

Rectangle Detectives

Use square tiles and side lengths to find area and perimeter.

GRADE 4 • 4.MG.3.d

4.MG.3.d "Use concrete materials and pictorial models to explore the relationship between area and perimeter of rectangles."

NAME _____

DATE _____

INSIDE AND OUTSIDE

Picture a rectangle covered with unit squares. Count every square for area, then add the lengths of all four outside sides for perimeter.

WORKED EXAMPLE

A tiled rectangle has 11 rows of 6 unit squares. Find its area and perimeter.

1. Area: $11 \times 6 = 66$ square units.
2. One long side is 11 units and one short side is 6 units.
3. Perimeter: $11 + 6 + 11 + 6 = 34$ units.

**Answer: Area = 66 square units;
perimeter = 34 units.**

PRACTICE 6 problems

- 1** A rectangle is made of 5 rows of 3 unit squares. Find its area and perimeter.

ANSWER _____

- 2** A rectangle is 9 units long and 2 units wide. Find its area and perimeter.

ANSWER _____

- 3** A rectangle is 10 cm long and 4 cm wide. Find its area and perimeter.

ANSWER _____

- 4** A rectangle has a perimeter of 24 inches and a width of 4 inches. Find its length and area.

ANSWER _____

- 5** Rectangle A is 4 units by 9 units. Rectangle B is 3 units by 12 units. Which rectangle has the greater perimeter? Show both perimeters.

ANSWER _____

- 6** A rectangle has an area of 24 square units and a width of 3 units. Find its length and perimeter.

ANSWER _____

APPLY IT Show your work

- 1** For a science fair, Maya covers a rectangular display board that is 7 feet long and 5 feet wide with paper. She also puts ribbon around the outside edge. How many square feet of paper does she need, and how many feet of ribbon does she need?

WORK SPACE

ANSWER _____

- 2** At robotics club, a rectangular practice mat has an area of 48 square feet and a length of 12 feet. How wide is the mat, and how many feet of tape are needed to outline its edge?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Two rectangular game-board designs each use 30 units of border. Design A is 13 units by 2 units. Design B is 10 units by 5 units. Find the area of each design. Which design has the greater area? Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A rectangle is made of 5 rows of 3 unit squares. Find its area and perimeter.	Area = 15 square units; perimeter = 16 units.
2	A rectangle is 9 units long and 2 units wide. Find its area and perimeter.	Area = 18 square units; perimeter = 22 units.
3	A rectangle is 10 cm long and 4 cm wide. Find its area and perimeter.	Area = 40 square centimeters; perimeter = 28 centimeters.
4	A rectangle has a perimeter of 24 inches and a width of 4 inches. Find its length and area.	Length = 8 inches; area = 32 square inches.
5	Rectangle A is 4 units by 9 units. Rectangle B is 3 units by 12 units. Which rectangle has the greater perimeter? Show both perimeters.	Rectangle B has the greater perimeter. Rectangle A = 26 units; Rectangle B = 30 units.
6	A rectangle has an area of 24 square units and a width of 3 units. Find its length and perimeter.	Length = 8 units; perimeter = 22 units.

PART 2 • APPLY IT

- 35 square feet of paper and 24 feet of ribbon.** Multiply 7 by 5 to find the area. Add $7 + 5 + 7 + 5$ to find the perimeter.
- The mat is 4 feet wide, and 32 feet of tape are needed.** Divide 48 by 12 to find the width. Add $12 + 4 + 12 + 4$ to find the perimeter.

CHALLENGE

Design A has an area of 26 square units. Design B has an area of 50 square units. Design B has the greater area because both designs have a perimeter of 30 units, but Design B has side lengths that are more equal.

Accept equivalent wording and correct units. For perimeter comparison and challenge items, accept correct calculations with a clear conclusion.