Name _____

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

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?

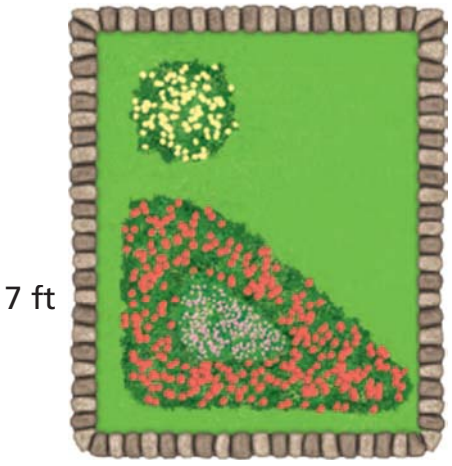
- Circle the numbers you will use.
- What are you asked to find?

_____

_____

Perimeter is the distance around a shape.

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



Use addition.

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

7 + 5 + 7 + 5 = _____

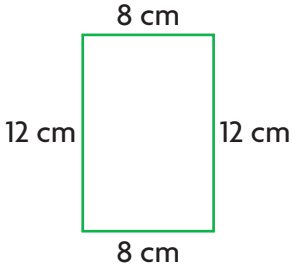
The perimeter is _____ feet.

So, Julio needs _____ feet of stone border.

Use multiplication.

A Find Perimeter of a Rectangle

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



Perimeter = (2 × 12) + (2 × 8)

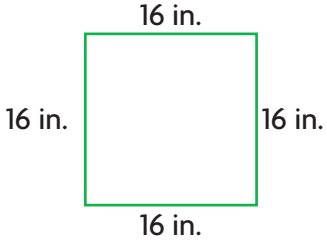
= 24 + 16

= _____

So, the perimeter is _____ centimeters.

B Find Perimeter of a Square

Perimeter = 4 × one side



Perimeter = 4 × 16

= _____

So, the perimeter is _____ inches.

Math Talk MATHEMATICAL PRACTICES 7

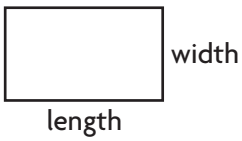
Identify Relationships How is using addition and using multiplication to find the perimeter of a rectangle related?

Use a Formula

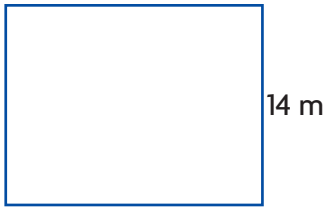
A **formula** is a mathematical rule. You can use a formula to find perimeter.

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

↑ perimeter ↑ length ↑ width



Example Find the perimeter of the rectangle.



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

$= (2 \times$ _____ $) + (2 \times$ _____ $)$ Think: Write the measures you know.

$=$ _____ $+$ _____ Think: Do what is in parentheses first.

$=$ _____

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:
$P = 4 \times s$

Share and Show

MATH BOARD

1. Find the perimeter of the rectangle.

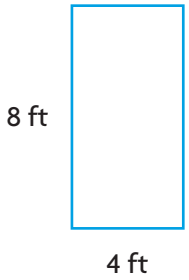
$P = (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$= (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

$= \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

The perimeter is _____ feet.

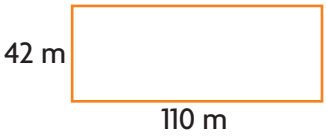


Find the perimeter of the rectangle or square.

2.

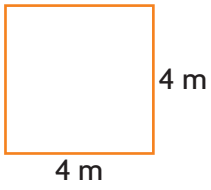
_____ yards

3.



_____ meters

4.



_____ meters

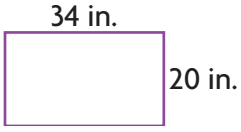
Math Talk MATHEMATICAL PRACTICES 8

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

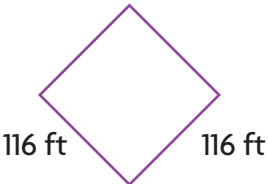
Find the perimeter of the rectangle or square.

5.



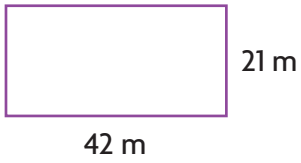
_____ inches

6.



_____ feet

7.



_____ 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?

Math on the Spot

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.

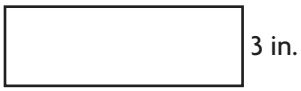
Name _____

Perimeter

Common Core **COMMON CORE STANDARD—4.MD.A.3**
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Find the perimeter of the rectangle or square.

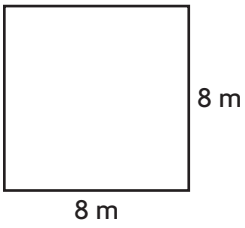
1.



$9 + 3 + 9 + 3 = 24$

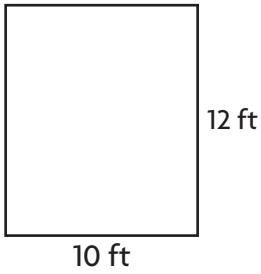
24 inches

2.



_____ meters

3.



_____ 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.

_____

_____

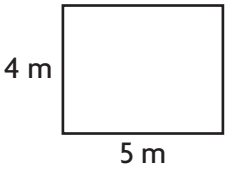
_____

_____

Lesson Check (4.MD.A.3)

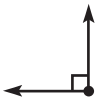
1. What is the perimeter of a square window with sides 36 inches long?

2. What is the perimeter of the rectangle below?



Spiral Review (4.NF.C.7, 4.MD.A.1, 4.MD.C.5a, 4.MD.C.5b, 4.G.A.3)

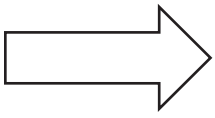
3. Natalie drew the angle below.



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