

Lesson 5-9 • Group 2

Reinforce Understanding**5.9 Small Group • Group 2**

I can find the area of a regular polygon by decomposing it into triangles, explain why the method works, and use it on a problem I have not seen before.

Worked model

My hexagon has 6 equal sides. Each side is 6 feet, and each center triangle has a height of 5.2 feet.

1. First I find one triangle: $A = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 6 \times 5.2$.
2. I multiply: $6 \times 5.2 = 31.2$, then $\frac{1}{2} \times 31.2 = 15.6$ square feet.
3. A hexagon has 6 sides, so it has 6 equal triangles.
4. I multiply: $6 \times 15.6 = 93.6$. So the total area is 93.6 square feet.

Practice

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

1. Complete the table.

Complete the table. Show how you found each value.

Polygon	Number of Triangles	Triangle Base	Triangle Height	Area of One Triangle	Total Area
Hexagon	6	6 ft	5.2 ft		
Pentagon	5	8 ft	5.5 ft		
Square	4	5 ft	4 ft		
Octagon	8	4 ft	4.8 ft		

Show your work

2. Match each polygon to its total area.

Write the letter of the matching item on each line.

1. _____ Hexagon: 6 triangles, each $\frac{1}{2} \times 6 \times 5.2$
 2. _____ Pentagon: 5 triangles, each $\frac{1}{2} \times 8 \times 5.5$
 3. _____ Octagon: 8 triangles, each $\frac{1}{2} \times 4 \times 4.8$
 4. _____ Square: 4 triangles, each $\frac{1}{2} \times 5 \times 4$
 5. _____ Decagon: 10 triangles, each $\frac{1}{2} \times 3 \times 4$
 6. _____ Equilateral triangle: 3 triangles, each $\frac{1}{2} \times 4 \times 3$
- A93.6 sq ft
 - B110 sq ft
 - C76.8 sq ft
 - D40 sq ft
 - E60 sq ft
 - F18 sq ft