

# Geometry Lesson 40

Objective: TSW find perimeters and areas of composite figures.

Date: \_\_\_\_\_

Period: \_\_\_\_\_

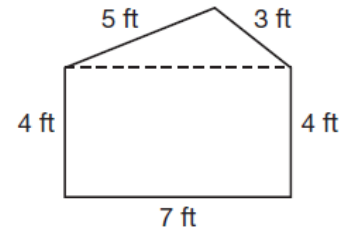
\_\_\_\_\_ Figure - A plane figure made up of simple shapes or a three-dimensional figure made up of simple three-dimensional figures.

The perimeter of a plane \_\_\_\_\_ figure is the sum of the lengths of its sides.

## Example 1 Finding Perimeters of Composite Figures

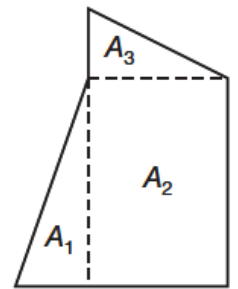
Find the perimeter of the composite figure.

SOLUTION



*Postulate 19: Area Congruence Postulate - If two polygons are congruent, then they have the same area.*

*Postulate 20: Area Addition Postulate - The area of a region is equal to the sum of the areas of its nonoverlapping parts. In the diagram,  $A = A_1 + A_2 + A_3$ .*



The Area Congruence Postulate and the Area Addition Postulate make it possible to find the area of complex composite figures by breaking them down into \_\_\_\_\_ shapes and finding the area of each shape.

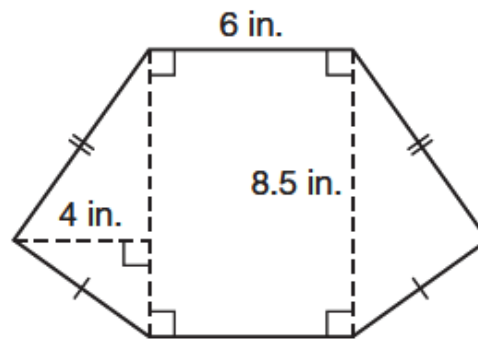
## Example 2 Finding Areas of Composite Figures

Find the area of this composite figure.

SOLUTION

Left triangle:

Rectangle:



### Hint

Sometimes a figure will need to be divided into parts in order to find the area. Look for parts of the figure that appear to be rectangles or triangles and draw dotted lines to indicate how the figure should be divided.

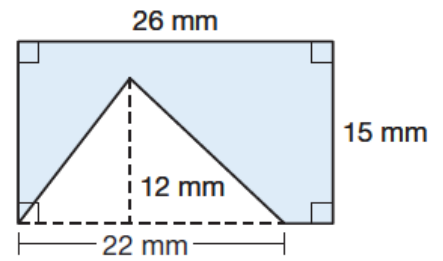
Example 3 Finding Areas of Composite Figures by Subtracting

Find the area of the shaded region.

SOLUTION

Outer rectangle:

“Missing” triangle:

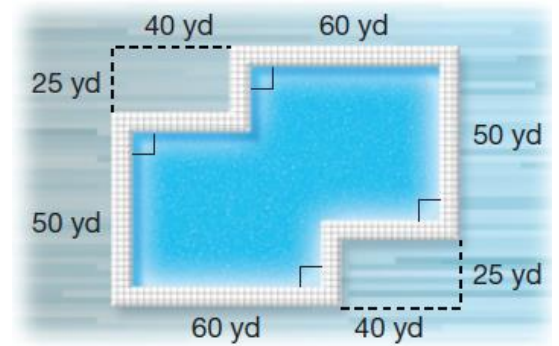


Example 4 Application: Architecture

The diagram shows the plan for a reflecting pool that will form part of a new downtown plaza.

a. The edge of the pool needs to be tiled. What is the perimeter of the pool that will need tiling?

SOLUTION



b. What area of concrete will be needed for the bottom of the pool?

SOLUTION

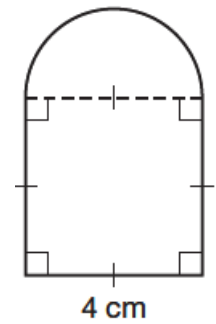
Outer rectangle:

Each “missing” rectangle:

You Try!!!!

Use this composite figure to answer problems b and c.

- b. Determine the area of the figure. Express your answer in terms of  $\pi$ .



- c. A rectangle with dimensions 3-by-1.5 centimeters is removed from the bottom left corner of the figure. Determine the area of the new figure. Express your answer in terms of  $\pi$ .
- d. A new office building has one side in the shape of a right triangle on top of a rectangle. The rectangle is 420 feet tall and 120 feet wide. The triangle's base is 120 feet long and its vertical leg is 160 feet long. What is the perimeter of this side of the building?
- e. How much glass is needed to cover the side of the building in part d?