

# 3-5 Area and Perimeter (Pages 139–145)

Two important measures of rectangles are **perimeter** and **area**. The perimeter of a rectangle is the distance around it. The area of a rectangle is the number of square units that it encloses.

<p><b>Perimeter of a Rectangle</b></p>	<p>If a rectangle has a length of <math>\ell</math> units and a width of <math>w</math> units, then the perimeter is twice the sum of the length and the width.  <math>P = 2(\ell + w)</math></p>	
<p><b>Area of a Rectangle</b></p>	<p>If a rectangle has a length of <math>\ell</math> units and a width of <math>w</math> units, then the area is <math>\ell \cdot w</math> square units.  <math>A = \ell w</math></p>	

## EXAMPLES

**A rectangle has a length of 12 cm and a width of 10 cm.**

**A** Find the perimeter of the rectangle.

$$P = 2(\ell + w)$$

$$P = 2(12 + 10) \quad \ell = 12, w = 10$$

$$P = 2(22) \quad \text{Add 12 and 10.}$$

$$P = 44$$

The perimeter is 44 cm.

**B** Find the area of the rectangle.

$$A = \ell w$$

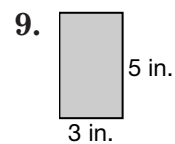
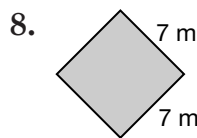
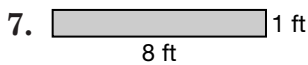
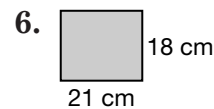
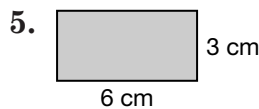
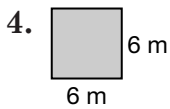
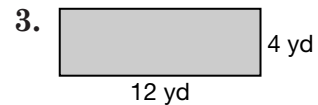
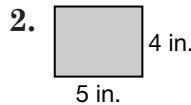
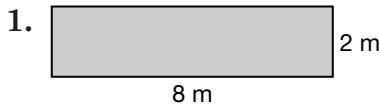
$$A = (12)(10) \quad \ell = 12, w = 10$$

$$A = 120$$

The area is 120 cm<sup>2</sup>.

## PRACTICE

Find the perimeter and area of each rectangle.



**10. Standardized Test Practice** Sara's bedroom is 10 feet by 12 feet. Her bed is 4 feet by 6.5 feet. How much floor space is left open when the bed is in place?

- A** 150 ft<sup>2</sup>                      **B** 120 ft<sup>2</sup>                      **C** 94 ft<sup>2</sup>                      **D** 30 ft<sup>2</sup>

**Answers:** 1.  $P = 20$  m,  $A = 16$  m<sup>2</sup> 2.  $P = 18$  in.,  $A = 20$  in<sup>2</sup> 3.  $P = 32$  yd,  $A = 48$  yd<sup>2</sup> 4.  $P = 24$  m,  $A = 36$  m<sup>2</sup> 5.  $P = 18$  cm,  $A = 18$  cm<sup>2</sup> 6.  $P = 78$  cm,  $A = 378$  cm<sup>2</sup> 7.  $P = 18$  ft,  $A = 8$  ft<sup>2</sup> 8.  $P = 28$  m,  $A = 49$  m<sup>2</sup> 9.  $P = 16$  in.,  $A = 15$  in<sup>2</sup> 10. C