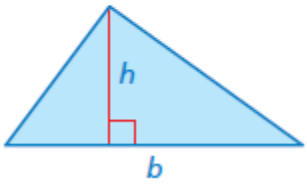
Key Idea

Area of a Triangle

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

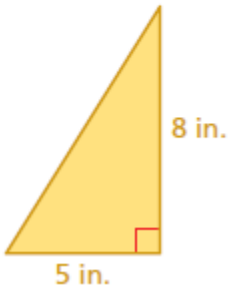
Algebra $A = \frac{1}{2}bh$



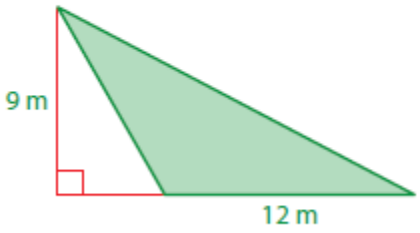
Finding Areas of Triangles

Find the area of each triangle.

a.

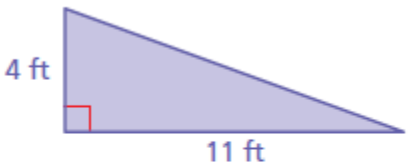


b.



Try It **Find the area of the triangle.**

1.



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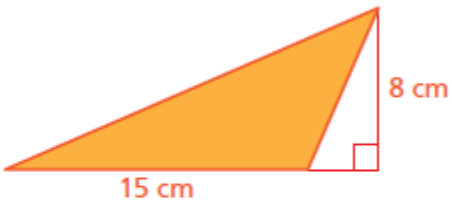

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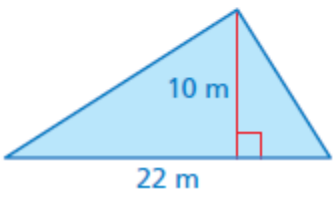

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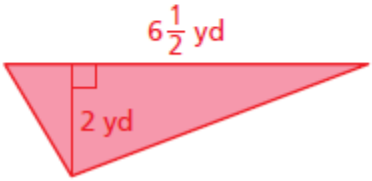
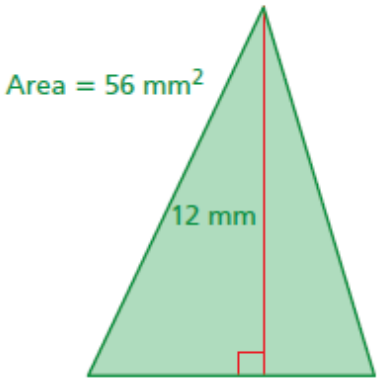


EXAMPLE 2 Finding a Missing Dimension



Find the base of the triangle.

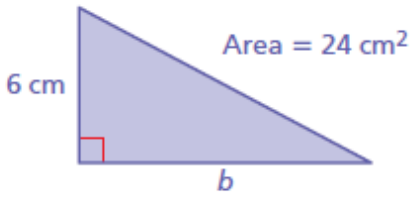
Use the formula for the area of a triangle. Substitute for the area and t
height, then solve for the base.

$A = \frac{1}{2}bh$	Write formula for area of a triangle.
$56 = \frac{1}{2}b(12)$	Substitute 56 for A and 12 for h.
$56 = 6b$	Simplify.
$\frac{56}{6} = \frac{6b}{6}$	Division Property of Equality
$9\frac{1}{3} = b$	Simplify.

So, the base is $9\frac{1}{3}$ millimeters.

Try It **Find the missing dimension of the triangle.**

5.



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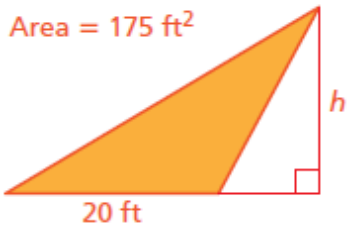
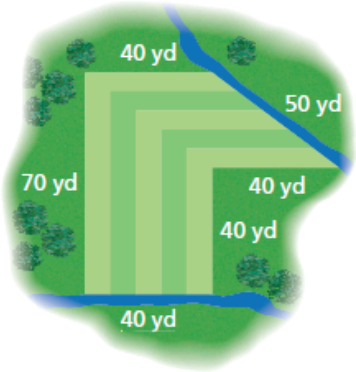


A **composite figure** is made up of triangles, squares, rectangles, and other two-dimensional figures. To find the area of a composite figure, separate it into figures with areas you know how to find. This is called *decomposition*.

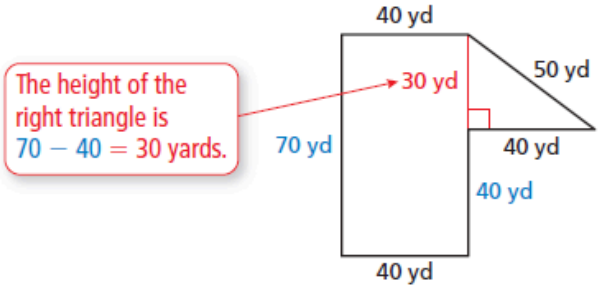
EXAMPLE 3 Modeling Real Life



Find the area of the fairway between two streams on a golf course.

There are several ways to separate the fairway into figures with areas you can find using formulas. It appears that one way is to separate the fairway into a rectangle and a right triangle.

Identify each shape and find any missing dimensions. Then find the area of each shape.



The height of the right triangle is $70 - 40 = 30$ yards.

Area of Rectangle

$$A = \ell w$$
$$= 70(40)$$
$$= 2800$$

Area of Right Triangle

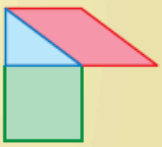
$$A = \frac{1}{2}bh$$
$$= \frac{1}{2}(40)(30)$$
$$= 600$$

Another Method It appears that you can separate the fairway into a parallelogram, a triangle, and a square.

$40(30) = 1200$

$\frac{1}{2}(40)(30) = 600$

$40(40) = 1600$



$1200 + 600 + 1600 = 3400 \text{ yd}^2$ ✓