

# THE FORMULA FOR THE AREA OF A TRIANGLE

## Introduction and Background

The area of a triangle, like other polygons, is determined by finding out how many unit squares it takes to cover the triangle. But, as you saw in an earlier *GeoGebra* lab, unit squares don't evenly cover a polygon like a triangle.



You also learned that the area of a triangle can be related to the area of a rectangle, so perhaps a formula for the area of a triangle is related to the formula for the area of a rectangle:

$$\text{Area of rectangle} = \text{base} \times \text{height}$$

For this activity, you are going to generate six different triangles and have *GeoGebra* compute their area in unit squares. Then you will try to find a pattern in your data.

## Step 1. Generating Data on Triangles and their Area



Use the MOVE (pointer) tool to drag the blue corner points of the triangle, changing it into six triangles with *different* heights and bases. As you construct the triangles, fill in the Data Table for each triangle you create.

Data Table			
Triangle	Base in Units	Height in Units	Area in Unit Squares
Triangle 1			
Triangle 2			
Triangle 3			
Triangle 4			
Triangle 5			
Triangle 6			

## Step 2. Search for a Pattern

Look for a pattern in the data.

If you know a triangle's base and height, do you see a way to compute the area of a triangle without counting unit squares on a grid? Remember, the formula for the area of a triangle appears to be related to the formula for a rectangle.

Describe your method and write a formula: