

Lines of Symmetry Lesson Plan

A Family-Style Math Lesson, great for homeschool co-ops, or 4H STEM

Supplies

- A copy of “Lines of symmetry definition” page for each student
- A copy of “Alphabet Symmetry Page” for each student
- An apple
- A cutting board
- A knife to cut the apple
- A piece of graphing paper for each student (could use plain paper if you don’t have any)
- Pencil
- Tangram blocks
- Piece of art paper
- Tempra paints or acrylic paints

Objective

Help students discover a definition for lines of symmetry and practice making lines of symmetry in various objects: an apple, their body, the alphabet, art, and tangram blocks.

Lesson Activities

1. Welcome and a little yoga
2. **Create a definition** for Lines of symmetry. Use “Lines of Symmetry Definition” page to help students notice patterns and develop their own definition.
3. **Cut an apple using lines of symmetry.**
 - a. Note: Older children can try this on their own apple.
 - b. With whole apple, ask *Which way should I cut it to make a line of symmetry? Will my cut make the apple halves perfectly symmetrical? Or imperfectly symmetrical?* (Imperfect)
 - c. Cut the apple. Show the symmetry of both halves.
 - d. Using half of the apple, ask if they could see another place to cut it to make a line of symmetry. Cut the apple on the new line.
 - e. Continue until it is too small to safely cut it.
 - f. Eat the apple slices.
4. **Use our bodies to make symmetry and asymmetry.**
 - a. *Look at my face? Is it symmetrical? Is it perfectly symmetrical or generally symmetrical?* Point out that my face is generally symmetrical because I have an eye on one side, and an eye on the other, as well as cheeks, nostrils, ears, etc. But my face is not exactly symmetrical. My eyebrows are different shapes, for example.
 - b. Ask students to make a silly face that is symmetrical and then one that is asymmetrical.
 - c. *What about my hairstyle? Does anyone in the room have symmetrical hair? Asymmetrical?*
 - d. Group students into pairs (or pair yourself with your student). Ask person 1 to stand so their body is symmetrical on both sides. Ask person 2 to stand so their body is asymmetrical. Switch.
 - e. Their bodies are symmetrical if they hold their arms and legs the same way on both sides, and asymmetrical if they hold their arms differently on both sides.
 - f.

5. **Fill out the Alphabet Symmetry Page.**
 - a. Discuss what students noticed.
 - b. *Which letters have the most lines of symmetry? Which don't have any at all?*
6. **Draw symmetry with a partner.**
 - a. With students in pairs, have them fold their graphing paper in half.
 - b. Each student will draw a picture on half of the page. Then they will switch papers with their partner and complete the other half so it is symmetrical. (My students did abstract art, faces, butterflies, stick figures, etc.)
7. **Build symmetrical designs with Tangram blocks.**
 - a. Challenge 1: Build a butterfly
 - b. Challenge 2: Build a flower
 - c. Challenge 3: Build a unique symmetrical design
8. **Painting activity (optional)**
 - a. Give students a piece of art paper. Have them fold the page in half. Have them quickly paint a butterfly (or any design) on one half of the paper. Before it dries, have them fold the page in half so that the paint sticks to the other side, then unfold it. If they worked quickly enough it will create a symmetrical design on the page.
9. **Processing**
 - a. Come back together and process what students learned.
 - b. Have each student share something they noticed about lines of symmetry.