Find the area of each figure.

**Example**

There are 3 rows of one-inch squares.

Each row has 4 one-inch squares.

\[
3 \times 4 = 12
\]

There are 12 one-inch squares covering rectangle A.

Area of rectangle A = 12 in.\(^2\)

1. There are \_\_\_\_\_\_ rows of one-meter squares.

Each row has \_\_\_\_\_\_ one-meter squares.

\[
\_\_\_\_\_\_ \times \_\_\_\_\_\_ = \_\_\_\_\_\_
\]

There are \_\_\_\_\_\_ one-meter squares covering rectangle B.

Area of rectangle B = \_\_\_\_\_\_ m\(^2\)
Look at the rectangles in the grid. Write the length, width, and area of each rectangle in the grid. Give your answers in the correct units.

2.

<table>
<thead>
<tr>
<th>Rectangle</th>
<th>Length</th>
<th>Width</th>
<th>Area = Length × Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3 cm</td>
<td>2 cm</td>
<td>6 cm²</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Complete to find the area of each figure.

3. Area = length × width

= __________ × __________

= __________ yd²

The area is __________ square yards.

4. Area = __________ × __________

= __________ ft²

The area is __________ square feet.

Find the perimeter and area of each rectangle or square.

Example

Perimeter = ________ ft
Area = ________ ft²

5. Perimeter = ________ in.
Area = ________ in²

6. Perimeter = ________ ft
Area = ________ ft²

7. Perimeter = ________ yd
Area = ________ yd²
Solve. Show your work.

Example

Ashley has a rug that measures 3 yards by 2 yards on her bedroom floor.
What area of her bedroom floor is covered by the rug?

\[
\text{Area} = \text{length} \times \text{width} = 3 \times 2 = 6 \text{ yd}^2
\]

The area of her bedroom floor covered by the rug is 6 square yards.

8. Paula wants to paint one of the walls in her room blue. The wall measures 5 meters by 3 meters. What is the area of the wall she has to paint?

9. The area of a nature reserve is 100 square miles. Oak trees were planted on a square plot of land in the nature reserve with sides that measure 8 miles each. What area of the nature reserve is not covered by oak trees?
Solve. Show your work.

10. Yolanda has a piece of rectangular fabric measuring 30 centimeters by 9 centimeters. She uses half of the material to make a puppet. What is the area of the leftover fabric?

Estimate the area of each figure in square units.

Example

Estimated area

= 14–15 square units

11.

Estimated area

= __________ square units

12.

Estimated area = __________ square units
Look at John’s answers for the area and perimeter of the figures.

John’s mistakes are circled.

**Explain why these answers are wrong. Write the correct answers.**

**Example**

Area of figure A:

The unit for the area of figure A should be ‘in.\(^2\).’

1. Perimeter of figure A: ______________________________

2. Perimeter of figure B: ______________________________

3. Area of figure C: ______________________________
Practice 2  Rectangles and Squares

Find the perimeter of each figure.

Example

Perimeter of rectangle

\[= 7 + 4 + 7 + 4\]

\[= 22\text{ cm}\]

The perimeter of the rectangle is 22 centimeters.

1.

Perimeter of square \[= 4 \times \underline{\phantom{0}}\]

\[= \underline{\phantom{0}}\text{ in.}\]

The perimeter of the square is \underline{\phantom{0}} inches.
Solve. Show your work.

Example

The perimeter of a square flower garden is 20 feet. Find the length of one side of the flower garden.

\[
\text{Length of one side} = \frac{\text{perimeter}}{4} = \frac{20}{4} = 5 \text{ ft}
\]

The length of one side of the flower garden is 5 feet.

2. The perimeter of a square building is 160 yards. Find the length of one side of the building.

\[
\text{Length of one side} = \frac{\text{perimeter}}{4} = \frac{160}{4} = 40 \text{ yd}
\]
Solve. Show your work.

3. A square field has a perimeter of 44 meters. Find the length of one side of the field.

\[ \text{perimeter} = 44 \text{ m} \]

4. The perimeter of a rectangular town is 32 miles. Its width is 5 miles. Find the length.

\[ \text{perimeter} = 32 \text{ mi} \]
Solve. Show your work.

5. The perimeter of a rectangle is 24 centimeters. Its length is 9 centimeters. Find the width.

6. The perimeter of a rectangular garden is 18 yards. Its length is 6 yards. Find the width.
Practice 3  Rectangles and Squares

Find the area of each figure.

Example

12 ft

Area of the rectangle = $\frac{12}{6} \times 6$

= 72 ft$^2$

The area of the rectangle is 72 square feet.

1.

9 cm

Area of the square = $\frac{9}{9} \times 9$

= 81 cm$^2$

The area of the square is 81 square centimeters.
**Solve. Show your work.**

**Example**

The area of a rectangular hall is 78 square yards. Its width is 6 yards. Find the length.

\[ \text{Area} = 78 \text{ yd}^2 \]

\[ \text{Width} = 6 \text{ yd} \]

\[ \text{Length} \times \text{Width} = \text{Area} \]

\[ \text{Length} \times 6 = 78 \text{ yd}^2 \]

\[ \text{Length} = \frac{78}{6} \]

\[ = 13 \text{ yd} \]

The length of the hall is **13** yards.

2. A rectangle has an area of 56 square centimeters. Its length is 8 centimeters. Find the width.

\[ \text{Area} = 56 \text{ cm}^2 \]

\[ \text{Length} = 8 \text{ cm} \]

\[ \text{Length} \times \text{Width} = \text{Area} \]

\[ 8 \text{ cm} \times \text{Width} = 56 \text{ cm}^2 \]

\[ \text{Width} = \frac{56}{8} \]

\[ = 7 \text{ cm} \]

The width of the rectangle is **7** centimeters.
Solve. Show your work.

3. The area of a rectangular carpet is 84 square meters. Its width is 7 meters.
   a. Find the length.
   b. Find the perimeter of the carpet.

4. The area of a square is 64 square inches. Find the length of one side of the square. (Hint: What number multiplied by itself is equal to 64?)

5. The area of a square garden is 100 square meters.
   a. Find the length of each side of the garden.
   b. Find the perimeter of the garden.
**Solve. Show your work.**

6. The area of a rectangular recreation area is 45 square miles. Its width is 5 miles.
   \[ \text{a. } \text{Find the length.} \]
   \[ ? \text{ mi} \]
   \[ 5 \text{ mi} \]
   \[ \text{area} = 45 \text{ mi}^2 \]
   \[ \text{b. } \text{Find the perimeter.} \]

7. The perimeter of a rectangular poster is 156 inches. Its width is 36 inches.
   \[ \text{a. } \text{Find the length.} \]
   \[ 36 \text{ in.} \]
   \[ ? \text{ in.} \]
   \[ \text{perimeter} = 156 \text{ in.} \]
   \[ \text{b. } \text{Find the area.} \]
Practice 4 Composite Figures

Find the lengths of the unknown sides of each figure. Then find the perimeter of each figure.

Example

Length of first unknown side = 16 - 4 = 12 in.
Length of second unknown side = 13 + 4 = 17 in.
Perimeter of figure = 16 + 13 + 12 + 4 + 4 + 17 = 66 in.

Perimeter = 66 in.

1.

Perimeter = __________ yd
Solve. Show your work.

2. Tom wants to fence in the piece of land shown in the diagram. Find the perimeter of the piece of land to find the length of fencing material he needs.

Perimeter = _________ m

3. Find the perimeter of this figure.

Perimeter = _________ mi
Solve. Show your work.

4. Find the perimeter of the figure.

Perimeter = _________ cm

Find the area of each composite figure. Show your work.

Example

Break up the figure into two rectangles as shown. Then find the area of the whole figure.

Area of rectangle 1 = length × width
= 10 × 3
= 30 in.²

Area of rectangle 2 = length × width
= 7 × 6
= 42 in.²

Total area = area of rectangle 1 + area of rectangle 2
= 30 + 42
= 72 in.²

Area = _________ in.²
Find the area of each composite figure. Show your work.

5.

\[ \text{Area} = \underline{\phantom{0}} \text{ft}^2 \]

6.

\[ \text{Area} = \underline{\phantom{0}} \text{m}^2 \]
Practice 5  Using Formulas for Area and Perimeter

Solve. Show your work.

Example

The floor of a patio measuring 8 feet by 7 feet is tiled with 1-foot square tiles. The shaded area in the figure is tiled in black, and the unshaded area is tiled in white. What is the area tiled in white?

\[
\begin{align*}
\text{Area of patio} &= 8 \times 7 \\
&= 56 \text{ ft}^2 \\
\text{Shaded area} &= 6 \times 4 \\
&= 24 \text{ ft}^2 \\
\text{Area of patio} - \text{shaded area} &= 56 - 24 \\
&= 32 \text{ ft}^2 \\
\text{The area tiled in white is} &= \text{32 square feet.}
\end{align*}
\]

1. The floor of Mr. Jones’ living room is in the shape shown below.

   a. Estimate, in square yards, the area of his living room.

   b. Mr. Jones wants to carpet his living room. If a roll of carpet is 3 yards wide, what is the smallest length of carpet Mr. Jones should buy?
Solve. Show your work.

2. The figure shows a small rectangle and a large rectangle. Find the area of the shaded part of the figure.

Area of large rectangle $= \underline{16} \times \underline{12} = \underline{192}$ ft$^2$

Area of small rectangle $= \underline{7} \times \underline{6} = \underline{42}$ ft$^2$

Area of shaded part $= \text{area of large rectangle} - \text{area of small rectangle}$

$= \underline{192} - \underline{42} = \underline{150}$ ft$^2$

The area of the shaded part is $\underline{150}$ square feet.
Solve. Show your work.

3. The figure shows a small rectangle and a large rectangle. Find the area of the shaded part of the figure.

Area of large rectangle = _______ $\times$ _______
= _______ in.$^2$

Area of small rectangle = _______ $\times$ _______
= _______ in.$^2$

Area of shaded part = _______ $-$ _______
= _______ in.$^2$

The area of the shaded part is _______ square inches.

Example

A rug is centered on a rectangular floor as shown in the diagram. Find the area of the rug.

Length of rug = $9 - 1 - 1$
= 7 m

Width of rug = $6 - 1 - 1$
= 4 m

Area of rug = $7 \times 4$
= 28 m$^2$

The area of the rug is 28 square meters.
Solve. Show your work.

4. A rectangular pool is surrounded by a 2-yard-wide deck as shown in the diagram. Find the area of the deck.

5. A rectangular picture frame measures 25 centimeters by 15 centimeters. It has a wooden border 3 centimeters wide. To fit the picture frame, how large should a picture be?
Solve. Show your work.

6. Renee has a piece of rectangular cardboard measuring 90 centimeters by 80 centimeters. She cuts out a small rectangular piece measuring 15 centimeters by 20 centimeters.

a. Find the area of the remaining piece of cardboard.

b. Find the perimeter of the remaining piece of cardboard.

c. Compare the perimeter of the remaining piece of cardboard with that of the original piece of cardboard. Which one is greater?
Solve. Show your work.

7. Melanie makes a path 1 yard wide around her rectangular patch of land as shown in the diagram. Find the perimeter and area of the patch of land.

8. A rectangular piece of paper measuring 15 centimeters by 7 centimeters is folded along the dotted lines to form the figure shown.

Find the area of the figure formed.
Put On Your Thinking Cap!

Challenging Practice

1. Using the gridlines, draw as many different rectangles as you can that have an area of 12 square centimeters. Do the same for rectangles with an area of 9 square centimeters. How many rectangles can you draw for each area?
Solve. Show your work.

2. The length of a painting is 3 times its width. Its perimeter is 64 inches. Find the length.

3. The length of a dog run is twice its width. Its area is 50 square yards. Find the length and width of the dog run.
Solve. Show your work.

4. A rectangular garden measuring 15 meters by 8 meters is bordered by a house on one side as shown. How much fencing material is needed for the garden?

5. Mrs. Evan covered the rectangular floor of her living room with a parallelogram-shaped carpet as shown. The floor measures 5 feet by 7 feet. How much of the floor is covered with carpet?
Estimate the area.

6. Peter wanted to make a collage of a park. How much paper would he need to make this pond?
Put On Your Thinking Cap!

Problem Solving

1. Shawn has a piece of cardboard as shown in the diagram. He wants to cut out as many squares as possible from the cardboard. How many squares can he cut if each side of a square is

   a. 2 centimeters long?
   b. 3 centimeters long?
   c. 4 centimeters long?

2. Figure A shows a piece of paper folded to form a square with 8-inch sides as shown in the diagram. Figure B shows one of the flaps opened. Find the area of figure B.
Solve. Show your work.

3. The figure shows two squares. The area of the unshaded part of the figure is 9 square feet. If the sides of both the squares are whole numbers, find the perimeter of the unshaded part.