

Can You Build It?

Lesson Topic _____ **Grade** _____

Perimeter

3

Lesson Length _____

40 minutes

NCTM Standards Addressed _____

- Understand measurable attributes of objects and the units, systems, and processes of measurement.
- Recognize the attributes of length.
- Understand how to measure using nonstandard units.
- Apply appropriate techniques, tools, and formulas to determine measurement.
- Measure with multiple copies of units of the same size.
- Use repetition of a single unit to measure something larger than the unit.

Sample State Standards Addressed _____

- Compare measurable characteristics of different objects of the same dimensions (e.g. area, length, perimeter).
- Determine the measurement of objects with standard and non-standard units.
- Use concrete objects to determine area and perimeter.

Student Objectives _____

Students will:

- use non-standard units (pattern blocks) to measure perimeter
- build a shape that satisfies given characteristics.

Grouping for Instruction _____

- Whole group for opening and closure
- Pairs for activities

Overview of Lesson _____

Students explore the concept of perimeter in terms of distance traveled by a ladybug around a shape. Students design a figure and measure its perimeter. Students make a shape that satisfies several characteristics.

Background Information

Students should be able to measure by repeating the use of a non-standard unit.

Materials and Equipment

- Pattern blocks (overhead and student set)
- Plain paper
- Overhead projector

Procedure

A. Motivation and introduction

1. Put an orange square pattern block on the overhead. Say: “Let’s suppose that a ladybug is going to walk around the square. To go all the way around, the ladybug would walk four units. Each side of a square (or of a triangle) will represent one unit of measurement.”
2. Put two orange squares together to form a rectangle. Ask: “If the ladybug walks around this rectangle, how far will it walk?”
3. Solicit answers from students. (Correct response: six units)
4. Say: “Today we are going to explore how far a ladybug will walk in going around objects made with the pattern blocks. This distance around is called the perimeter.”

B. Development (including discussion points and feedback)

1. Have students work in pairs.
2. Give each pair a set of pattern blocks, a piece of paper, and a pencil.
3. Demonstrate how to measure a ladybug’s distance around a red trapezoid.
4. Put three pattern blocks together, namely: a red trapezoid, a green triangle, and a blue rhombus.
5. Demonstrate how to trace the shape with its component parts.
6. Ask: “How far will the ladybug travel in its journey around this shape?”
7. Instruct students: “Build any shape made up of four pattern blocks.”
8. Instruct students: “Now, trace around the shape and its parts.”
9. Instruct students: “Give your picture to your partner and ask the partner to determine how many units the ladybug will travel in going around the shape.”
10. Give students time to work and to share their responses with their partners.
11. Call on a few students to share with the class. (Possibly collect the students’ work for assessment.)
12. Say: “I’m going to see what good detectives you are. I am going to give you some clues and you are to build the shape that satisfies all the clues.”
13. Put four red trapezoids on the overhead projector.
14. Say: “Use four red trapezoids to build a large trapezoid. How many units will the ladybug travel to go around the large trapezoid?”

15. Observe as students work. Have students share answers and explain how they arrived at their answers.
16. Put one green triangle, one blue rhombus, and two red trapezoids on the overhead projector.
17. Say: “Use one green triangle, one blue rhombus, and two red trapezoids to make a large triangle with a perimeter of nine units.”
18. Observe as students work. Have students share responses. Look for alternate ways of doing this problem.
19. Say: “Build a large square. In your large square, there are four red trapezoids and one orange square. What is the perimeter of the large square?”
20. Say: “Build a large triangle. There are five green triangles, three red trapezoids, and one blue rhombus. What is the perimeter of the large triangle?”
21. Observe as students work. Have students share responses.

C. Summary and closure

Ask the class: “What have we done today?” Build on student responses. Emphasize that perimeter is the distance around an object.

D. Assignment

Draw any shape made of no more than nine pattern blocks. Find the perimeter of the shape in terms of units a ladybug would walk.

Think about: When a praying mantis walks around a large square made of four trapezoids and a square, the mantis walks four big units. How many big units would the praying mantis walk around the shape you made?

Assessment

- Observe students as they draw shapes and determine the distance around them.
- Collect the drawing made for the assignment.