Name _____ Date _____ Period _____

Lesson 5-4

Reinforce Understanding

Apply Area Concepts to Solve Problems

I can find the area of a composite figure by decomposing it into basic shapes, including a regular polygon split into triangles, and adding or subtracting the areas.

Worked model

A regular octagon has sides of 12 in. A triangle drawn from the center to one side has a height of 14 in. Find the area.

1. A regular octagon has eight equal sides, so it decomposes into eight congruent triangles.
2. Find the area of ONE triangle. ½ × 12 × 14 = 84
3. Every triangle matches, so multiply by how many there are. 84 × 8 = 672

Answer: The area of the octagon is 672 square inches (672 in^2).

Practice

Complete each exercise. Show the reasoning that supports your answer.

1. Sort each composite figure by whether you ADD or SUBTRACT the areas to find the total.

Write the name of the correct group on each line.

Groups: Add the areas Subtract the areas

- _____L-shaped hallway (two rectangles joined)
- _____Wall with a window cut out
- _____T-shaped stage (two rectangles joined)
- _____Floor with a trapdoor removed
- _____U-shaped pool (rectangle with center removed)
- _____Plus-sign shape (rectangles joined)

2. An L-shaped room is made of two rectangles: 10 ft × 6 ft and 4 ft × 3 ft. What is the total area?

Circle the letter of the best answer. Show how you know.

A. 12 sq ft
B. 60 sq ft
C. 72 sq ft
D. 72 ft

3. A rectangular patio is 15 ft × 10 ft with a 5 ft × 4 ft rectangular flower bed cut out. What is the remaining area?

Circle the letter of the best answer. Show how you know.

A. 20 sq ft
B. 130 sq ft
C. 150 sq ft
D. 170 sq ft