Measurement and Data

Perimeter of Shapes

Perimeter is the distance around a two-dimensional shape. When finding perimeter, students use geometry by relying on their knowledge of shape attributes while measuring. Once they have had a lot of hands-on exposure, they start to create formulas for finding perimeter. In this lesson, students will find the perimeter of a shape using a Geoboard.

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

Talk About It

Discuss the Try It! activity.

■ **Ask:** *How can we figure out the perimeter of a rectangle or square without using a Geoboard?* Discuss how rulers and other tools can be used to measure the perimeter of shapes that are not made on a Geoboard.

■ **Ask:** *What if the shape was 3 units by 4 units? What would the perimeter be then?* Have students model the new shape and find the perimeter.

■ **Ask:** *When might it be important to figure out the perimeter of something?* Discuss real-life situations involving perimeter, such as making a frame or building a fence.

Solve It

With students, reread the problem. Have students explain in writing how many inches of ribbon are needed and how they found the perimeter of the invitation.

More Ideas

For other ways to teach about finding the perimeter of a shape—

■ Students can use Centimeter Cubes to find the perimeter of a book cover, box top, or similar object using standard metric units. Make sure students understand that 1 cube equals 1 centimeter. Have students estimate the perimeter of each object before measuring.

■ Students can use Color Tiles to find the perimeter of classroom items such as a piece of paper or folder using standard customary units. Make sure students understand that each tile equals 1 inch. Have students estimate perimeters before measuring. Also watch that students only measure edges, not corners, using tiles.

Formative Assessment

Have students try the following problem.

What is the perimeter of a 3 inch by 3 inch square?

Try It!   25 Minutes | Pairs

Here is a problem about finding the perimeter of a shape.

The students in Mr. Woodley's class are having a play. The students made invitations to send home to their parents. The invitations are 4-inch by 4-inch squares. The students decided to put ribbon around the edges of the invitations. How many inches of ribbon are needed for one invitation?

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 (4 per pair)
- paper (1 sheet per pair)
- pencils (1 per pair)

1. Say: *Place a rubber band around two pegs to show 1 unit. Now stretch the rubber band to show 2 units.* Guide students to repeat the process for 3 and 4 units, identifying the number of units each time the rubber band moves.
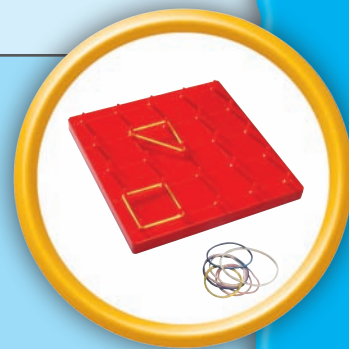
2. Say: *I want you to make a square that is 2 units by 2 units.* Students work with their partners to make the shape. **Ask:** *How do we find the perimeter of this shape?* Remind students, if needed, that *perimeter* is the distance around a two-dimensional shape.
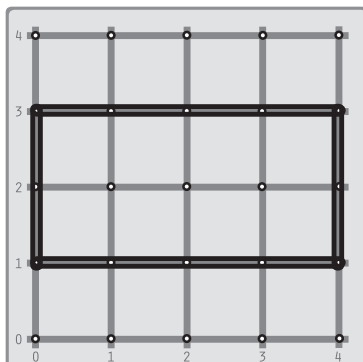
⚠️ Look Out!

Watch for students who count the number of pegs versus the space between pegs as a unit. If students are confused by this, have them put two fingers on the two pegs to show 1 unit, and move the fingers along as they count. Stress that the unit is the space between the two fingers. Also watch for students who call the units inches. Use Color Tiles to show that Geoboard units are not equal to inches. In addition, some students may attempt to calculate area (length times width) instead of perimeter. Emphasize that students should be measuring the distance around the shape, not the number of square units inside the shape.

3. Have students find the perimeter of the shape. Repeat the activity for a 3-unit by 2-unit rectangle and a 3-unit by 3-unit square. Guide students to write number sentences representing the perimeters they calculated on the Geoboards.

Use a Geoboard to model each shape. Find the perimeter of the shape. (Check students' work.)
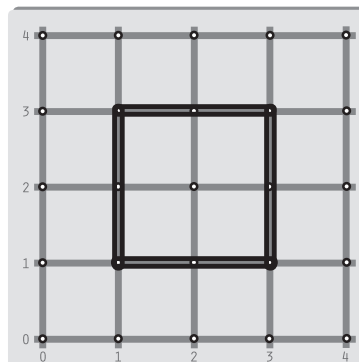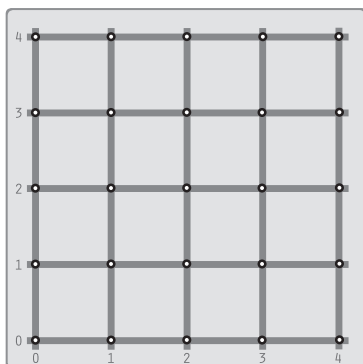
1.

12 units

2.

8 units

Using a Geoboard, model a shape with the given dimensions. Sketch the shape. Find the perimeter of the shape. (Check students' models.)
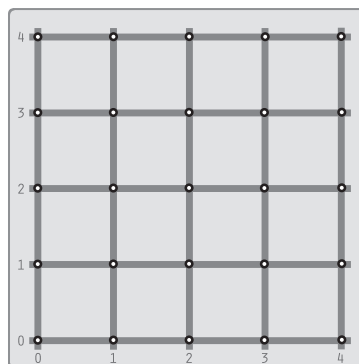
3. 4 units by 3 units
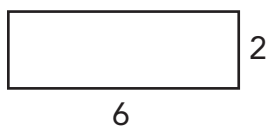

14 units

4. 3 units by 3 units

12 units
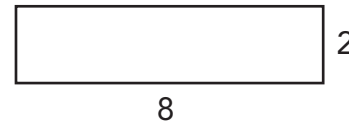
Find the perimeter of each rectangle given the dimensions.
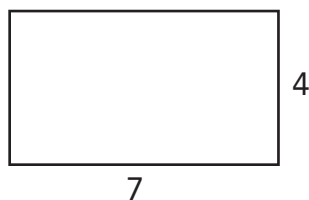
5.

6
2

16 units

6.

8
2

20 units

7.

7
4

22 units

8.

5
3

16 units

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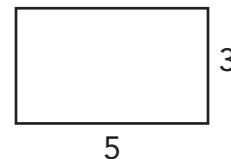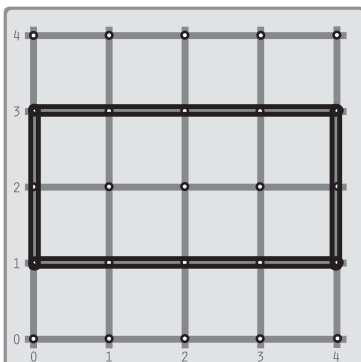
Challenge! Write an addition sentence that you could use to find the perimeter in Problem 5. Draw a picture to help. Explain each of the addends.

Challenge: (Sample) 6 + 2 + 6 + 2 = 16; The length of the rectangle is 6 units. There are two sides that are 6 units long. The width of the rectangle is 2 units. There are two sides that are 2 units long.
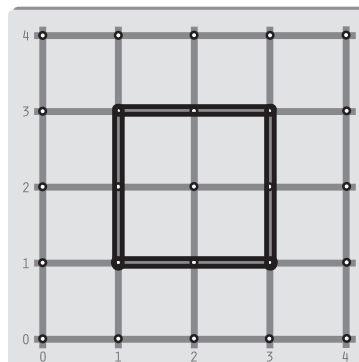
Name _____

Use a Geoboard to model each shape. Find the perimeter of the shape.
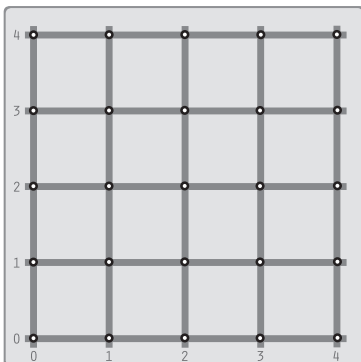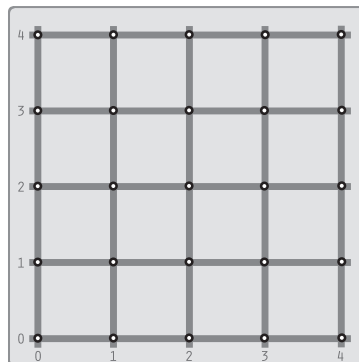
1.

_____ units

2.

_____ units

Using a Geoboard, model a shape with the given dimensions. Sketch the shape. Find the perimeter of the shape.

3. 4 units by 3 units

_____ units

4. 3 units by 3 units

_____ units

Find the perimeter of each rectangle given the dimensions.
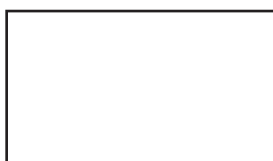
5.

2
6

_____ units

6.

2
8

_____ units

7.

4
7

_____ units

8.

3
5

_____ units

Challenge!   Write an addition sentence that you could use to find the perimeter in Problem 5. Draw a picture to help. Explain each of the addends.

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