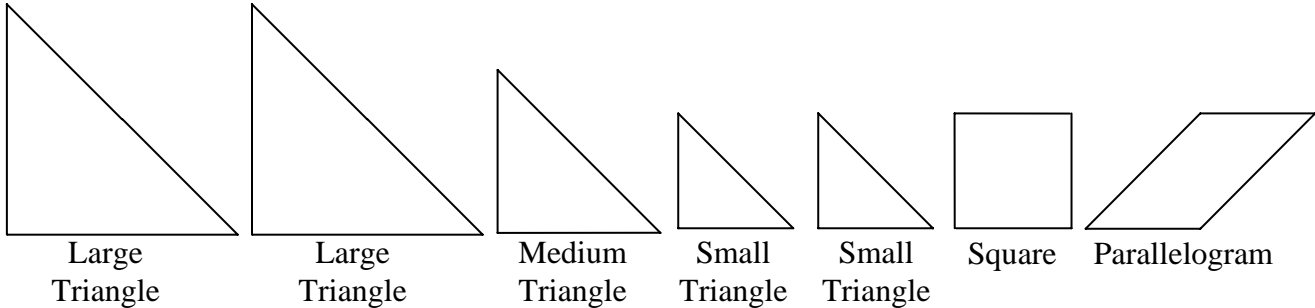


Tangrams

Here are the seven tangram pieces.



Part I

Take your tangrams and think about how the pieces are related to each other. If the small triangle pieces each have an area of one square unit, determine the areas of all of the other pieces?

- a. Complete the table below for all of the other pieces.

Piece	Area
Small triangle	1 unit ²
Medium triangle	
Large triangle	
Square	
Parallelogram	

- b. What is the total area of all seven tangram pieces? _____
- c. Explain how you figured out these areas.

Part II

Your tangram pieces consist of a square, a parallelogram, and three similar right triangles. See how many of those shapes you can make using your tangram pieces. Record the number of pieces used to make each new square, triangle, and parallelogram in the tables. Use the area values from Part 1 to determine the areas of these new polygons. Write which pieces you used for each different area in the “Piece Combinations” column. Draw a sketch of your solution in the “Sketch” column. Record each possible piece combination for the same area and the same number of pieces.

SQUARES

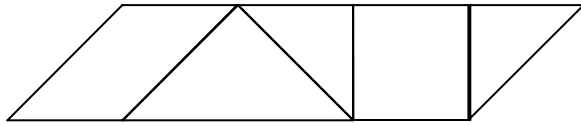
Number of pieces	Area	Piece Combinations	Sketch

Summary:

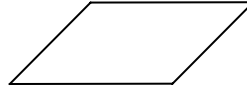
Are there multiple solutions for any number of pieces (1-7)? Are there no solutions for any number of pieces (1-7)? What do you notice about the possible areas for similar squares? Do you notice any patterns?

PARALLELOGRAMS

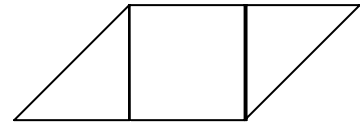
When you make your parallelograms, be sure that they are similar to the parallelogram puzzle piece. For example, while the shape pictured below to the left is a parallelogram, it is not similar to the original puzzle piece, and would therefore not be recorded in the table. The piece to the right, however, is similar, and would be recorded.



Not Similar



Tangram Piece



Similar

Number of pieces	Area	Piece Combinations	Sketch

Summary:

Are there multiple solutions for any number of pieces (1-7)? Are there no solutions for any number of pieces (1-7)? What do you notice about the possible areas for similar parallelograms? Do you notice any patterns? How do the possible areas for the parallelogram compare those for the square?

TRIANGLES

Number of pieces	Area	Piece Combinations	Sketch

Summary:

Are there multiple solutions for any number of pieces (1-7)? Are there no solutions for any number of pieces (1-7)? What do you notice about the possible areas for similar triangles? Do you notice any patterns? How do the possible areas for the triangle compare to those for the square?