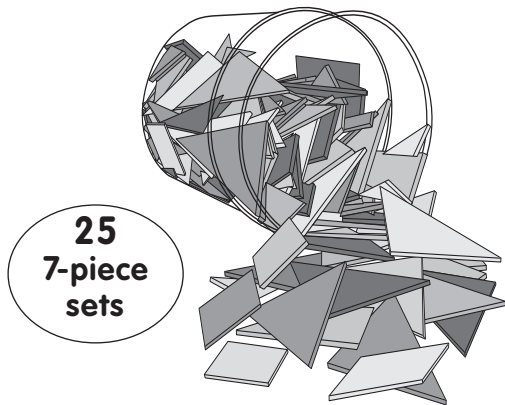


Tangrams



Tangrams are 7-piece puzzles that can be assembled into a square—or thousands of other shapes! They're ideal for improving spatial reasoning and many other essential math skills.



WARNING:

CHOKING HAZARD—Small parts.
Not for children under 3 yrs.

Designed to meet these objectives:

Math

- Students will identify and compare 2-D shapes.
- Students will create and extend patterns.
- Students will combine shapes to create new shapes.
- Students will demonstrate an understanding of symmetry.

Activities

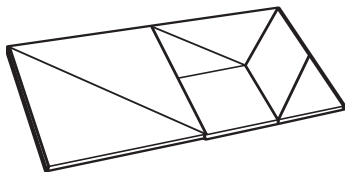
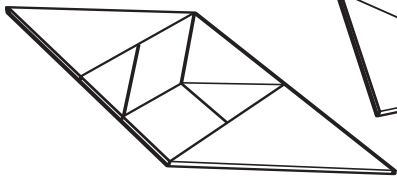
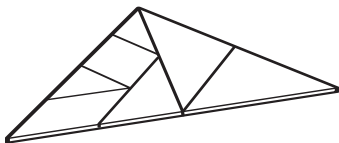
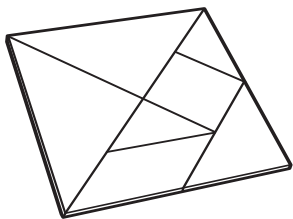
Identifying & Comparing Shapes

Help students identify the 7 tangram shapes: 2 small triangles, 2 large triangles, 1 medium triangle, 1 square, and 1 parallelogram. Explain that shapes such as the two small triangles that are identical in size and form are said to be *congruent*. Shapes such as the small, medium, and large triangles that are identical in form but not in size are said to be *similar*. Discuss the properties of each shape while introducing terms like *line*, *angle*, *vertex*, *side*, *diagonal*, and *parallel*. Prompt students to compare the shapes by asking, "Which shapes have more than 3 sides? Which ones have parallel sides? How many triangles are there? How are they alike? How are they different?"

Combining Shapes

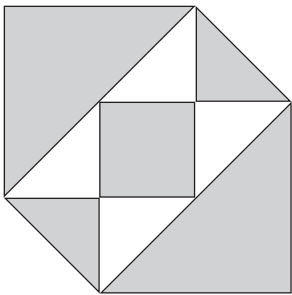
Ask if anyone can use two small triangles to copy the shape of the square. What other shapes can they copy with two small triangles? What shapes can be used to copy the large triangle?

Next, model how the tangrams can be combined to create a square. Have students duplicate the square, then challenge them to use all seven tangram pieces to form a rectangle, parallelogram, or triangle.



Creating and Extending Patterns

Use tangram pieces to create a simple design such as the one at right. Ask a volunteer to duplicate your design, then extend it by adding more tangram pieces. Repeat with other patterns. Prompt students to use the tangrams to create their own designs for other children to duplicate.



Understanding Symmetry

Discuss the concept of *symmetry*. Explain that a symmetrical shape can be divided into two halves that are mirror images of each other. Ask, "Which of these tangram pieces are symmetrical?" (All except the parallelogram.) Have children trace one of each tangram shape onto paper. Then, prompt students to cut out the shapes and find their lines of symmetry by folding the shapes in half. How many different lines of symmetry can they find for each shape?

Challenge children to combine two identical shapes to form a new shape. Is the new shape symmetrical? Why or why not?