TIMSS

NAEP

Standard Indicator
**4.4.5**

# Lines Of Symmetry

## Purpose

Students will identify and draw lines of symmetry in polygons.

## Materials

*For the teacher:* square and rectangle of construction paper, marker, mirror, ruler
*For each student:* square and rectangle of construction paper, one copy each of Black Line Masters (BLMs) *Polygons* and *Lines of Symmetry*, ruler, pencils, mylar mirrors, scissors

## Activity

### A. Introduction

1. Show the students a square of paper. Fold it down the middle (in any direction).
2. Have students repeat what you model for each step below.
3. Use the marker to trace over the fold line so that it is easily visible to the students.
4. Ask the students what they notice about the two parts. (They are the same.)
5. Ask the students what happens if you refold along the same line. (All the edges match up.)
6. Ask the students if there are other ways to fold the square so that the same things would happen. Try each of their suggestions.
7. Repeat the process with the rectangle.
8. Ask the students about what happens when the rectangle is folded diagonally. Discuss that the two parts are the same, but that the edges do not match up.
9. Introduce the term *line of symmetry* to describe the fold lines they found in the square and rectangle when the edges matched exactly. Ask: "How many lines of symmetry are in a square? In a rectangle?"
10. Show students how to place a mirror on a line to check if it is a line of symmetry.

### B. Student Activity

1. Hand out copies of the BLMs *Polygons* and *Lines of Symmetry*, mirrors, and rulers.

*(continued)*

INCORPORATING **TECHNOLOGY**

Use a computer drawing program to draw simple shapes and add the lines of symmetry.

**connecting across the curriculum**

**Visual Arts**

Depending upon the time of year, have students make holiday decorations that are symmetrical (e.g., pumpkins, apples, Christmas trees, menorahs, Valentines).

**Standards Link**
**4.4.3**

## Activity (continued)

2. Have students cut the square out of the BLM *Polygons*. Have them fold the square, repeating to find and mark lines of symmetry. Have them practice using the mirrors to check for the lines of symmetry.
3. Explain to the students that their task is to find all of the lines of symmetry for each shape on their BLM. They should be encouraged to cut out the figures, fold them, use the mirrors, or use any other method to find and check the lines of symmetry.
4. As they complete each shape, they should record their findings on the BLM *Lines of Symmetry*.

## Questions for Review

### Basic Concepts and Processes

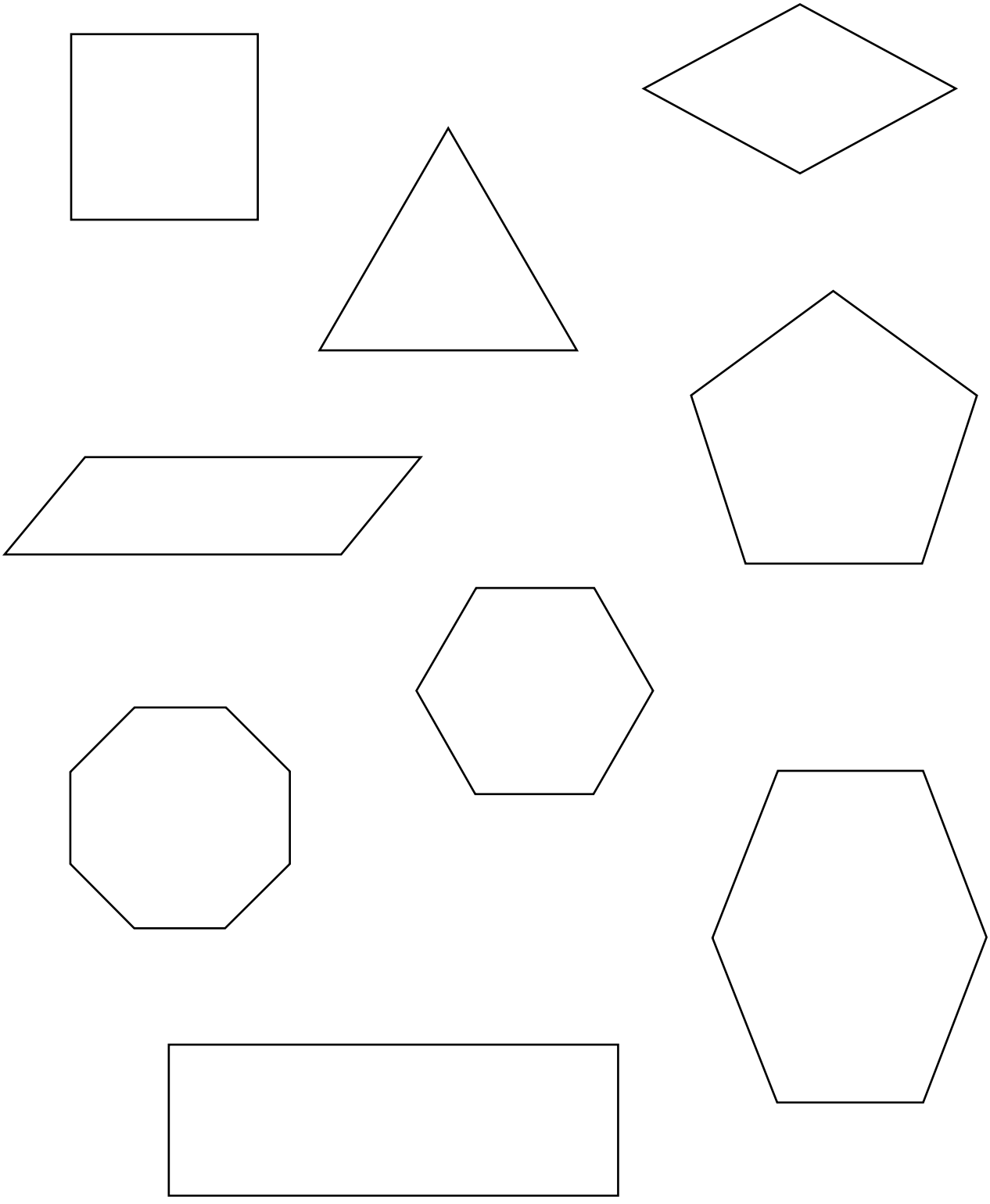
During the activity, discuss the following questions with students to gauge their understanding of the indicator:


Is the shape the same each side of the fold line?


Is the fold line a line of symmetry?


How can you make sure that you find all the lines of symmetry?

# Polygons



# Polygons

## Teacher Directions

Have students cut the shapes from the BLM and find their lines of symmetry.

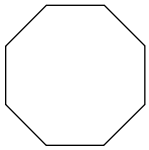
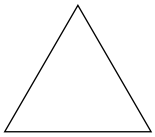
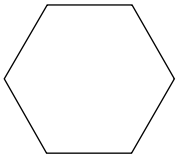
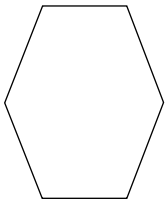
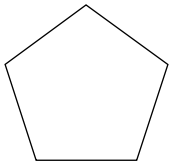
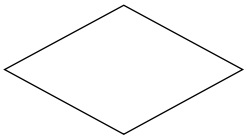
## Answer Key

Not applicable.

Name: _____

# Lines of Symmetry

**Record what you found about the lines of symmetry for each shape. Then draw the lines of symmetry on each shape using a ruler.**

| Shape | Name of Shape | Number of Lines of Symmetry |
|---|---|---|
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |

# Lines of Symmetry

## Teacher Directions

Ask students to record their findings on the BLM *Lines of Symmetry*.

## Answer Key

rectangle: 2 lines of symmetry
parallelogram: 0 lines of symmetry
octagon: 8 lines of symmetry
triangle: 3 lines of symmetry
hexagon: 6 lines of symmetry
hexagon: 2 lines of symmetry
pentagon: 5 lines of symmetry
rhombus: 2 lines of symmetry