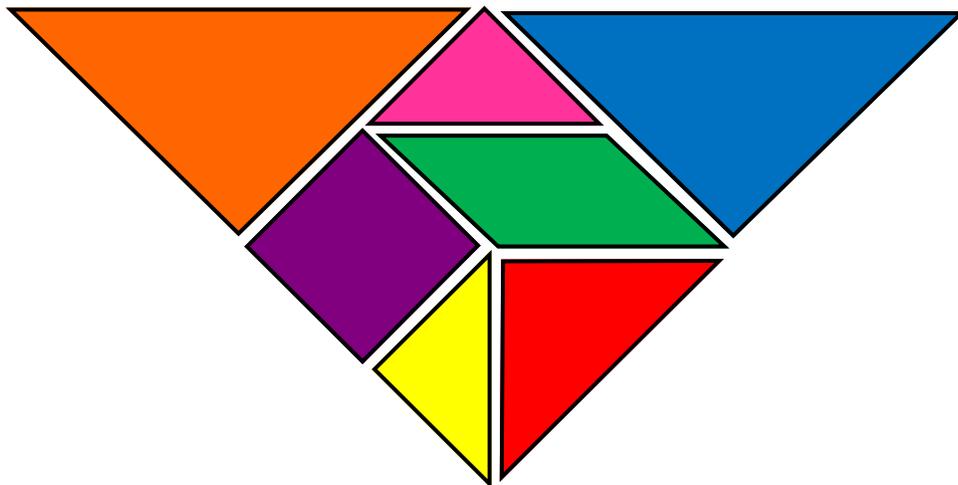


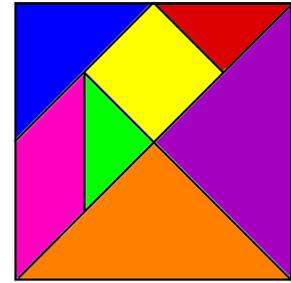
Tangram Polygon Explorations

Explore and Create Polygons With
Tangram Puzzle Pieces



Laura Candler
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Tangram Polygon Explorations



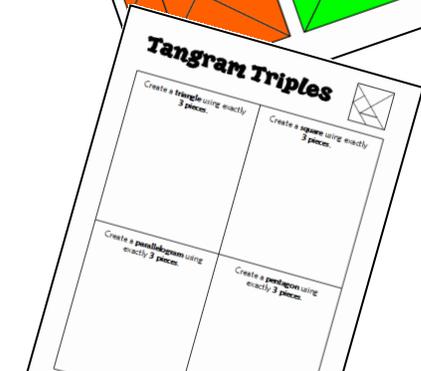
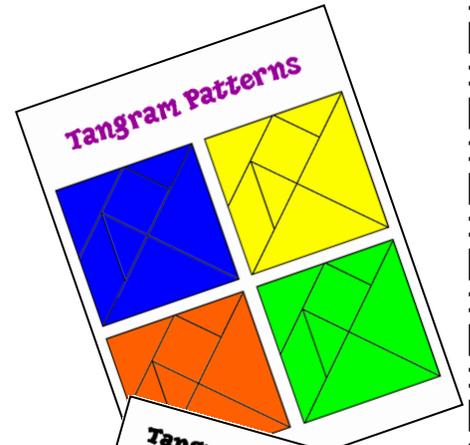
Created by Laura Candler

A tangram is an ancient Chinese puzzle with 7 specific pieces that fit perfectly together to form a square. Those 7 pieces are 2 large triangles, 1 medium triangle, 2 small triangles, a square, and a parallelogram. Children enjoy playing with tangrams and using them to create silhouettes of animals and objects.

I've also found that tangrams are excellent for exploring and reinforcing polygon concepts. Duplicate, laminate, and cut apart one set of tangram patterns for each student, or use plastic tangram shapes. Make sure students start by counting to be sure they have all 7 pieces. It's also best if students who are seated near each other have different colored sets of tangrams.

Start by discussing the various shapes and their attributes, using precise mathematical terms. Then challenge students to create specific polygons with one or more of their tangram pieces, without overlapping them. It's best to start out very simply with the Tangram Doubles activity on page 7 and work up to the more difficult challenges on pages 10 and 11. Give each student one page and work through each challenge, one at a time, allowing students to demonstrate their solutions on an overhead projector or with a document camera. Students will be able to trace their solutions on that page. For example, students might draw the arrangement shown on the right for the problem, "Create a triangle using exactly 2 pieces." As the activity pages become increasingly more difficult, you will no longer be able to trace their pieces but will have to draw their solutions to scale.

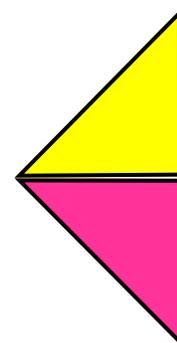
Please note that some solutions are not possible. For example, it's not possible to make a rectangle with 2 pieces (unless the rectangle is a square). Students should write "No solution" if they are absolutely certain that it's not possible to create the given polygon.



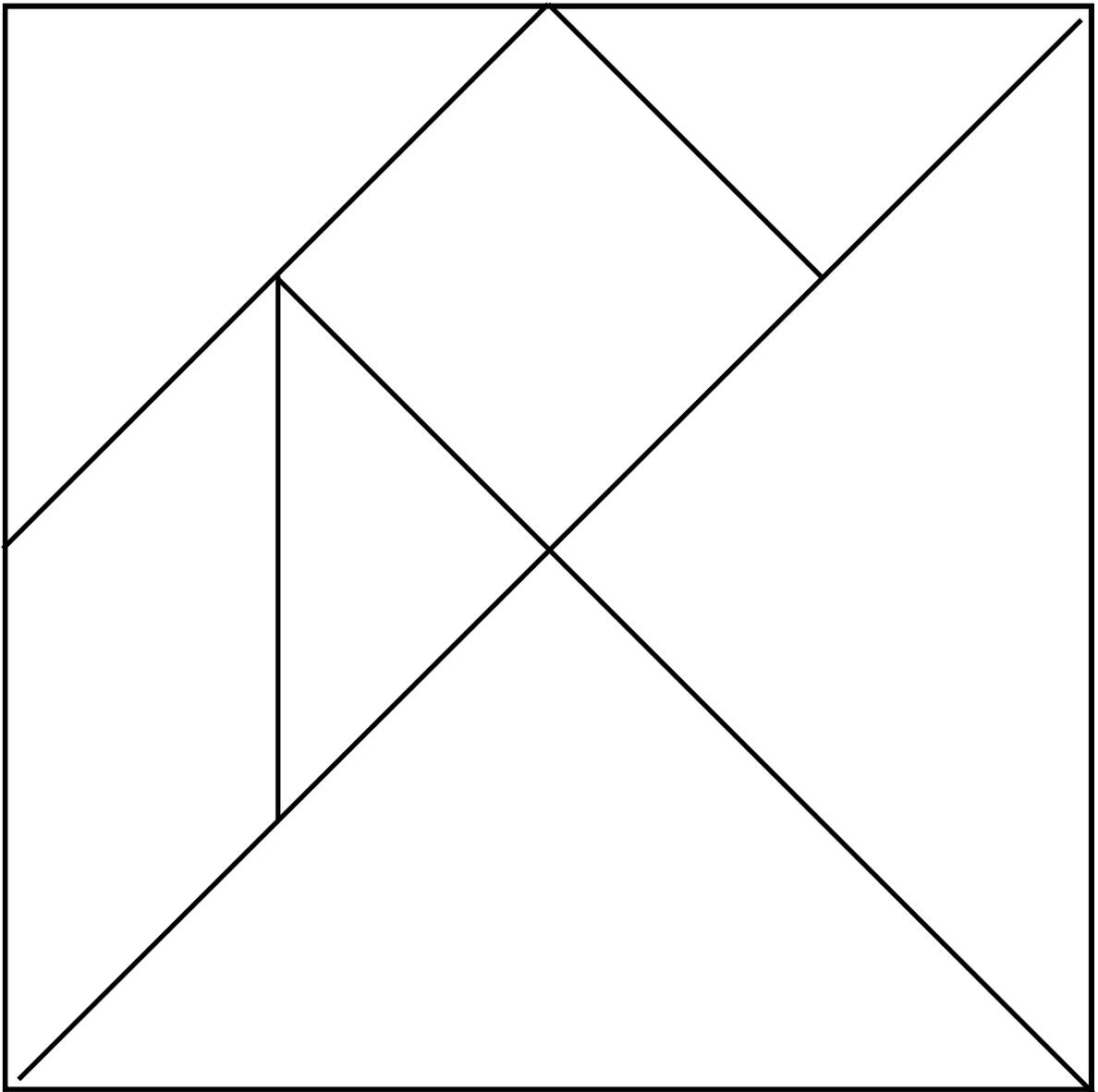
Tangram Polygon Super Challenge Name: _____

For each polygon, use different numbers of tangram pieces. Draw your shape on the grid below. Some shapes may not be possible.

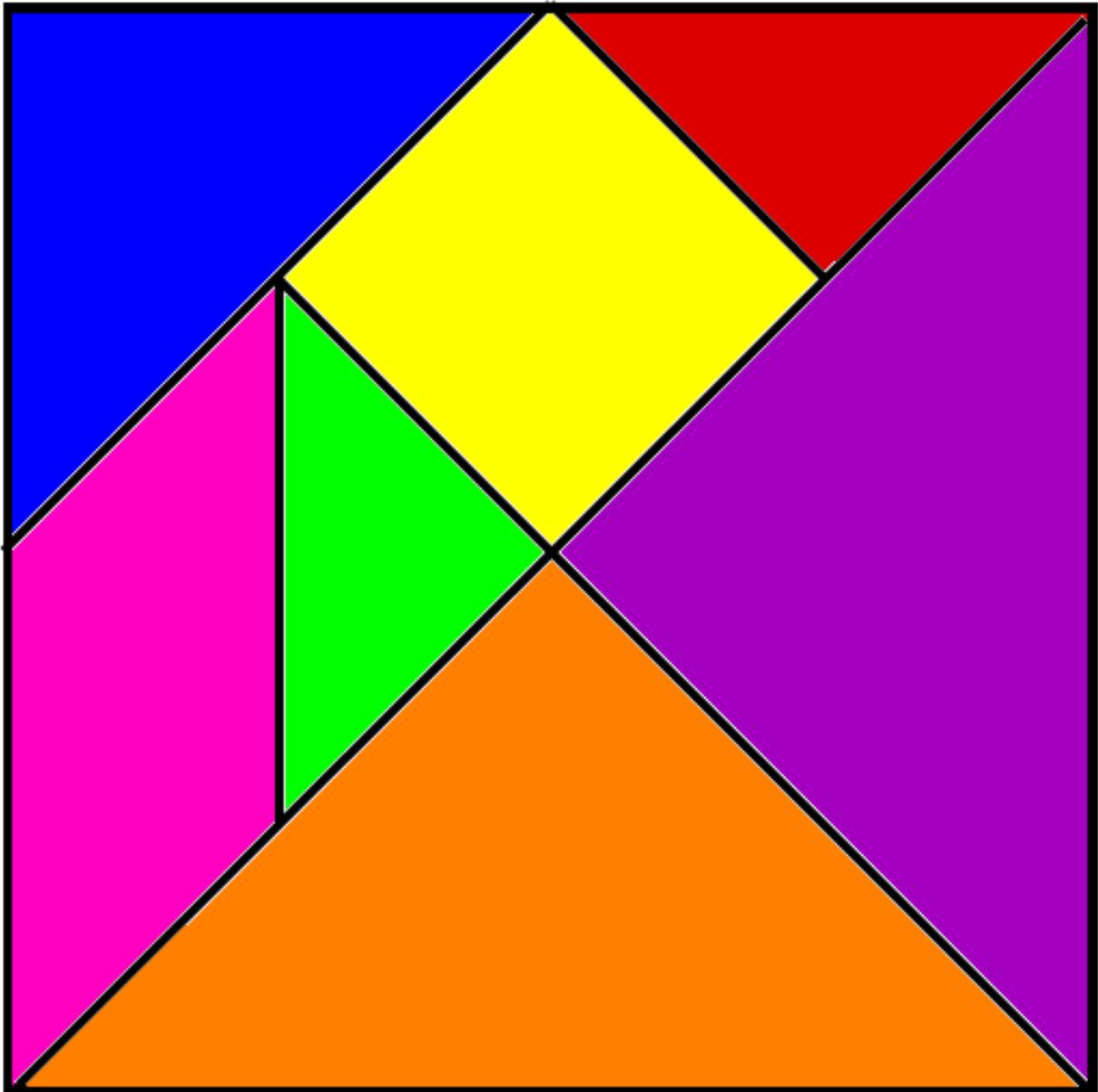
# of Pieces	1	2	3	4	5	6	7
Square							
Triangle							
Trapezoid							
Parallelogram							
Pentagon							



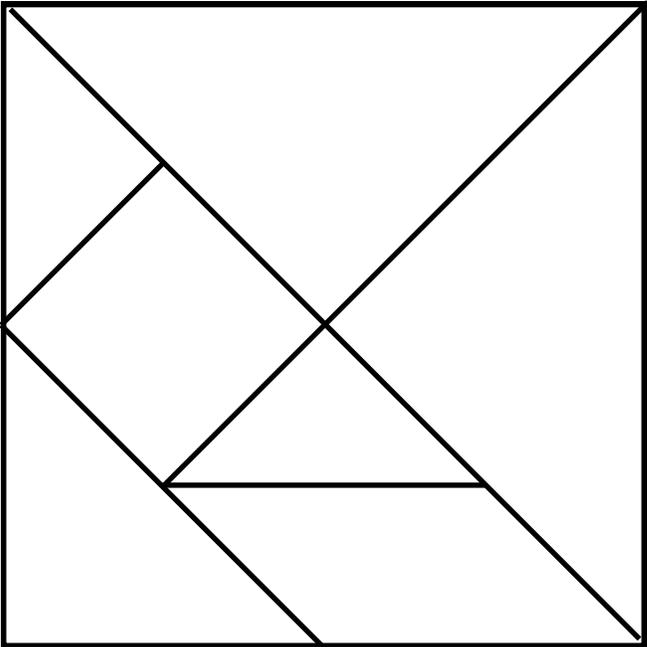
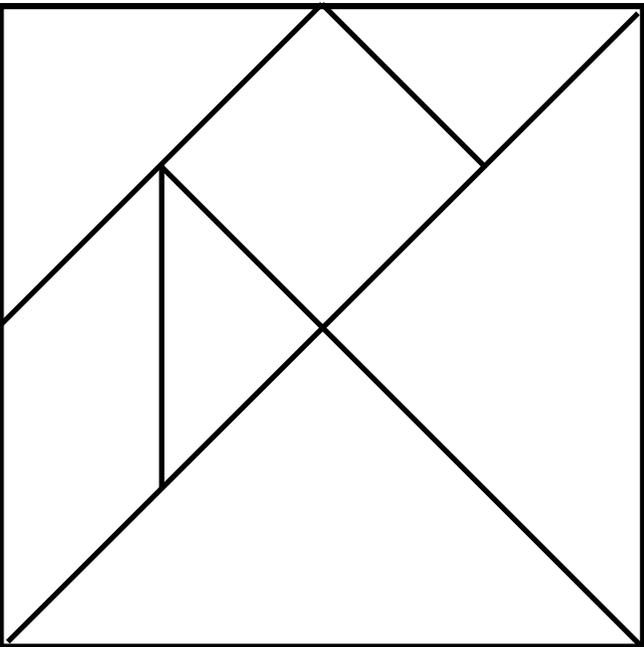
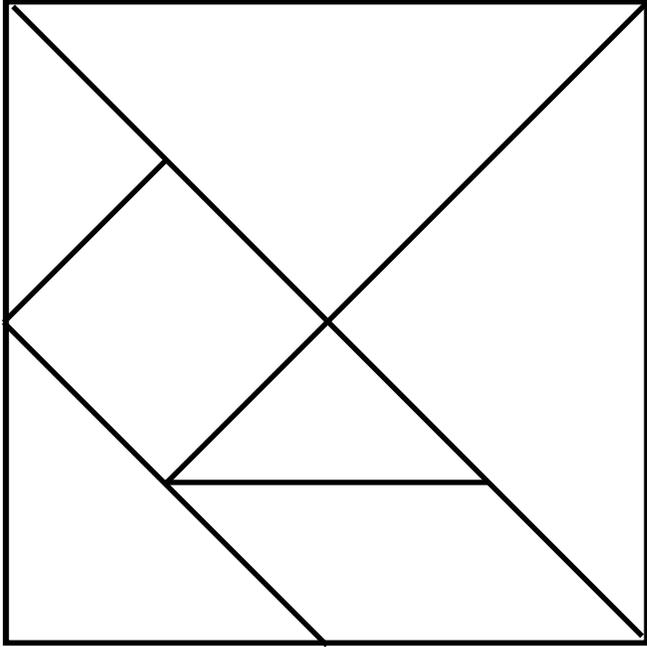
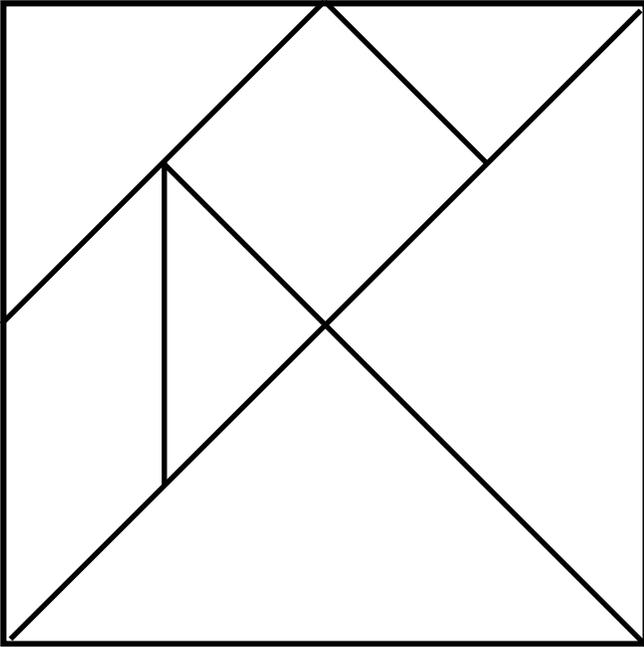
Tangram Pattern



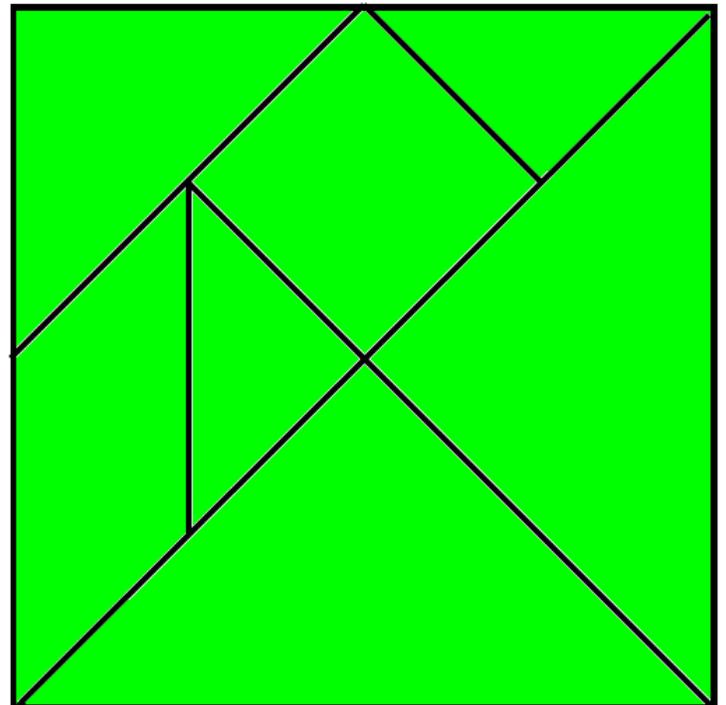
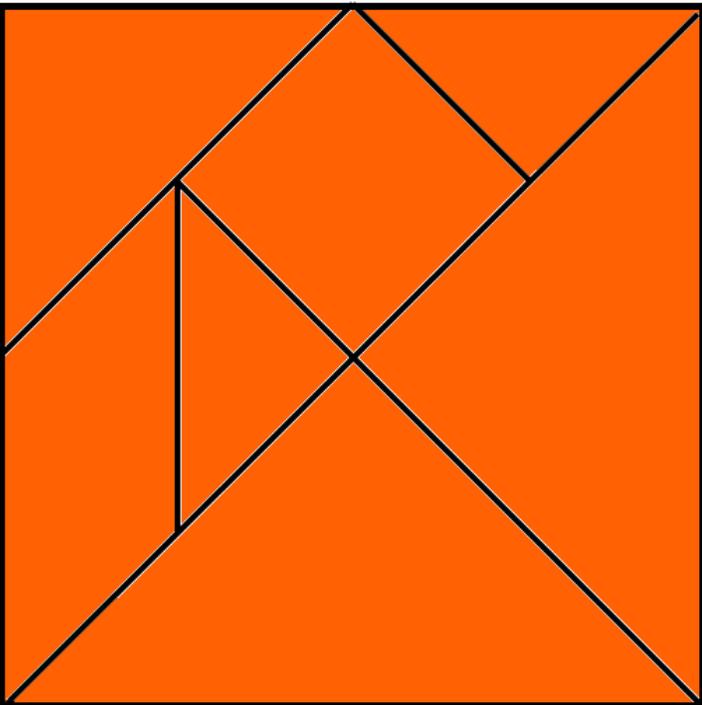
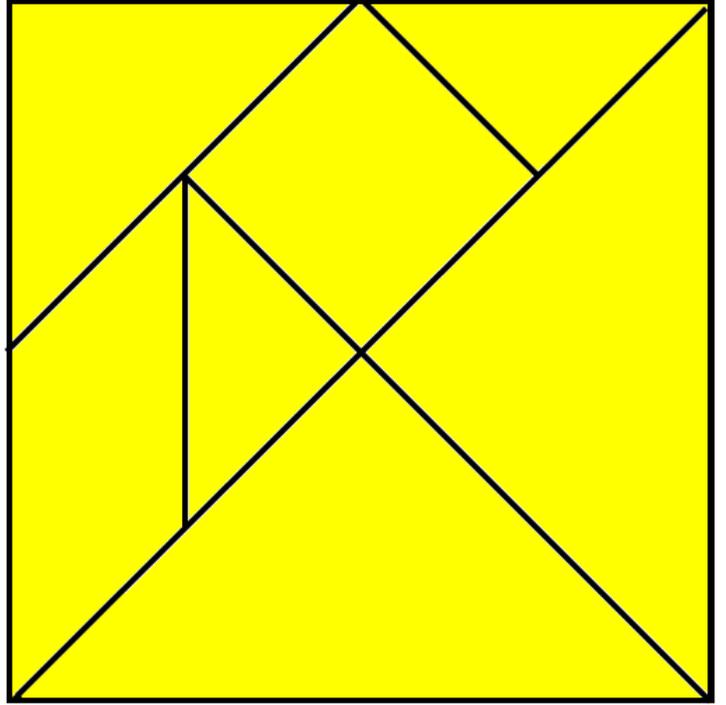
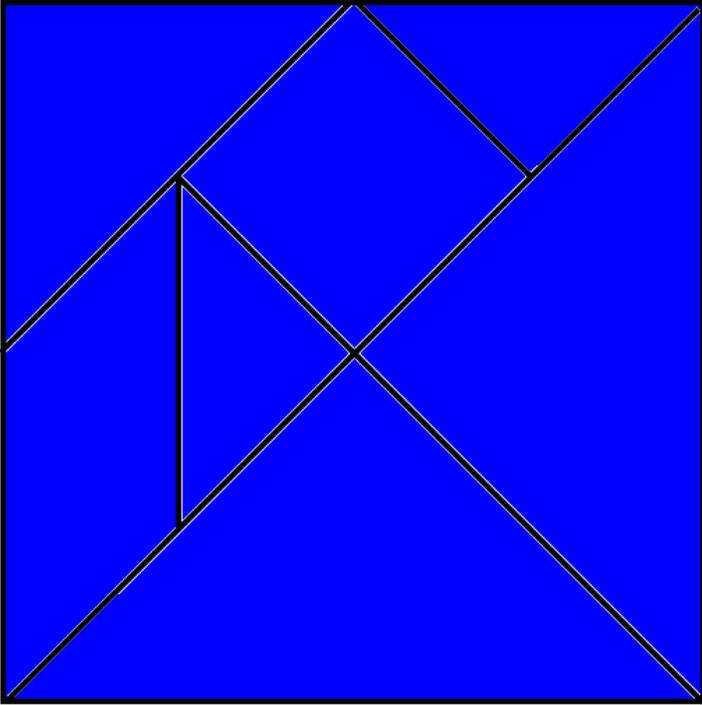
Tangram Pattern



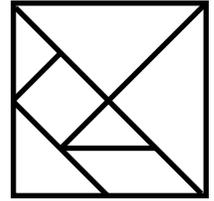
Tangram Patterns



Tangram Patterns



Tangram Duos



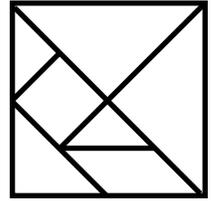
Create a **triangle** using exactly
2 pieces.

Create a **square** using exactly
2 pieces.

Create a **parallelogram** using
exactly 2 pieces.

Create a **trapezoid** using
exactly 2 pieces.

Tangram Triples



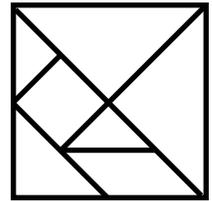
Create a **triangle** using exactly
3 pieces.

Create a **square** using exactly
3 pieces.

Create a **parallelogram** using
exactly 3 pieces.

Create a **pentagon** using
exactly 3 pieces.

Tangram Quads



Create a **triangle** using exactly
4 pieces.

Create a **square** using exactly
4 pieces.

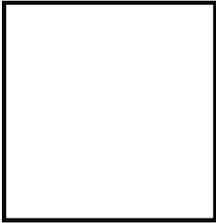
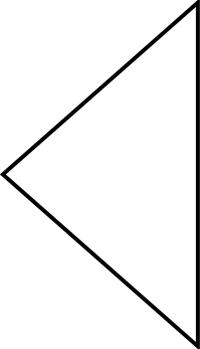
Create a **parallelogram** using
exactly 4 pieces.

Create a **trapezoid** using
exactly 4 pieces.

Name _____

Tangram Polygon Challenge

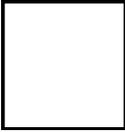
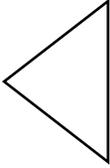
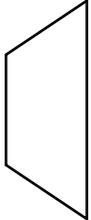
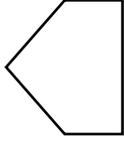
Try making the polygons using different numbers of tangram pieces. Draw your findings on the chart below. Some solutions may not be possible.

Number of Pieces →	1	2	3	4
 <p>Square</p>				
 <p>Triangle</p>				
 <p>Rectangle</p>				

Tangram Polygon Super Challenge

Name _____

Try making the polygons using different numbers of tangram pieces. Draw your findings on the chart below. Some solutions may not be possible.

# of Pieces →	1	2	3	4	5	6	7
 Square							
 Triangle							
 Trapezoid							
 Parallelogram							
 Pentagon							



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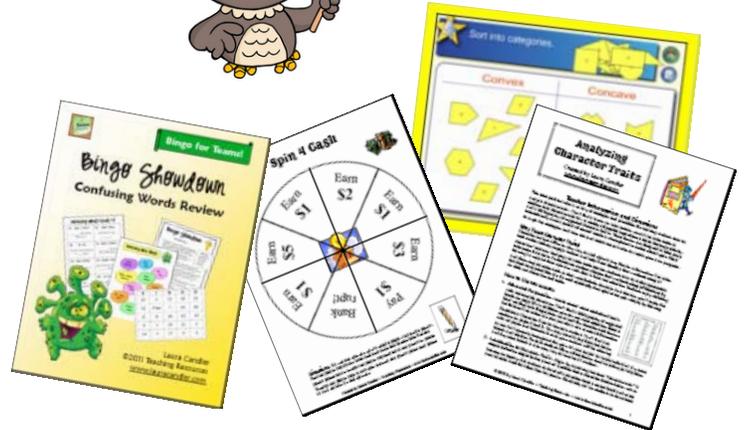
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