

Tangrams

One of my pet peeves is the collections of cute pictures you can make with tangrams, pretending to be math problems. Maybe reproducing the pictures with tangrams involves some sort of geometric intuition, but I wouldn't call it a math lesson.

Here's what I do with them (with my preservice elementary teachers).

Assume that the small square has area 1. Find the areas of all the pieces.

Can you make all the pieces on a geoboard, choosing some square on the geoboard for the small square?

Put the pieces together to make a square. Find the area of the square.

Make some simple pictures with the tangrams and find their areas.

Make as many different squares as you can with tangrams (record your results with a sketches on graph paper.)

What are their areas?

When you have a collection of squares made by various people, you can discuss what should be meant by "different"--different shape? Different size? Made with different pieces? Made with the same pieces, but combined in a different way?

How could you figure out whether all possible ones have been found?

Make as many triangles as you can. Are they all similar?

Make as many rectangles as you can. Are they all similar?

(Parallelograms, trapezoids, etc.)

Make up a new set of tangrams that fit together to make a square.

(Use graph paper.) Find the areas of all the pieces. Can you make any different interesting shapes with your tangrams?