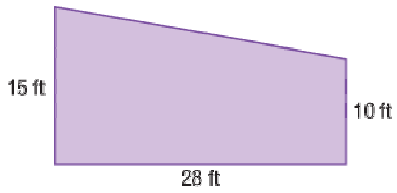
Lesson 2-9

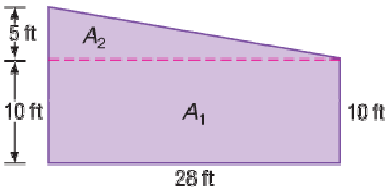
Example 1

Find the area of the garden with dimensions shown.



Solution

Divide the figure into a rectangle and a right triangle.



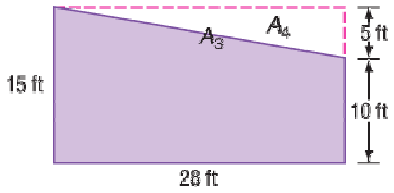
Total area = $A_1 + A_2$

$A_1 = 28 \cdot 10$ $\quad A_1 = \ell \cdot w$ $\quad A_2 = \frac{1}{2} \cdot 28 \cdot 5$ $\quad A_2 = \frac{1}{2} \cdot b \cdot h$

$A_1 = 280$ $\quad A_2 = 70$

$A_1 + A_2 = 280 + 70 = 350$ The total area of the garden is 350 ft^2.

Another way to find the area is to determine the dimensions of the garden as if it were a complete rectangle. Find the area of the complete rectangle, and then subtract the area of the nonexistent triangle from the total area.



Total area = $A_3 - A_4$

$A_3 = 28 \cdot 15$ $\quad A_3 = \ell \cdot w$ $\quad A_4 = \frac{1}{2} \cdot 28 \cdot 5$ $\quad A_2 = \frac{1}{2} \cdot b \cdot h$

$A_3 = 420$ $\quad A_4 = 70$

$A_3 - A_4 = 420 - 70 = 350$ The total area of the garden is 350 ft^2.

Example 2

LANDSCAPING Ms. Phillips is a landscaper who is designing a garden for a city park. The garden will be made up of plants surrounding a fountain. She estimates that the cost of the plants will be \$5/ft^2.

a. To the nearest square foot, how many square feet will be available for planting?

b. About how much will the plants for this garden cost?

Solution

a. Find the area of the larger circle, which has radius 10 feet. Then find the area of the smaller circle, which has radius 8 feet. Subtract the area of the smaller circle from the area of the larger circle.

Area for planting = $A_1 - A_2$

$A_1 = \pi r^2$
$A_1 = \pi \cdot 10^2$
$A_1 \approx 3.14 \cdot 100$
$A_1 \approx 314$

$A_2 = \pi r^2$
$A_2 = \pi \cdot 8^2$
$A_2 \approx 3.14 \cdot 64$
$A_2 \approx 200.96$

$A_1 - A_2 \approx 314 - 200.96 \approx 113.04$

The total area available for planting is about 113 ft^2.

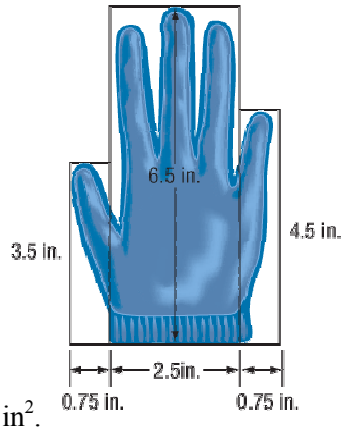
b. Multiply the area by \$5 to find the total cost of the plants.
$5 \cdot 113 = 565$ The plants will cost about \$565.

Example 3

Estimate the area of the top surface of the glove shown.

Solution

Enclose the figure in 3 rectangles.
Find the area of each rectangle,
and add these areas.



Total area = $A_1 + A_2 + A_3$

$A_1 = 0.75 \cdot 3.5 = 2.625$ $\quad A_1 = \ell \cdot w$

$A_2 = 2.5 \cdot 6.5 = 16.25$ $\quad A_2 = \ell \cdot w$

$A_3 = 0.75 \cdot 4.5 = 3.375$ $\quad A_3 = \ell \cdot w$

$A_1 + A_2 + A_3 = 2.625 + 16.25 + 3.375 = 22.25$

The area of the top surface of the glove is about 22.25 or $22\frac{1}{4}$ in^2.