LESSON MAKER PRO

Rectangle Rules

Find area and perimeter with rectangle models.

GRADE 4 · 4.MG.3.a

4.MG.3.a "Use concrete materials and pictorial models to develop a formula for the area and perimeter of a rectangle (including a square)."

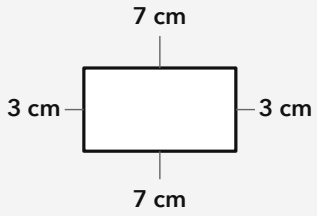
NAME _____ DATE _____

COVER IT AND GO AROUND

Area tells how many square units cover the inside of a rectangle. Multiply length × width to find area. Perimeter is the distance around the outside, so add all four sides or use 2 × length + 2 × width. Before Apply 3, your teacher supplies 12 equal square tiles, grid paper and a pencil. Use one tile edge as one length unit. Build and draw your own models before explaining the formulas.

WORKED EXAMPLE

Look at the rectangle. Find its area and perimeter.

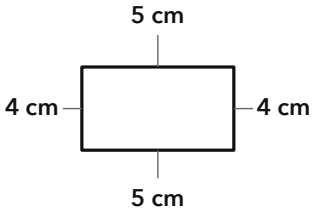


1. Area = 7 × 3.
2. Area = 21 square cm.
3. Perimeter = 7 + 3 + 7 + 3 = 20 cm.

Answer: Area: 21 square cm; perimeter: 20 cm

PRACTICE 6 problems

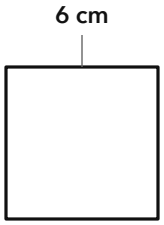
1 The rectangle is 5 cm by 4 cm. Find its area and perimeter.



ANSWER _____

_____

2 The square has side length 6 cm. Find its area and perimeter.



ANSWER _____

_____

3 A rectangle is 9 m long and 2 m wide. What is its area?

ANSWER _____

4 A rectangle is 8 in. long and 5 in. wide. What is its perimeter?

ANSWER _____

5 A rectangle has an area of 24 square ft and a width of 4 ft. Find its length and perimeter.

ANSWER _____

_____

6 A square has a perimeter of 28 cm. Find the length of one side and its area.

ANSWER _____

_____

APPLY IT Show your work

1 Mia is making a rectangular poster for her favorite game. The poster is 12 in. long and 4 in. wide. How many square inches of paper does she need? How many inches of ribbon does she need to go around the edge?

WORK SPACE

ANSWER _____

2 A class is setting up a rectangular pet habitat display that is 10 ft long and 6 ft wide. What area of floor space does the display cover? What perimeter will need a safety border?

WORK SPACE

ANSWER _____

3 Use the supplied square tiles to build a rectangle 4 units long and 3 units wide with no gaps or overlaps. Count the covering tiles and the unit edges around its outside. Draw a matching grid picture. Reuse 9 tiles to build a 3-by-3 square; count and draw again. From your models, explain why a rectangle of length l and width w has $A = l \times w$ and $P = 2 \times l + 2 \times w$, and how these formulas apply to a square. Use the supplied grid paper if you need more space.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A rectangle has an area of 36 square units. Its side lengths must be whole numbers. List all possible pairs of side lengths. Which pair makes the greatest perimeter? Explain how you know.

WORK SPACE AND ANSWER

ANSWER KEY # Rectangle Rules

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The rectangle is 5 cm by 4 cm. Find its area and perimeter.	**Area: 20 square cm; perimeter: 18 cm**
2	The square has side length 6 cm. Find its area and perimeter.	**Area: 36 square cm; perimeter: 24 cm**
3	A rectangle is 9 m long and 2 m wide. What is its area?	**18 square m**
4	A rectangle is 8 in. long and 5 in. wide. What is its perimeter?	**26 in.**
5	A rectangle has an area of 24 square ft and a width of 4 ft. Find its length and perimeter.	**Length: 6 ft; perimeter: 20 ft**
6	A square has a perimeter of 28 cm. Find the length of one side and its area.	**Side length: 7 cm; area: 49 square cm**

PART 2 · APPLY IT

1. **48 square in.; 32 in.** Multiply 12 × 4 to find the paper area. Add the four side lengths, 12 + 4 + 12 + 4, to find the ribbon length.
2. **60 square ft; 32 ft** Multiply 10 × 6 for the floor area. Use 2 × 10 + 2 × 6 for the safety border.
3. **4-by-3 rectangle: A = 12 square units, P = 14 units; 3-by-3 square: A = 9 square units, P = 12 units.** Observe actual tile builds, matching grid pictures, inside tile counts and outside unit-edge counts. A rectangle has w rows of l unit squares, so A = l × w. Its two lengths and two widths give P = l + w + l + w = 2l + 2w. For a square, l = w = s, giving A = s × s and P = 4s. Do not count interior tile edges as perimeter.

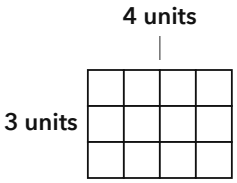
CHALLENGE

Possible side pairs: 1 and 36, 2 and 18, 3 and 12, 4 and 9, 6 and 6. The 1-by-36 rectangle has the greatest perimeter, 74 units, because 2 × 1 + 2 × 36 = 74, which is greater than the perimeter of every other pair.

Accept equivalent area and perimeter notation, including cm^2, m^2, ft^2, or square units. For the challenge, accept factor pairs in either order and a correct comparison of perimeters. Apply 3 requires actual concrete builds, corresponding learner pictures and model-backed explanations of both formulas, including the square case. Teacher supplies materials and checks tile coverage and boundary counts; merely substituting into given formulas is incomplete.

Rectangle Rules

Apply 3 rectangle: 3 rows of 4 unit squares; area 12, perimeter 14.



Rectangle Rules

Apply 3 square: 3 rows of 3 unit squares; area 9, perimeter 12.

