

## Lesson 5-4 • Group 1

**Reinforce Understanding****5.4 Small Group • Group 1**

With my small group, 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 — one step at a time, with support.

**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.  $\frac{1}{2} \times 12 \times 14 = 84$
3. Every triangle matches, so multiply by how many there are.  $84 \times 8 = 672$

**Answer: The area of the octagon is 672 square inches (672 in<sup>2</sup>).**

**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. Complete the table.**

Complete the table. Show how you found each value.

| Figure                         | Shape 1 Area | Shape 2 Area | Operation | Total Area |
|--------------------------------|--------------|--------------|-----------|------------|
| L-shaped deck                  | 48 sq ft     | 20 sq ft     | Add       |            |
| Floor with alcove              | 90 sq ft     | 15 sq ft     | Add       |            |
| Wall with window cutout        | 120 sq ft    | 18 sq ft     | Subtract  |            |
| Courtyard with fountain cutout | 200 sq ft    | 36 sq ft     | Subtract  |            |

Show your work