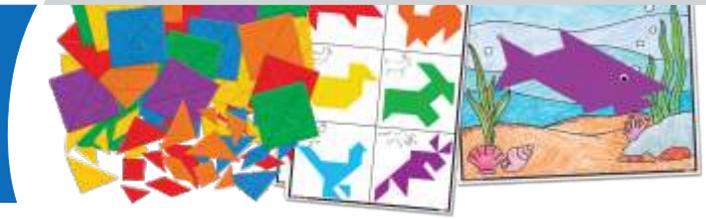
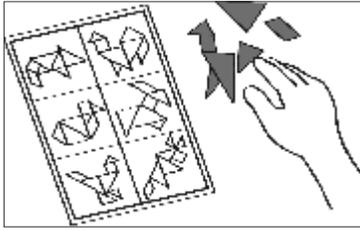


No. 15663

Tangram Puzzle Mosaics



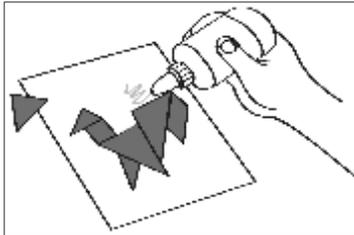
Make people, animals, plants, buildings and vehicles with only 7 tangram puzzle shapes. Tangram is the centuries-old puzzle game that can be played by anyone anywhere! Use your own tangram puzzles or visit our website to print off 72 puzzle cards.



We've created three different versions of the puzzle cards. The easiest set shows the shapes at actual size with outlines. The second set features the shape outlines that are smaller than the actual size. We've put six puzzles on one sheet. The hardest version shows the

puzzles in silhouette with no hints.

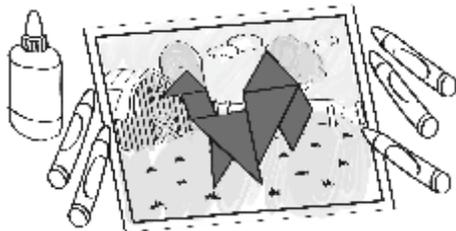
Print each puzzle card onto letter size or A4 paper. Children arrange the mosaics according to the puzzle cards and then glue their completed puzzles onto paper.



To extend this activity, we've created scenery sheets that you can access at www.Roylco.com/product/R15663. There are six scenes that relate to the puzzle cards. There are twelve puzzles for each of the scenes. Children can color in the scenes and then arrange and glue their

mosaics over top.

Our Tangram sets come in 6 different colors. They are die cut for children to easily separate the shapes. All Tangram sets feature 7 shapes: 2 large triangles, 2 small triangles, one medium triangle, a square and a parallelogram or rhomboid.



Encourage children to design their own puzzles. There are several important rules that students should know before they design their Tangrams:

1. Make 1 design at a time. Every design must use ALL 7 Tangram shapes in a set.
2. Each Tangram shape must lie flat.
3. No Tangram shape can overlap another Tangram piece.
4. All Tangram shapes must touch.

Learn about the properties of these different shapes as your students separate their Tangram sets. Talk about the number of

sides and corners or vertices. Arrange shapes into similar piles and then learn the names of each shape. Once students have all their Tangram pieces in front of them, hand out puzzle cards to each group of children. Tip: Hand out a theme of Tangram images to each group of children. This will help you keep track of which scenery artwork will match students' Tangrams. Instruct the groups to arrange their individual Tangrams using the puzzle cards as reference. Each child should make their own distinct Tangram that's different from their neighbors'.

Each of the puzzle cards represents a Tangram theme. There are 72 Tangram images in total that are separated into 6 themes. These include the Arctic, safari, ocean, desert, forest and farm themes. Each Tangram has its own thematic scenery artwork that can be found online at www.Roylco.com/artwork/R15663art.pdf. Enter the item number and click on 'Artwork' to access the resources. Download the resources and print out the scenery themes that match the students' images. Once students have completed their Tangrams, they can color in their scenery with markers or crayons. Paste Tangrams onto colored scenery.

Use this economical method to integrate math into art while developing fine motor and problem solving skills. Learn about geometry, properties of figures, sorting, mathematical vocabulary, shape and color recognition.

CURRICULUM CONNECTIONS

- Teach basic geometry
- Explore creative math materials
- Solve fun puzzles
- Distinguish colors and shapes
- Develop dexterity
- Learn about Tangram history

Tangrams was a popular puzzle game in the 16th to 20th centuries. It had originated in China as a popular pastime for women and children but after European sailors opened trade routes with the East, Tangrams quickly became a revolutionary hobby game for people of all ages and backgrounds around the world.

In the 1800s, Tangrams were marketed in a variety of different materials such as wood, metal, glass, earthenware and ceramic which added to their appeal. Since almost anyone could play it at any time, many Tangram sets were made and used during the First World War as a form of portable entertainment.

Each shape in the Tangram is called a "tan." Each Tangram is in fact a solid square that has been divided into proportionate sections or shapes. Proportionate shapes are shapes that are divided in various ways to show how they all make up a whole shape together. All the shapes combine to make a solid square or triangle.

Each Tangram shape "fits" with the other shapes in a set

because all 7 shapes share similar angles. Angles are the measurements of two lines that meet at a point that signify how close they are to each other. An angle is like a "turn" or how far one line "turns away" from the other line. All shapes have angles since all shapes have lines that meet at a point. These angles can be measured by a special tool called a protractor.

A protractor looks like a semi-circle with a straight line for its base. It has many lines reaching out from its base that make it look a bit like the sun setting. Protractors usually have tiny clear circles at the bottom of those radiating lines.

To measure an angle, place the protractor over top of an angle. Make sure the corner (or vertex) of the angle is dead center in that small clear circle. Line up the bottom angle line with the base line of the protractor. Note: An angle can face either left or right but a protractor can always measure both sides. Make sure the bottom angle line and the protractor base line match completely. Look to where the other angle line turns away from the bottom base line. How far is it turning away? Each radiating line in the protractor has a number on it to help you measure the distances.

Some shapes like the ones in the Tangrams have 45 degree angles, such as the parallelogram and triangles; some have 90 degree angles such as the square; while others have 135 degree angles such as the wide interior angle of the parallelogram.

The tans can be arranged in a variety of ways to produce thousands of Tangrams. There are even alternate ways of making the same image!

In the original Tangrams game, the parallelogram shape can be flipped to complete the image, however we have printed a single color onto the Tangram sets to make it easier for children to complete their Tangrams.

As children experiment with their Tangrams, they will learn how to evenly align the pieces and build their puzzle solving abilities by matching and arranging all the shapes together. Once they have completed their Tangrams, they can try out more Tangram challenges or simply make up their own! Be sure to print out extra copies of scenery artwork for children to use. If they have come up with a new original design, paste the design onto scenery, or encourage children to draw and color in their own backgrounds.

Play a game of Tangram-Mania! Start with a group of 4-6 players. Each person must have their own Tangram set. Make sure the shapes in the Tangram set are already separated. Hand out a photocopy of the challenge Tangram image to each person. Someone must yell "Start!" for children to begin arranging their Tangrams. The first person to successfully complete their Tangram wins! Tip: Challenge players by handing out photocopies of a harder silhouette puzzle card. Alternatively, use a stopwatch to measure how fast each player can arrange different Tangrams.

If students want to reuse their Tangram sets, ask them to figure out how to use all 7 pieces to construct a square, rectangle or triangle. The Tangram sets must be separated into their individual shapes before children begin. Hint: Further challenge your students' abilities by combining two sets of Tangrams that are different colors, preferably in sharp contrast to each other such as red and blue. Use the resulting 14 shapes to make a rectangle, triangle or square.