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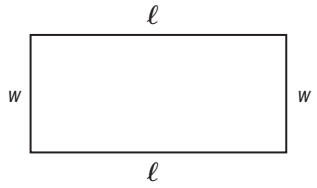
5-1 Study Guide and Intervention

Perimeter and Area

Perimeter Formulas are equations that show relationships among certain quantities. They usually contain two or more variables. You can use formulas to find the perimeter of a figure. **Perimeter** is the distance around a geometric figure.

Perimeter of a rectangle

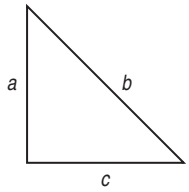


Words The perimeter of a rectangle is the sum of twice the length and twice the width.

Symbols $P = \ell + \ell + w + w$

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

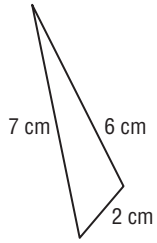
Perimeter of a triangle



Words The perimeter of a triangle is the sum of the measures of all three sides.

Symbols $P = a + b + c$

Example 1 **Find the perimeter of the triangle.**



$P = a + b + c$	Write the formula for perimeter.
$P = 7 + 6 + 2$	Replace a with 7, b with 6, and c with 2.
$P = 15$ cm	Simplify. The perimeter is 15 cm.

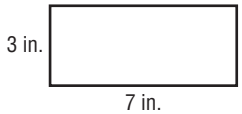
Example 2 **The perimeter of a rectangle is 26 inches. Its length is 7 inches. Find the width.**

$P = 2\ell + 2w$	Write the formula for perimeter.
$26 = 2 \cdot 7 + 2w$	Replace P with 26, and ℓ with 7.
$26 = 14 + 2w$	Simplify.
$26 - 14 = 14 - 14 + 2w$	Subtraction Property of Equality
$12 = 2w$	Simplify.
$\frac{12}{2} = \frac{2w}{2}$	Division Property of Equality
$6 = w$	Simplify. The width of the rectangle is 6 inches.

Exercises

Find the perimeter for each figure.

1.



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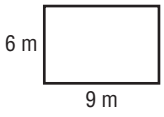

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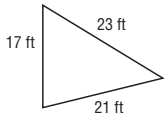

4. Find the length of a rectangle if the width is 4.7 meters and the perimeter is 12.6 meters.

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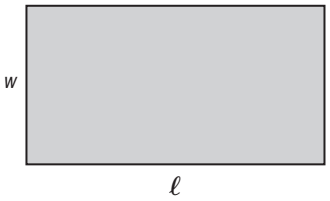
5-1 Study Guide and Intervention *(continued)*

Perimeter and Area

Area Formulas can also be used to calculate the area of a figure. **Area** is a measure of the surface enclosed by a figure and is always given in square units, u^2.

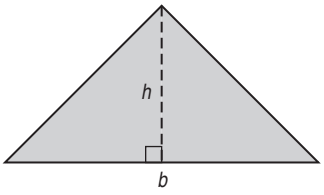
Area of a rectangle



Words The area of a rectangle is the product of the length and width.

Symbols $A = \ell w$

Area of a triangle



Words The area of a triangle is one-half the product of the base and height.

Symbols $A = \frac{1}{2}bh$

Example 1 **The base of a triangle is 14 feet and its height is 4.5 feet. Find its area.**

$A = \frac{1}{2}bh$ Write the formula for area.

$A = \frac{1}{2} \cdot 14 \cdot 4.5$ Replace b with 14 and h with 4.5.

$A = 31.5$ Simplify. The area is 31.5 square feet.

Example 2 **Find the length of a rectangle with an area of 54 square yards and a width of 8 yards.**

$A = \ell w$ Write the formula for area.

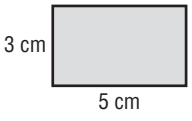
$54 = 8\ell$ Replace A with 54 and w with 8.

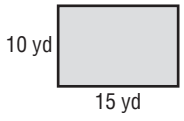
$\frac{54}{8} = \frac{8\ell}{8}$ Division Property of Equality

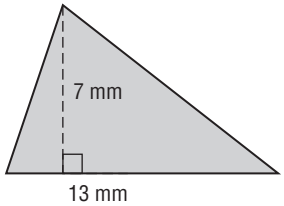
$6.75 = \ell$ Simplify. The length is 6.75 yards.

Exercises

Find the area for each figure.

1. 

2. 

3. 

4. Find the height of a triangle if the area is 48 square millimeters and the base is 24 millimeters.