



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.

Grade Levels: 1–2




Concepts

- Whole Numbers
- 2-dimensional geometric figures
- Addition
- Symmetry



Materials

-  TI-10 calculators

Note: the TI-15 Explorer™ calculator can be used in place of the TI-10 for this activity.

- Small mirrors
- Pattern blocks
- Student activity sheet
- Crayons or markers



Assessment

Throughout the activity, questions are included for formative assessment. Student work should be used as a check for understanding. Have the students use the Pattern Blocks along with the TI-10 or TI-15 to complete the activity.



Introduction

1. On a display board or through an alternative method, build a design that has a line of symmetry using Pattern Blocks. Mark the line of symmetry with a 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 in this activity. Have them record their designs on the triangular grid paper provided on their activity sheet using crayons or markers. Have them repeat the process modeled in your display. Predict the value of half of the design, find the value, predict the value of the whole design, and find its value.

Collecting and Organizing Data

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

Questions for Students:

- ❖ *What Pattern Blocks are you using in your design?*
- ❖ *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.*



Using the Calculator

- *How are you using the calculator to help you find the value of your design?*
- *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 design, have them work as a whole group to analyze their triangular grids. Ask questions such as:

Questions for Students:

- ❖ *How did you predict the number of green triangles it would take to build half 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?*



Using the Calculator

- *How did the calculator 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?*

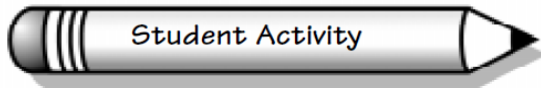
Continuing the Investigation

Have students:

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



SOLUTIONS



Name _____

Date _____



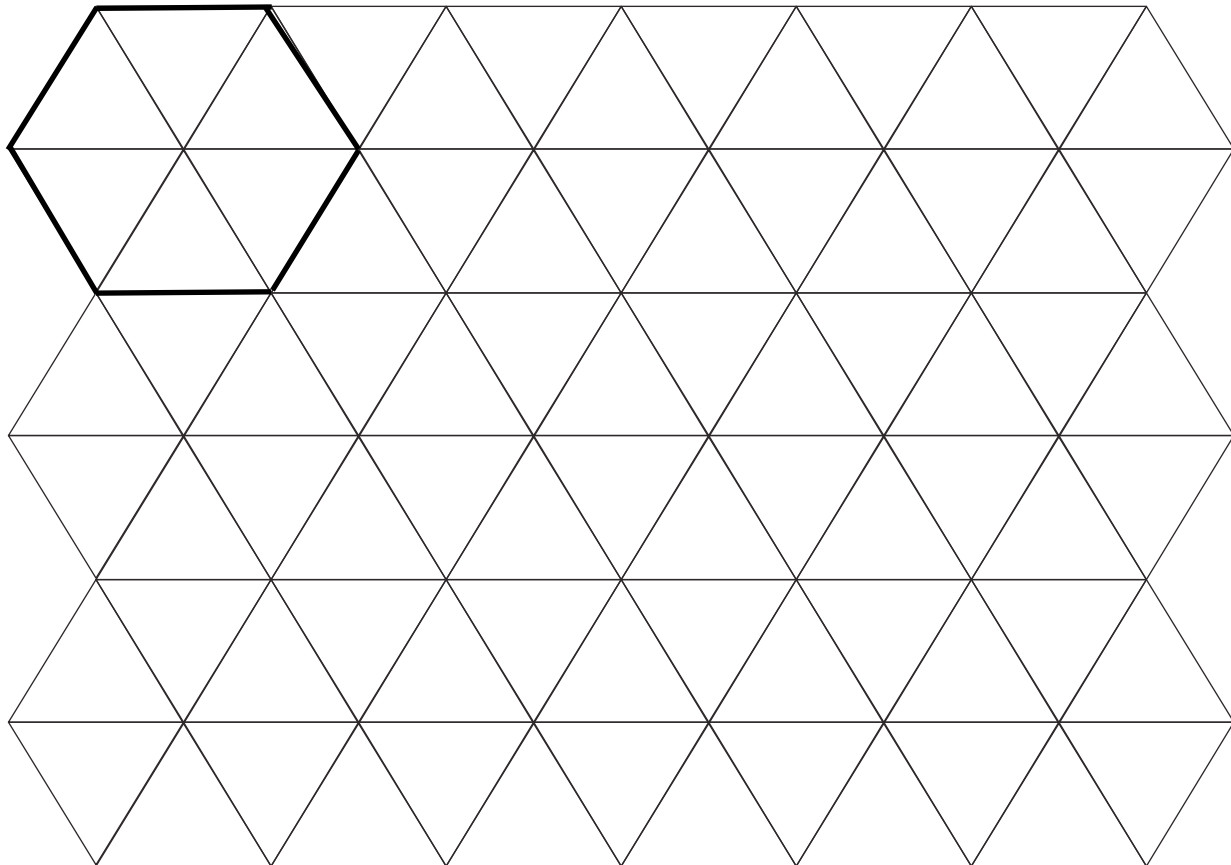
Focus: Create symmetrical designs with Pattern Blocks.

Symmetry with Pattern Blocks

Collecting and Organizing Data

Sample answer: See darkened lines for hexagon pattern block used.

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



Analyzing Data and Drawing Conclusions

Half of my design is worth: _____ (my prediction) 3¢ (actual value)

My whole design is worth: _____ (my prediction) 6¢ (actual value)

Questions we thought of while we were doing this activity: Sample: how many lines of symmetry can a shape have? How does the number of sides affect number of lines of symmetry?



Symmetry with Pattern Blocks

