

Perimeter and Area

Name: _____

Prerequisite: Connect Area and Perimeter

Study the example showing how to find the area and perimeter of a rectangle. Then solve problems 1–7.

Example

Find the area and perimeter of the rectangle at right.

Area

Count square units or multiply side lengths.

The rectangle is 4 units by 10 units.

$$4 \times 10 = 40 \text{ square units}$$

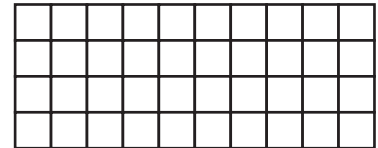
$$\text{Area} = 40 \text{ square units}$$

Perimeter

Add the lengths of all the sides.

$$4 + 10 + 4 + 10 = 28 \text{ units}$$

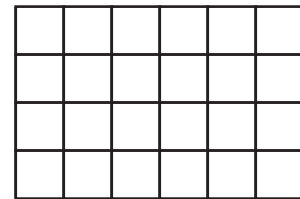
$$\text{Perimeter} = 28 \text{ units}$$



- 1 Find the area and perimeter of the rectangle at right.

Area = _____ square units Perimeter = _____ units

- 2 Look at the rectangle in problem 1. Draw a rectangle with the same area but a different perimeter.



What is the perimeter of the rectangle you drew?

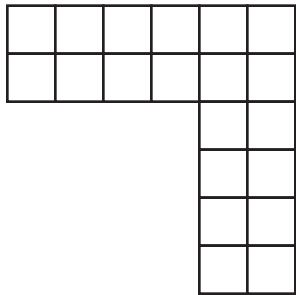
- 3 Look at the rectangle in problem 1. Draw a rectangle with the same perimeter but a different area.

What is the area of the rectangle you drew?



Solve.

- 4** Look at the shape below. Find the area and perimeter of the shape.



Area = _____ square units

Perimeter = _____ units

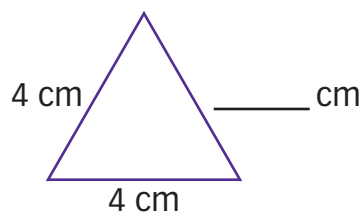
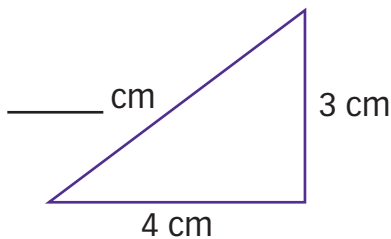
- 5** What is the area and perimeter of a square with side lengths of 4 units? Draw the square below.

Area = _____ square units

Perimeter = _____ units

- 6** Look at the square you drew in problem 5.
- Draw a rectangle with the same area as the square and a different perimeter than the square.
 - What is the perimeter of the rectangle you drew? Is it equal to, greater than, or less than the perimeter of the square you drew in problem 5? Explain.

- 7** The perimeter of each triangle below is 12 centimeters. Write the missing side length on each triangle.



Solve Perimeter Problems

Study the example problem showing how to solve a problem about perimeter. Then solve problems 1–6.

Example

The community center has a rectangular kiddie pool. The length of the pool is 25 feet. The width is 15 feet. What is the perimeter of the kiddie pool?

Use a formula for the perimeter of a rectangle.

$$P = 2l + 2w$$

$$= (2 \times 25) + (2 \times 15)$$

$$= 50 + 30$$

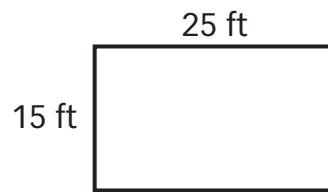
$$= 80$$

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

$$= 2(25 + 15)$$

$$= 2(40)$$

$$= 80$$



The perimeter of the pool is 80 feet.

- 1** A rectangular photograph has a length of 10 inches and a width of 8 inches. Fill in the numbers in the formulas below to show two ways to find the perimeter of the photograph.

$$P = \quad 2l \quad + \quad 2w$$

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

$$P = (2 \times \underline{\quad}) + (2 \times \underline{\quad})$$

$$P = 2(\underline{\quad} + \underline{\quad})$$

$$= \underline{\quad} + \underline{\quad}$$

$$= 2(\underline{\quad})$$

$$= \underline{\quad}$$

$$= \underline{\quad}$$

The perimeter is inches.

- 2** Jason's rectangular computer screen is 50 centimeters across and 36 centimeters high. What is the perimeter of Jason's computer screen?

Show your work.

Solution: $P = \underline{\quad}$ centimeters



Solve.

- 3** A rectangular garden has a width of 90 feet. The perimeter is 500 feet. What is the length of the garden?

$$500 = (2 \times l) + (\text{_____} \times \text{_____})$$
$$500 = 2l + \text{_____}$$
$$\text{_____} = 2l$$
$$\text{_____} \div 2 = l$$
$$\text{_____} = l$$

The length of the garden is _____ feet.

- 4** What is the perimeter of a square with side lengths of 3 inches?

Show your work.

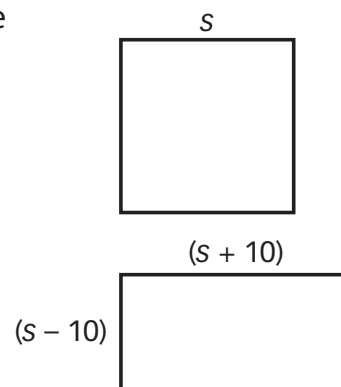
Solution: _____

- 5** Amy has a ribbon that is 36 inches long. Choose *Yes* or *No* to tell whether she has enough ribbon to wrap around the perimeter of a picture frame for each frame with the given shape and size.

- a. square, side lengths of 9 inches Yes No
- b. rectangle, 18 inches by 10 inches Yes No
- c. rectangle, 12 inches by 24 inches Yes No
- d. square, side lengths of 6 inches Yes No

- 6** The square and the rectangle at the right each have a perimeter of 200 centimeters. What are the side lengths of the square and rectangle?
(Hint: First find the side length of the square.)

Show your work.



Square: side length _____ cm Rectangle: length _____ cm width _____ cm

Solve Area Problems

Study the example showing how to solve a problem about area. Then solve problems 1–6.

Example

Michelle wants to use bricks to make a rectangular patio. She has enough bricks to cover an area of 135 square feet. She wants the length of the patio to be 15 feet. How wide should she make the patio?

Write an equation to represent the area of a rectangle: $A = l \times w$

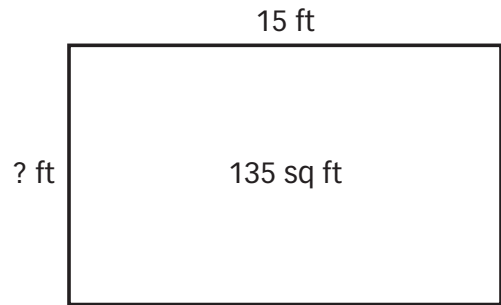
$$A = 15 \times w$$

$$135 = 15 \times w$$

$$135 \div 15 = w$$

$$9 = w$$

Michelle should make the patio 9 feet wide.

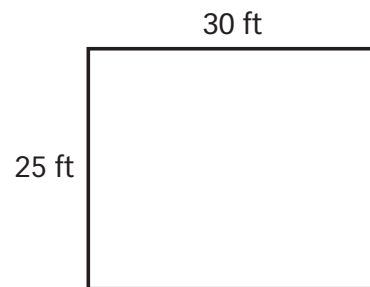


- 1** Juan is installing new flooring in a large entryway. The picture at the right shows the length and width of the entryway. How many square feet of flooring does Juan need?

$$A = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$A = \underline{\hspace{2cm}}$$

Juan needs square feet of flooring.



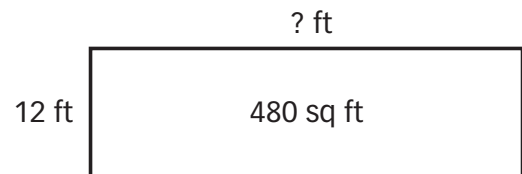
- 2** Look at the picture at the right. Alyssa wants to tile a room with an area of 480 square feet. The width of the room is 12 feet. What is the length of the room?

$$\underline{\hspace{2cm}} = l \times \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = l$$

$$\underline{\hspace{2cm}} = l$$

The length of the room is feet.



Solve.

- 3** Jim is painting the surface of a picnic table. The surface has an area of 2,160 square inches. The width of the table is 30 inches. What is the length of the table?

Show your work.

Solution: _____

- 4** An Olympic floor exercise mat has an area of 144 square meters. Its length is 12 meters. What is the width of the mat?

Show your work.

Solution: _____

- 5** Look at problem 4. What is the shape of the floor exercise mat? Explain how you know.

- 6** Melissa has enough paint to cover an area of 250 square feet. She wants to paint two walls. The rectangular wall is 9 feet high and 20 feet wide. The square wall has a height of 9 feet. Does Melissa have enough paint to cover the area of both walls?

Show your work.

Solution: _____

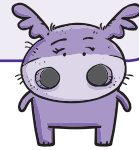
Solve Perimeter and Area Problems

Solve the problems.

- 1 The area of a rectangle is 40 square feet. What could be the perimeter of the rectangle? Circle the letter for all that apply.

A 82 ft D 28 ft
 B 44 ft E 26 ft
 C 40 ft

$A = l \times w$
 $P = 2(l + w)$
 Find the length and width. Then find the perimeter.

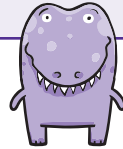


- 2 Trish had a square garden with side lengths of 8 feet. She expanded her garden to 10 feet by 8 feet. By how many square feet did she expand the area of her garden?

A 144 sq ft C 64 sq ft
 B 80 sq ft D 16 sq ft

Kerry chose **A** as the correct answer. How did she get that answer?

How much greater is the area of the rectangle than the area of the square?



- 3 Layla painted the walls of a rectangular room. Two walls are 9 feet by 12 feet. The other two walls are 9 feet by 20 feet. What is the total area of wall that Layla painted?

Show your work.

How do you find the area of all four walls?

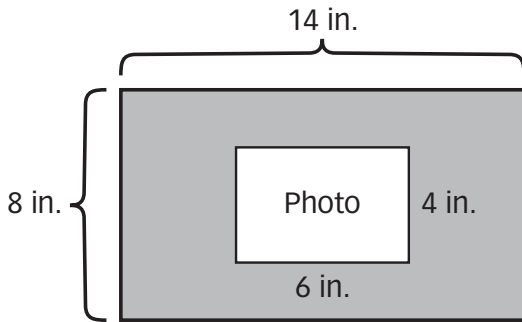


Solution: _____



Solve.

- 4** Olivia is putting decorations around the photo in the picture frame shown below. What is the area of the frame that she can decorate?



You can find the difference between the area of the larger rectangle and the area of the smaller rectangle.



Show your work.

Solution: _____

- 5** A painter needs a piece of glass to protect a painting. He is also putting wooden strips around the perimeter to make a frame for the painting. The painting is 85 centimeters by 62 centimeters. How many square centimeters of glass does he need to cover the area of the painting? What is the total length of wooden strips that he needs to frame the perimeter of the painting?

You need to find both the area and the perimeter.



Show your work.

Solution: Glass: _____

Wooden strips: _____