

# TEACHER PAGE



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## Lesson: Terrific Tangrams Teacher-Authors: Nellie Jo Hendricks ASSET Animator: Harue Yoshida

### New Arizona Math Strand 4 Geometry and Measurement

Grade 3

**Articulated 4M31-O1** Build geometric figures with other common shapes.

### Old Arizona Math Standard 4: Geometry Foundations 2

Grades 1-3

**4MF2-PO1** Build geometric shapes with other common shapes (e.g., tangrams, pattern blocks, geoboards)

**Learning Objectives:** The student will be able to:

- Identify all 7 shapes of a tangram
- Explain the process of change in making new shapes out of a limited number of shapes
- Explain the meaning of the word rotation in tangrams.

### Overview:

Students manipulate basic shapes to create new shapes and explain the results in making new shapes with the limitation of a precise number of pieces. This is a pre-transformation activity. There are web activities in the lesson and a print request in **Talk About It!**

### Engage students:

Students will need to follow directions in finding the 7 exact, and listed, pieces for tangrams from pre-cut pieces stored in a container. Or teacher demonstrates on the overhead the manipulation of, perhaps, the two larger triangles from a set of tangram pieces to explore new shapes. Students should be invited to the overhead, or at their desks, to explore the same phenomenon. Explore the reason for tangrams in developing spatial sense. At home, does someone move the furniture around with sometimes good and sometimes not so good results? How do scientists use this “spatial sense” information? Allow students to predict the way shapes can be changed, changed by combining shapes, and changed by dividing them.

### Content:

The activity of building geometric shapes with other common shapes transcends basic identification, naming, and naming attributes to another layer of understanding of geometric properties. The understanding of spatial sense can be reached either from the whole to the parts or vice versa. Tangrams give practice with both. Think of art projects that relate to this concept and use them to transfer this skill to another level. The word rotation is used in the lesson—be sure students understand this term. This lessons is also available with English narration and script.

### Follow-up, extensions:

There are many web sites that help students explore tangrams. One is given in the lesson and this one from Math Forum ought to remain stable. Two more good sites are:

<http://pbskids.org/sagwa/games/tangrams/>

<http://www.ex.ac.uk/cimt/puzzles/tangrams/tangint.htm>

Develop a center for tangram puzzles. Encourage students to make up their own puzzles. There are many commercial games that follow the principles of spatial sense. Suggest students look over their games and bring them to school to demonstrate or describe them.

### Assessment:

The student will fill tangram shapes without the aid of guidelines. Students may check the results. Other tests may involve placing triangles together to make other triangles, or dividing a triangle or rectangle into smaller ones.

