. wide. Find its area and perimeter.

ANSWER _____

- 5** A 10-unit by 3-unit rectangle has a perimeter of 26 units. A different rectangle also has a perimeter of 26 units. Its side lengths are 6 units and 7 units. What is its area?

ANSWER _____

- 6** A 1-cm by 21-cm rectangle has an area of 21 square cm. A different rectangle also has an area of 21 square cm. One side is 7 cm. What is the other side length, and what is the perimeter?

ANSWER _____

APPLY IT Show your work

1

Kai is making a rectangular play mat for a pet. The mat is 15 in. long and 6 in. wide. How many square inches of mat material does Kai need? How many inches of edging are needed to go around the outside?

WORK SPACE

ANSWER _____

2

A classroom square poster has a side length of 12 cm. What is the area of the poster? How much ribbon is needed to go around its edge?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangle has an area of 30 square units. Its side lengths must be whole numbers. List all possible side-length pairs, then find the rectangle with the smallest perimeter.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A rectangle has 6 rows with 2 equal squares in each row. What is its area?	12 square units
2	A rectangle is 13 cm long and 3 cm wide. What is its perimeter?	32 cm
3	A square has a side length of 7 m. Find its area and perimeter.	Area: 49 square m; Perimeter: 28 m
4	A rectangle is 12 in. long and 2 in. wide. Find its area and perimeter.	Area: 24 square in.; Perimeter: 28 in.
5	A 10-unit by 3-unit rectangle has a perimeter of 26 units. A different rectangle also has a perimeter of 26 units. Its side lengths are 6 units and 7 units. What is its area?	42 square units
6	A 1-cm by 21-cm rectangle has an area of 21 square cm. A different rectangle also has an area of 21 square cm. One side is 7 cm. What is the other side length, and what is the perimeter?	Other side length: 3 cm; Perimeter: 20 cm

PART 2 • APPLY IT

- 90 square in. of material; 42 in. of edging** Multiply 15 by 6 to find the area. Add $15 + 6 + 15 + 6$ to find the perimeter.
- 144 square cm; 48 cm of ribbon** Multiply 12 by 12 to find the area. Multiply 12 by 4 to find the perimeter.

CHALLENGE

Side-length pairs: 1 by 30, 2 by 15, 3 by 10, and 5 by 6. The 5-unit by 6-unit rectangle has the smallest perimeter, 22 units.

Accept side lengths written in either order. Require square units for area and linear units for perimeter when students include units.