Perimeter

Essential Question How can you use a formula to find the perimeter of a rectangle?

Common Core **Measurement and Data—4.MD.A.3**
MATHEMATICAL PRACTICES
MP1, MP7, MP8

🔑 Unlock the Problem · Real World

Julio is putting a stone border around his rectangular garden. The length of the garden is 7 feet. The width of the garden is 5 feet. How many feet of stone border does Julio need?

Perimeter is the distance around a shape.

To find how many feet of stone border Julio needs, find the perimeter of the garden.

- Circle the numbers you will use.
- What are you asked to find?

_____

_____

🔑 Use addition.

Perimeter of a Rectangle = length + width + length + width

$7 + 5 + 7 + 5 =$ _____

The perimeter is _____ feet.

So, Julio needs _____ feet of stone border.

7 ft

5 ft

🔑 Use multiplication.

Ⓐ Find Perimeter of a Rectangle

Perimeter = (2 × length) + (2 × width)

8 cm

12 cm   12 cm

8 cm
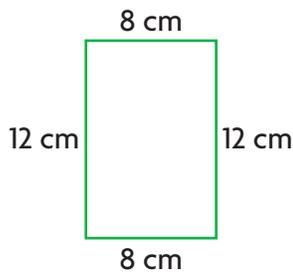
Perimeter = $(2 \times 12) + (2 \times 8)$

$= 24 + 16$

$=$ _____

So, the perimeter is _____ centimeters.
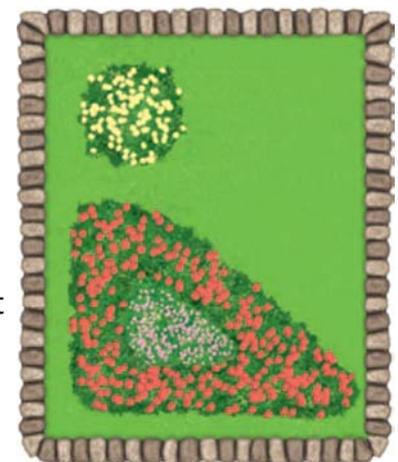
Ⓑ Find Perimeter of a Square

Perimeter = 4 × one side

16 in.

16 in.   16 in.

16 in.

Perimeter = 4×16

$=$ _____
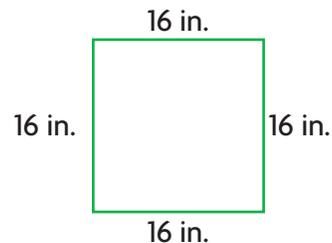
So, the perimeter is _____ inches.

Math Talk

MATHEMATICAL PRACTICES ⑦

Identify Relationships How is using addition and using multiplication to find the perimeter of a rectangle related?

Use a Formula   A **formula** is a mathematical rule. You can use a formula to find perimeter.

$$P = (2 \times l) + (2 \times w)$$

perimeter   length   width

width

length

Example **Find the perimeter of the rectangle.**

$P = (2 \times l) + (2 \times w)$

$= (2 \times \underline{\hspace{1cm}}) + (2 \times \underline{\hspace{1cm}})$ Think: Write the measures you know.

$= \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$ Think: Do what is in parentheses first.

$= \underline{\hspace{1cm}}$

14 m

18 m

The perimeter of the rectangle is _____.

1. Can you use the Distributive Property to write the formula $P = (2 \times l) + (2 \times w)$ another way? Explain.

_____

_____

_____

_____

Try This! **Write a formula for the perimeter of a square.**

Use the letter _____ for perimeter.

Use the letter _____ for the length of a side.

Formula: _____

2. Justify the formula you wrote for the perimeter of a square.

_____

_____

_____

_____

Name _____

Formulas for Perimeter

Rectangle:
$P = (2 \times l) + (2 \times w)$ or
$P = 2 \times (l + w)$

Square:
$P = 4 \times s$

1. Find the perimeter of the rectangle.

$P = ($_____ $\times$ _____$) + ($_____ $\times$ _____$)$

$ = ($_____ $\times$ _____$) + ($_____ $\times$ _____$)$

$ =$ _____ $+$ _____

$ =$ _____

The perimeter is _____ feet.

8 ft

4 ft

Find the perimeter of the rectangle or square.

2.
4 yd

16 yd

_____ yards

✓**3.**
42 m

110 m

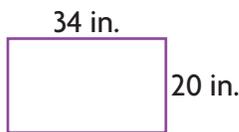_____ meters

✓**4.**
4 m

4 m
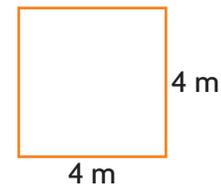
_____ meters

Math Talk

MATHEMATICAL PRACTICES ⑧

Draw Conclusions Can you use the formula $P = (2 \times l) + (2 \times w)$ to find the perimeter of a square? Explain.
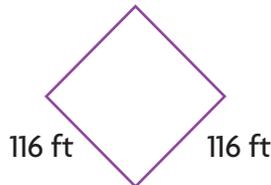
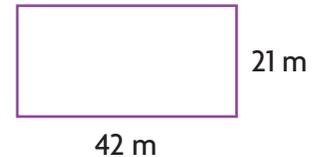## On Your Own

Find the perimeter of the rectangle or square.

5.
34 in.

20 in.

_____ inches

6.
116 ft   116 ft

_____ feet

7.
21 m

42 m

_____ meters

8. **GO DEEPER** Robert wants to put lights around the edge of his yard. The yard is 40 feet long and 23 feet wide. How many yards of lights does he need?

_____

9. **MATHEMATICAL PRACTICE ①** **Analyze** What is the side length of a square with a perimeter of 60 meters?

_____

🔑 Unlock the Problem Real World

10. **THINK SMARTER** Alejandra plans to sew fringe on a scarf. The scarf is shaped like a rectangle. The length of the scarf is 48 inches. The width is one half the length. How much fringe does Alejandra need?

a. Draw a picture of the scarf, and label the given measurements on your drawing.

b. What do you need to find?

_____

c. What formula will you use?

_____

d. Show the steps you use to solve the problem.

e. Complete.

The length of the scarf is _____ inches.

The width is one half the length,

or _____ ÷ 2 = _____ inches.

So, the perimeter is (_____ × _____) +

(_____ × _____) = _____ inches.

f. Alejandra needs _____ of fringe.

11. **GO DEEPER** Marcia will make a frame for her picture. The picture frame will be three times as long as it is wide. The width of the frame will be 5 inches. How much wood does Marcia need for the frame?

12. **THINK SMARTER** Maya is building a sandbox that is 36 inches wide. The length is four times the width. What is the perimeter of the sandbox? Show your work. Explain.
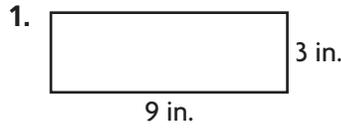
Perimeter

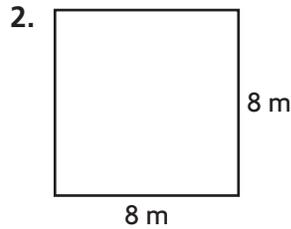**Find the perimeter of the rectangle or square.**

1.

3 in.

9 in.

$9 + 3 + 9 + 3 = 24$

__24__ inches

2.

8 m

8 m

_____ meters

3.

12 ft

10 ft
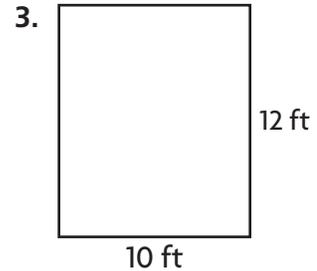
_____ feet

Problem Solving · Real World

4. Troy is making a flag shaped like a square. Each side measures 12 inches. He wants to add ribbon along the edges. He has 36 inches of ribbon. Does he have enough ribbon? **Explain.**

_____

5. The width of the Ochoa Community Pool is 20 feet. The length is twice as long as its width. What is the perimeter of the pool?
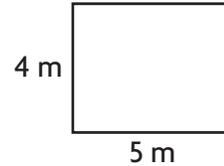
_____

6. **WRITE** ▸ *Math* Imagine you want to put a border around a rectangular room. Summarize the steps you would use to find the length of border needed.

_____

_____

_____

_____

Lesson Check

1. What is the perimeter of a square window with sides 36 inches long?

2. What is the perimeter of the rectangle below?

4 m

5 m

_____

_____

Spiral Review

3. Natalie drew the angle below.

What is the most reasonable estimate for the measure of the angle Natalie drew?

4. Ethan has 3 pounds of mixed nuts. How many ounces of mixed nuts does Ethan have?

_____

_____

5. How many lines of symmetry does the shape below appear to have?

6. Janna drank 0.7 liter of water before soccer practice and 0.70 liter of water after practice. Compare the two decimals using $<$, $=$, or $>$.

_____

_____

FOR MORE PRACTICE GO TO THE
Personal Math Trainer