

Symmetry with Pattern Blocks

Math Concepts

- Whole numbers
- 2-dimensional geometric figures
- addition
- symmetry

Materials

- TI-10
- **Symmetry with Pattern Blocks** recording sheets
- small mirrors
- Pattern Blocks
- crayons or markers

Overview

Students will use Pattern Blocks to build a design that has a line of symmetry and find the value of half of the design. Finally they will predict and then discover the value of the entire design.

Introduction

The **Design a Quilt** (page 37) and **Double Your Design** (page 41) activities should be completed before beginning this activity.

1. On the overhead projector, build a design that has a line of symmetry using Pattern Blocks. Mark the line of symmetry with a transparency marker, and check it with a small mirror. Ask students to predict the value of half of the design if the green triangle is worth 1¢. Find the value of half of the design. Have students use that information to predict the value of the entire design.
2. Have students build their own designs using Pattern Blocks or the paper pattern blocks provided on page 48. Have them record their designs on the triangular grid paper provided on their recording sheets using crayons or markers. Have them repeat the process modeled on the overhead: Predict the value of half of the design, find the value, predict the value of the whole design, and find its value.
3. Have students write what they discovered from the three activities: **Design a Quilt**, **Double Your Design**, and **Symmetry with Pattern Blocks**.

Collecting and Organizing Data

While students are constructing and recording their designs, ask questions such as:

- What Pattern Blocks are you using in your design?



How are you using the calculator to help you find the value of your design?

Symmetry with Pattern Blocks *(continued)*

Collecting and Organizing Data (continued)

- Where is your line of symmetry? How are you using the mirror to check your line of symmetry?
- If we assign a value of 1¢ to the green triangle, how much do you think half of your design is worth? How can you find out?
- How can you use the value of half of your design to predict how much your whole design is worth? Write down your prediction and then find the value.



How can you decide if the answer you are getting on the calculator is reasonable or not?

Analyzing Data and Drawing Conclusions

After students have recorded the value of their designs, have them work as a whole group to analyze their triangular grids. Ask questions such as:

- How did you predict the number of green triangles it would take to build half of your design?
- Did the line of symmetry in your design divide any of your Pattern Blocks into parts? How did you decide to count the value of those parts?
- How did the mirror help you check the line of symmetry in your design?



How did you use the calculator to help you find the value of your design?

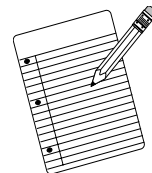


Does the order in which you entered the numbers in your calculator matter? Why or why not?

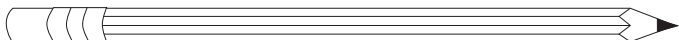
Continuing the Investigation

Have students:

- Change the value of the green triangle and find the new values of their designs.
- Make a design with two lines of symmetry.



Name: _____

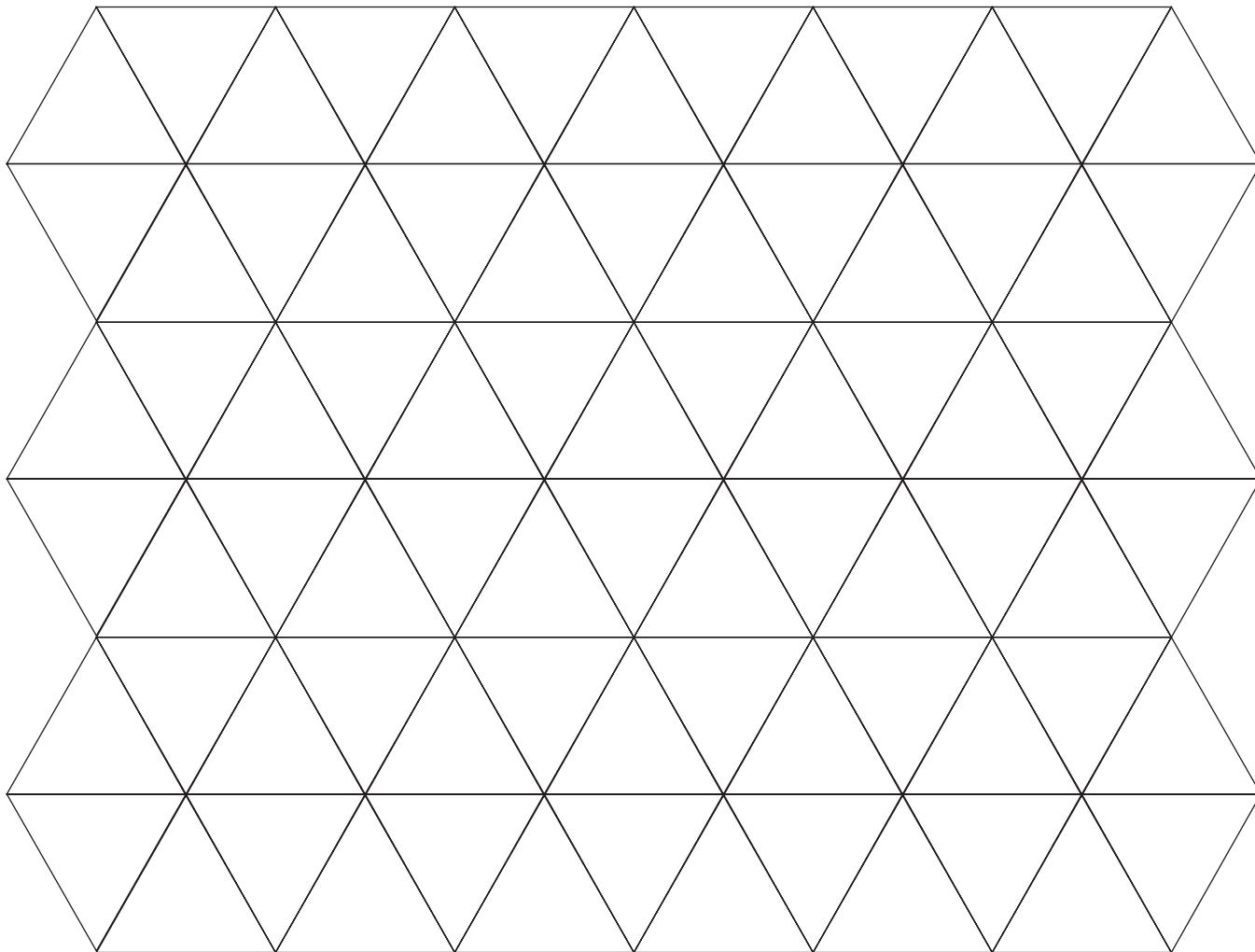


Symmetry with Pattern Blocks

Recording Sheet

Collecting and Organizing Data

Record your design below. Be sure to include your line of symmetry.



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Analyzing Data and Drawing Conclusions

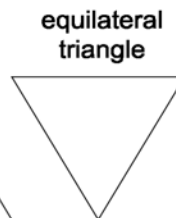
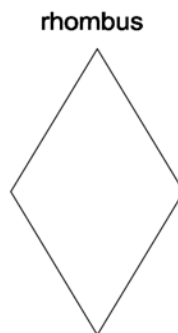
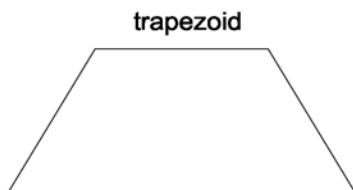
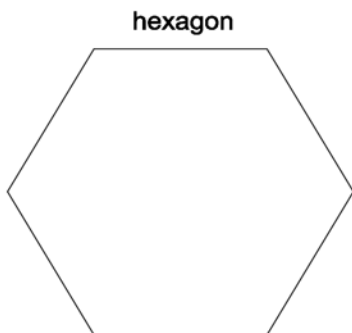
Half of my design is worth: _____ (my prediction) _____ (actual value)

My whole design is worth: _____ (my prediction) _____ (actual value)

Questions we thought of while we were doing this activity:

Symmetry with Pattern Blocks

Pattern Blocks



Other Geometric Shapes

