

LESSON 15

Objective

Explore the concept of perimeter.

Common Core State Standards

- **3.MD.8** Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Measurement and Data

Exploring Perimeter

Exploring perimeter involves both geometry and number sense. Through geometry, students begin to understand attributes of shapes. In addition, an understanding of numbers, along with hands-on exploration of linear measurement, makes exploring perimeter more concrete. As students begin to build a foundation for measurement, they can apply their knowledge to find the perimeter of shapes.

Try It! Perform the Try It! activity on the next page.

Talk About It

Discuss the Try It! activity.

- **Ask:** How many units long was each side of the first square you made? How did you know?
- **Ask:** How many units around was the whole first square you made? How did you find the total number of units?
- **Ask:** When could it be important to measure how many units around something is?

Solve It

With students, reread the problem. Have students look at the square on their Geoboards that is 3 units long on each side. Then ask them to find how many units around the square is. Invite students to write a sentence telling how many units of fencing the school will need to go around its new playground.

More Ideas

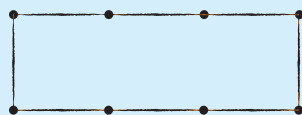
For other ways to teach about exploring perimeter—

- Have students use Geoboards to build bigger squares and rectangles and determine perimeter.
- Have students use Color Tiles to build squares of different perimeters. For example, ask students to build a square that has 3 tiles on each side and find the perimeter in number of tiles. Remind students that they only need to count around the outside of the shape, so the inside should not be filled in with tiles.

Formative Assessment

Have students try the following problem.

How many units around is this rectangle? Circle the answer.



- A. 3 units B. 4 units C. 6 units D. 8 units

Try It! 20 minutes | Pairs

Here is a problem about exploring perimeter.

Wilson Elementary School is building a new, square-shaped playground that measures 3 units on each side. The school wants to build a fence around the playground. How much fencing will they need?

Introduce the problem. Then have students do the activity to solve the problem. Distribute Geoboards and rubber bands to students.

Materials

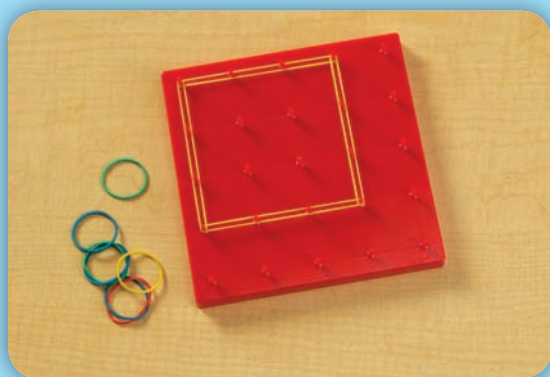
- Geoboard (1 per pair)
- rubber bands (several per pair)



1. Hold up the Geoboard and demonstrate how to place a rubber band on it. Tell students that 1 unit equals the distance from one peg to the next. Let students practice putting rubber bands on the pegs to make shapes. Then have students place a rubber band on their boards to make one side of a square 2 units long.



2. Have students continue making the square with each side 2 units. Remind students to think of the number of sides a square has, so they know how many rubber bands to use. When students have built a square, have them count aloud the length of sides in the model. As they are counting, they should touch each side with their finger. Write the equation $2 + 2 + 2 + 2 = 8$ on the board and discuss.

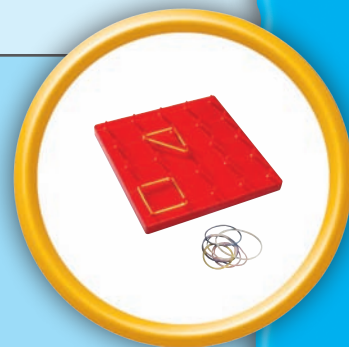


3. Say: Now we need to make a square with 3 units on each side. Show students how to stretch each rubber band to extend across 3 units. When students have built the square, have them count aloud the number of units for each side. As they are counting, they should touch each side with their finger. Write the equation $3 + 3 + 3 + 3 = \underline{\quad}$ on the board.

! Look Out!

Some students might equate 1 rubber band with 1 unit instead of 2 or 3 for this problem. To help make the 1 to 1 connection, you might have students use smaller rubber bands to connect 1 unit at a time, versus stretching a large rubber band to make 2 units.

Some students forget where they began counting the sides when finding perimeter. When using a Geoboard, they can keep one finger on the side they begin with. You can also encourage starting at the top and moving clockwise around a shape.



Use a Geoboard and rubber bands. Make each rectangle.
Find the perimeter of the rectangle. (Check students' work.)

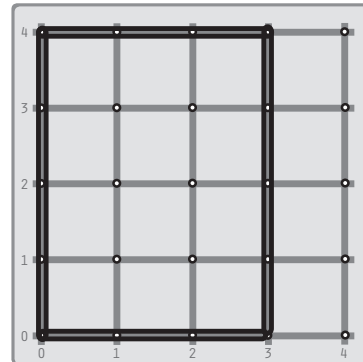
1.



12

units

2.

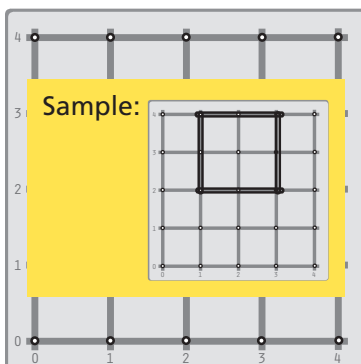


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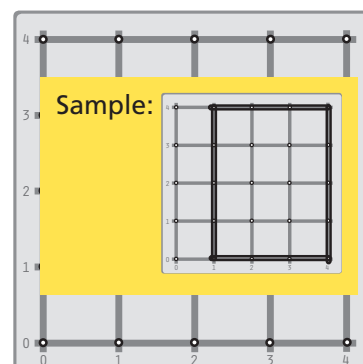
units

Use a Geoboard and rubber bands. Make a rectangle with the given perimeter. Draw the rectangle. (Check students' models.)

3. 8 units



4. 14 units



Answer Key

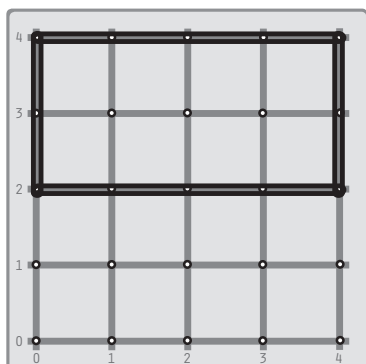
Challenge! What number sentence do you use to find the perimeter of a rectangle that is 3 units long and 1 unit wide? Draw a picture.

Challenge: (Sample) $3 + 1 + 3 + 1 = 8$

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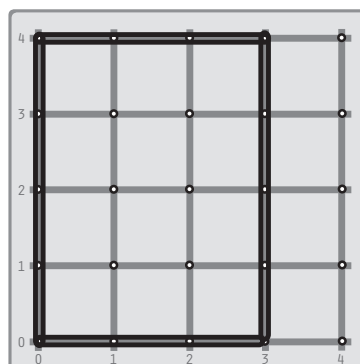
**Use a Geoboard and rubber bands. Make each rectangle.
Find the perimeter of the rectangle.**

1.



_____ units

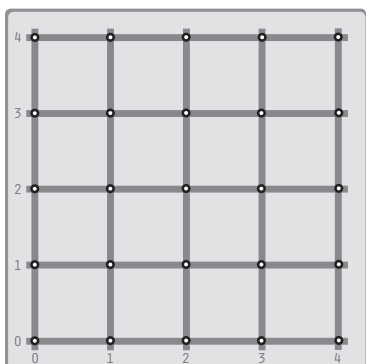
2.



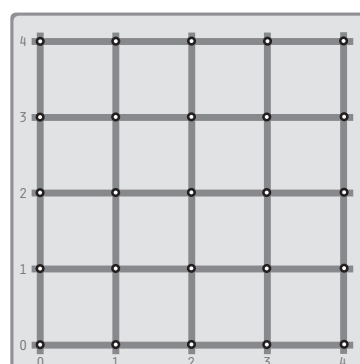
_____ units

Use a Geoboard and rubber bands. Make a rectangle with the given perimeter. Draw the rectangle.

3. 8 units



4. 14 units



Name _____

Challenge! What number sentence do you use to find the perimeter of a rectangle that is 3 units long and 1 unit wide? Draw a picture.

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