

# DECONSTRUCTING THE PARALLELOGRAM

## Introduction and Background

Polygons can usually be deconstructed (cut up) into smaller polygons. Another way of saying this is that most polygons are really combinations of other polygons. This can be useful information and help with problem solving.

In this activity you will explore parallelograms. Remember the definition of a parallelogram: a quadrilateral (four sided) polygon in which the opposite sides are parallel.

Even though rectangles are a form of parallelogram, in this activity you will focus on parallelograms that are not rectangles, for example:



## Step 1. Build a Parallelogram

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



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

## Step 2. Deconstruct a Set of Parallelograms



Use the MOVE GRAPHICS VIEW tool to move the *GeoGebra* page up, displaying a set of four parallelograms.



Turn on the GRID – it will help with the next constructions.



Use the SEGMENT BETWEEN TWO POINTS tool to construct line segments on the four parallelograms showing how they could be deconstructed into a rectangle and two triangles.

## Conclusions

Non-rectangular parallelograms can be deconstructed into a rectangle and two triangles. This conclusion will be useful in later activities involving finding the area of a parallelogram.