

Rectangle Match Lab

Compare side lengths, perimeters, and areas.

GRADE 4 • 4.MG.3.e

4.MG.3.e "Identify and represent rectangles with the same perimeter and different areas or with the same area and different perimeters."

NAME _____

DATE _____

MATCH ONE MEASURE

Perimeter is the distance around a rectangle. Add all the side lengths to find perimeter, and multiply length by width to find area. Rectangles can have the same perimeter but different areas, or the same area but different perimeters.

WORKED EXAMPLE

Show how a 3 by 11 rectangle and a 5 by 9 rectangle have the same perimeter but different areas.

1. First perimeter: $3 + 11 + 3 + 11 = 28$.
2. Second perimeter: $5 + 9 + 5 + 9 = 28$.
3. First area: 3 times 11 = 33. Second area: 5 times 9 = 45.

Answer: The rectangles have the same perimeter, 28 units. Their areas are different, 33 square units and 45 square units.

PRACTICE 6 problems

- 1** Rectangle A is 4 units by 12 units. Rectangle B is 6 units by 10 units. Find each perimeter and area. What measure is the same?

ANSWER _____

- 2** Rectangle A is 4 units by 18 units. Rectangle B is 6 units by 12 units. Find each area and perimeter. What measure is the same?

ANSWER _____

- 3** Rectangle A is 8 units by 12 units. Rectangle B is 6 units by 14 units. Compare their perimeters and areas.

ANSWER _____

- 4** Rectangle C is 7 units by 16 units. Rectangle D has an area of 112 square units and a width of 8 units. Find Rectangle D's length. Then compare the perimeters.

ANSWER _____

- 5** Rectangle E is 2 units by 20 units. Rectangle F is 4 units by 18 units. Do the rectangles have the same perimeter or the same area?

ANSWER _____

- 6** Rectangle G is 12 units by 12 units. Rectangle H is 8 units by 18 units. Find each area and perimeter. What measure is the same?

ANSWER _____

APPLY IT Show your work

- 1** The school garden club gives each team 64 feet of edging. Team Sun makes a garden that is 12 feet by 20 feet. Team Moon makes a garden that is 14 feet by 18 feet. Which garden covers more ground? How much more?

WORK SPACE

ANSWER _____

- 2** At a video game tournament, two rectangular prize tables each need 336 square inches of covering. Table A is 12 inches by 28 inches. Table B is 16 inches by 21 inches. Which table needs less ribbon around its edge, and how many inches less?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangle has a perimeter of 52 units. Its side lengths must both be even whole numbers. List all possible side-length pairs. Which pair has the greatest area? Explain your reasoning in one sentence.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Rectangle A is 4 units by 12 units. Rectangle B is 6 units by 10 units. Find each perimeter and area. What measure is the same?	Both perimeters are 32 units. Rectangle A has area 48 square units, and Rectangle B has area 60 square units. They have the same perimeter and different areas.
2	Rectangle A is 4 units by 18 units. Rectangle B is 6 units by 12 units. Find each area and perimeter. What measure is the same?	Both areas are 72 square units. Rectangle A has perimeter 44 units, and Rectangle B has perimeter 36 units. They have the same area and different perimeters.
3	Rectangle A is 8 units by 12 units. Rectangle B is 6 units by 14 units. Compare their perimeters and areas.	Both perimeters are 40 units. Rectangle A has area 96 square units, and Rectangle B has area 84 square units. They have the same perimeter and different areas.
4	Rectangle C is 7 units by 16 units. Rectangle D has an area of 112 square units and a width of 8 units. Find Rectangle D's length. Then compare the perimeters.	Rectangle D's length is 14 units. Both rectangles have area 112 square units. Rectangle C has perimeter 46 units, and Rectangle D has perimeter 44 units.
5	Rectangle E is 2 units by 20 units. Rectangle F is 4 units by 18 units. Do the rectangles have the same perimeter or the same area?	They have the same perimeter, 44 units. Rectangle E has area 40 square units, and Rectangle F has area 72 square units.
6	Rectangle G is 12 units by 12 units. Rectangle H is 8 units by 18 units. Find each area and perimeter. What measure is the same?	Both areas are 144 square units. Rectangle G has perimeter 48 units, and Rectangle H has perimeter 52 units. They have the same area and different perimeters.

PART 2 • APPLY IT

- Team Moon's garden covers more ground by 12 square feet.** Both gardens have perimeter 64 feet. Team Sun's area is 240 square feet, and Team Moon's area is 252 square feet.
- Table B needs 6 inches less ribbon.** Table A has perimeter 80 inches. Table B has perimeter 74 inches, so it needs 6 fewer inches of ribbon.

CHALLENGE

Possible pairs are 2 by 24, 4 by 22, 6 by 20, 8 by 18, 10 by 16, and 12 by 14. The 12 by 14 rectangle has the greatest area, 168 square units. With the same perimeter, the pair with side lengths closest together has the greatest area.

Accept reversed length and width orders as equivalent. Require students to use square units for area and units for perimeter when they include labels.