

# FINDING THE AREA OF TRAPEZOID



## Introduction and Background

You can find the area of many polygons even if you can't remember the appropriate formula.

Deconstructing the polygons into smaller, simpler polygons with which you are more familiar can provide a tool for finding area.

Once you know...

1. that the area of a rectangle can be found by using the formula:  
**area of a rectangle = base X height**
2. and that the area of a triangle (since it is half of a rectangle) can be found by using the formula:  
**area of a triangle =  $\frac{1}{2}$  X base X height**

you can deconstruct other, more complex polygons, into rectangles and triangles and find their area in square units.

## Step 1. Build a Trapezoid

When you open the *GeoGebra* file, you see three simple polygons: a red rectangle, a blue triangle, and a green triangle.



Use the MOVE tool to use these three polygons to construct a trapezoid. If you need to rotate a triangle, click on the  **Show/Hide Rotator Points** option.

## Step 2. Find the Areas of the Pieces



Turn on the GRID to use as a measuring tool.

Complete the following calculations:

*Red Rectangle:*      area = base X height  
area = \_\_\_\_\_ units X \_\_\_\_\_ units = \_\_\_\_\_ sq. units

*Green Triangle:*      area =  $\frac{1}{2}$  X base X height  
area =  $\frac{1}{2}$  X \_\_\_\_\_ units X \_\_\_\_\_ units = \_\_\_\_\_ sq. units

*Blue Triangle:*      area =  $\frac{1}{2}$  X base X height  
area =  $\frac{1}{2}$  X \_\_\_\_\_ units X \_\_\_\_\_ units = \_\_\_\_\_ sq. units

*Area of Trapezoid* = \_\_\_\_\_ sq. units + \_\_\_\_\_ sq. units + \_\_\_\_\_ sq. units = \_\_\_\_\_ sq. units

## Step 3. Check your Calculations

Click on the  **Show/Hide Rotator Points** option to hide the rotator points.



Use the AREA tool to label each of the three polygons with their areas. Use this to check your work.