

Sample Lesson from the Math in a Cultural Context

Module: Patterns and Parkas

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Activity 1: Discovering a square

7. Joint Activity. Hand out small irregular pieces of butcher paper and scissors. Without the use of any measuring device, have the students visualize an approximately 3- inch square shape and have them cut one square that size. Begin cutting your own square. Students can follow along, and when they think they know how to do it, they may try to continue on their own.

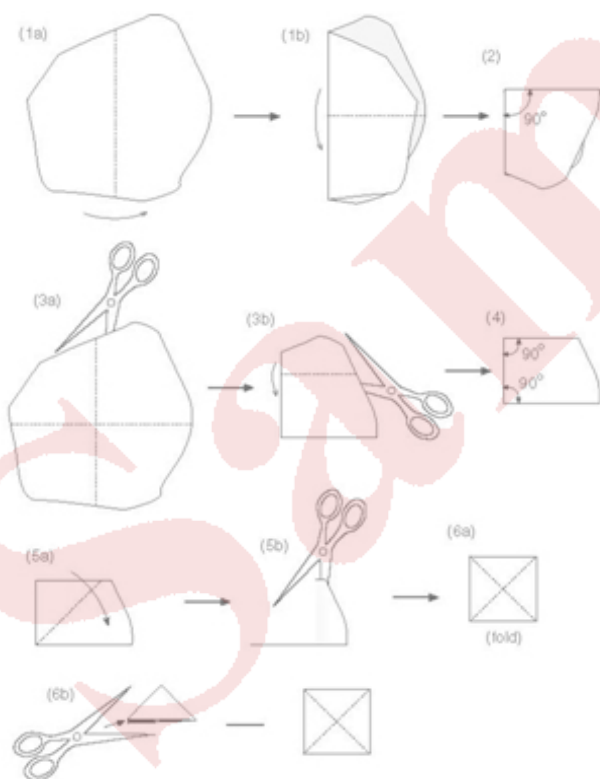


Fig. 1.4: One way to make a square from an irregular piece of paper



8. Introduce the term *line of symmetry* after you have made your square. Explain that if you can fold a shape in half and both sides match exactly, then it has a line of symmetry. Ask students to think about how many different lines of symmetry they can find when they

make their own squares.

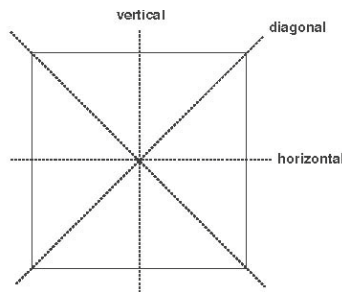


Fig. 1.5: Square with lines of symmetry

- Peer sharing. Ask the students, “How do you know your shape is a square?” Have them *prove or disprove* whether their shape is a square to a partner. Allow two to three minutes for sharing. If necessary, model peer sharing and proving a shape is a square.

Teacher Note: A reasonable prediction that is not yet proven is called a conjecture. When students have an idea in mind, they should fold the square to verify and prove or disprove their conjecture. If the two sides are not the same, students make another conjecture on where they can fold the square so both sides are the same, then fold the square again to find the line of symmetry.

- Ask for volunteers to share their method of proving a shape is a square. Repeat and record their ideas. Write a list of properties of a square on butcher paper. Add to this list as students gain new insights. Add other shapes to this list. Hand out Recording Paper worksheet. **Teacher Note:** Students are starting to think of the properties of a square. Refer to properties of shapes in the introduction for more information.
- Challenge.** How many ways can you fold the square in halves so that both halves match each other? Hand out pre-cut squares to each student. Have them predict, record their predictions, and explore.
- Have the students share their ways of folding a square in half. Were their predictions correct? Have the students write their names on their squares. Collect and display their squares on a piece of butcher paper or the blackboard. (Keep the display for later comparison.)
- Math notebooks.** Have students describe and illustrate the properties of a square in their

math notebooks.

Depending on your class, this may be a good place to stop for the day. Distribute the storage envelopes and have the students save all the scraps for use in the next part of the lesson. Be sure they write their names on the envelopes. Collect the storage envelopes. Begin the following day with a discussion on properties of a square.

Sample