

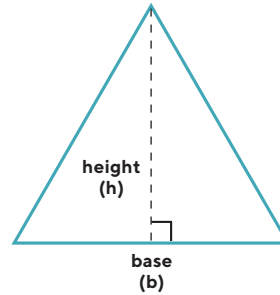


# Geometry Detective #3

## Area of a Triangle



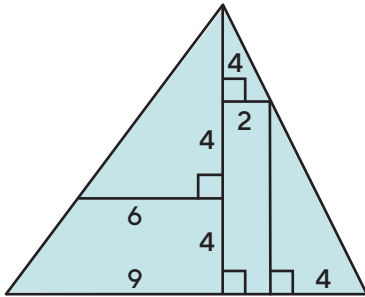
The **area of a triangle** is one-half the length of the base times the height. The **base** of a triangle can be any one of its sides. The **height** is the distance from a base to its opposite point, or vertex. A base must be perpendicular to the height.



**Area of a triangle:**  
 $\frac{1}{2} \times \text{base} \times \text{height}$

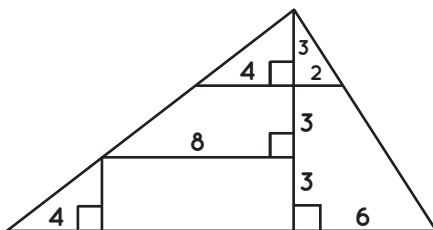
**DIRECTIONS:** Use the formula for the area of a triangle as shown above to calculate the area for the following triangles in square units. Show your work in the right column.

**EXAMPLE:**



**EXAMPLE:**

$$\begin{aligned} \text{base} &= 9 + 2 + 4 = 15 \\ \text{height} &= 4 + 4 + 4 = 12 \\ \text{area} &= \frac{1}{2} \times 15 \times 12 \\ &= 100 \text{ units}^2 \end{aligned}$$

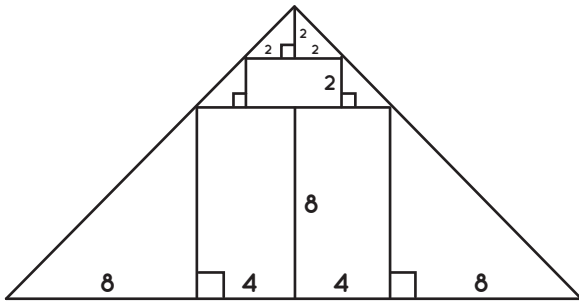


$$\begin{aligned} \text{base} &= 4 + 8 + 6 = 18 \\ \text{height} &= 3 + 3 + 3 = 9 \\ \text{area} &= \frac{1}{2} \times 18 \times 9 \\ &= 81 \text{ units}^2 \end{aligned}$$



## Geometry Detective #3

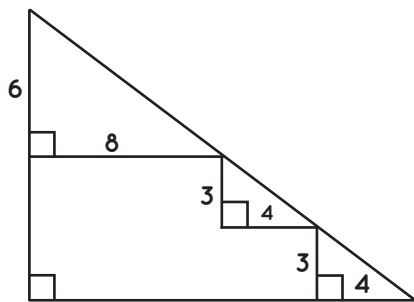
# Area of a Triangle



$$\text{base} = 8 + 4 + 4 + 8 = 24$$

$$\text{height} = 8 + 2 + 2 = 12$$

$$\begin{aligned} \text{area} &= \frac{1}{2} \times 24 \times 12 \\ &= 144 \text{ units}^2 \end{aligned}$$



$$\text{base} = 8 + 4 + 4 = 16$$

$$\text{height} = 3 + 3 + 6 = 12$$

$$\begin{aligned} \text{area} &= \frac{1}{2} \times 16 \times 12 \\ &= 96 \text{ units}^2 \end{aligned}$$

### Challenge!

Look at the last triangle. Without doing the math, explain how you would find the area of that triangle a different way.

You could find the area of the triangle by calculating the area of each rectangle and triangle within the whole triangle. Then you would add those areas to get the total area.