

Exploring Tangram Puzzles

Objective: Students will be able to create and solve tangram puzzles using geometric shapes.

Assessment:

Students will complete a tangram puzzle worksheet where they will create their own tangram design and identify the shapes used. They will also explain how they created their design verbally or in writing.

Key Points:

- **Tangram Shapes:** Understand the seven pieces (tans) of a tangram: 2 large triangles, 1 medium triangle, 2 small triangles, 1 square, and 1 parallelogram.
- **Geometry in Action:** Recognize how shapes can combine to form new shapes and figures.
- **Problem Solving:** Learn to manipulate and rotate shapes to fit them together in a puzzle.
- **Creativity and Design:** Encourage creativity in creating unique tangram shapes and designs.
- **Collaboration:** Work together in pairs or small groups to share ideas and strategies.

Opening:

- Begin with a brief discussion on shapes: Ask students what shapes they see around them and how they can be combined.
- Introduce tangrams by showing a completed tangram puzzle image and asking students, "What do you think these shapes can create?"
- Engage students with a simple challenge: "Can you guess what this tangram puzzle represents?"

Introduction to New Material:

- Explain the seven pieces of a tangram puzzle and their names.
- Demonstrate how to manipulate the pieces, showing how they can fit together to make different designs.

- Present examples of both simple and complex tangram designs.
- **Common Misconception:** Students may think that all shapes must be used in every design; clarify that some designs may use only a few pieces.

Guided Practice:

- Pair students and distribute tangram sets for hands-on practice.
- Set expectations: students should take turns demonstrating how they can create different shapes.
- Start with simple shapes (like a square or triangle) and gradually increase the complexity (like animals or objects).
- Encourage students to ask questions and discuss their strategies with their partners.
- Monitor student performance by walking around the room, providing feedback and support as needed.

Independent Practice:

- Students will receive a tangram worksheet where they must create their own design using at least five of the seven pieces.
- Clearly outline expectations: they should label each shape they used and provide a brief description of their design process.
- Remind students to check their work for creativity and accuracy.

Closing:

- Ask students to share their designs with the class or in small groups.
- Facilitate a discussion on what they learned about shapes and how they worked together to create their tangram puzzles.

Extension Activity:

- For students who finish early, provide additional tangram challenge cards with specific designs to recreate or more complex shapes to invent.

Homework:

- Assign students to find a tangram puzzle online or in books, complete it, and write a short paragraph about the experience, including what shapes they used.

Standards Addressed:

- **Common Core Geometry Standard 3.G.A.2:** Understand shapes and their attributes.
- **Mathematics Practice Standard 4:** Model with mathematics.

Here are some online resources for tangram puzzles:

1. National Geographic Kids - Tangram Puzzles

- A fun interactive site that provides tangram puzzles along with history and background information about them.
- Link: [National Geographic Kids](#)

2. Toy Theater - Tangram Puzzles

- An interactive platform that allows students to play with tangram pieces online and create their own designs.
- Link: [Toy Theater Tangram](#)

3. Tangram Game - Online Puzzle

- This website offers a variety of tangram puzzles to solve with varying levels of difficulty.
- Link: [Tangram Game](#)

4. Cool Math Games - Tangram

- A fun game site that features tangram puzzles where students can drag and drop pieces to complete shapes.
- Link: [Cool Math Games](#)

5. PBS Kids - Tangram Puzzles

- Provides engaging tangram activities and games suitable for younger students, focusing on shape recognition and problem-solving.
- Link: [PBS Kids Tangram](#)

6. Math is Fun - Tangrams

- Offers explanations, tutorials, and printable tangram puzzles for students to work on offline.
- Link: [Math is Fun Tangrams](#)

These resources can provide additional practice and enhance students' understanding of tangram puzzles while making learning enjoyable!

Here are some engaging activities to accompany tangram puzzles:

1. Tangram Design Challenge

- **Objective:** Encourage creativity and critical thinking.
- **Activity:** Students create their own unique shape using the tangram pieces. They then present their design to the class, explaining how they created it and what inspired them.
- **Materials Needed:** Tangram pieces, paper, and markers for presentations.

2. Storytelling with Tangrams

- **Objective:** Integrate language arts with math.
- **Activity:** After creating a tangram shape, students write a short story or description about what their shape represents. They can create a character or scene based on their design and share it with the class.
- **Materials Needed:** Tangram pieces, paper, and writing materials.

3. Tangram Puzzles Relay Race

- **Objective:** Promote teamwork and physical activity.
- **Activity:** Divide students into teams. Set up a relay race where each student must run to a tangram station, pick a puzzle to complete, and then return to tag the next teammate. The team that completes the most puzzles in a given time wins.
- **Materials Needed:** Tangram puzzles printed or displayed at stations.

4. Tangram Art Gallery

- **Objective:** Combine art and math concepts.
- **Activity:** Students create a series of tangram shapes that represent different themes (animals, objects, etc.). Once completed, display the shapes in a classroom "art gallery." Students can walk around and vote for their favorite designs.
- **Materials Needed:** Tangram pieces, construction paper, and markers for decoration.

5. Tangram Math Problems

- **Objective:** Enhance math skills through tangrams.

- **Activity:** Create math word problems related to tangrams. For example, "If you use 2 large triangles and 1 square, how many pieces do you have left?" Students can solve these problems using their tangram pieces as visual aids.
- **Materials Needed:** Tangram pieces, math problem handouts.

6. Tangram Puzzle Exchange

- **Objective:** Encourage collaboration and sharing.
- **Activity:** Each student creates a unique tangram puzzle for a partner to solve. They then exchange puzzles and attempt to complete each other's designs. Discuss what made each puzzle challenging or interesting.
- **Materials Needed:** Tangram pieces, paper for creating puzzles.

7. Tangram Shape Scavenger Hunt

- **Objective:** Reinforce shape recognition.
- **Activity:** Create a scavenger hunt list with various tangram shapes. Students must find real-world objects that match the shapes or take pictures of them around the classroom or school.
- **Materials Needed:** Scavenger hunt lists and cameras or notebooks for recording findings.

These activities will enhance students' understanding of tangrams while promoting creativity, collaboration, and critical thinking skills!