

Measuring and Mapping the Playground

Use a scale factor to create an accurate map.

Materials

For the playground

- playground with painted game courts (hopscotch, four square, and so on)
- your Stride Ruler 
(Stride Ruler should be done ahead as a separate activity)
- paper
- pencil
- clipboard or book to create a sturdy drawing surface

For creating your map

- grid paper
- pencil
- mathematical compass (if your court contains circles or arcs)
- calculator
- ruler

Group Size

individuals

Related Activity

Stride Ruler 

Math Reminders

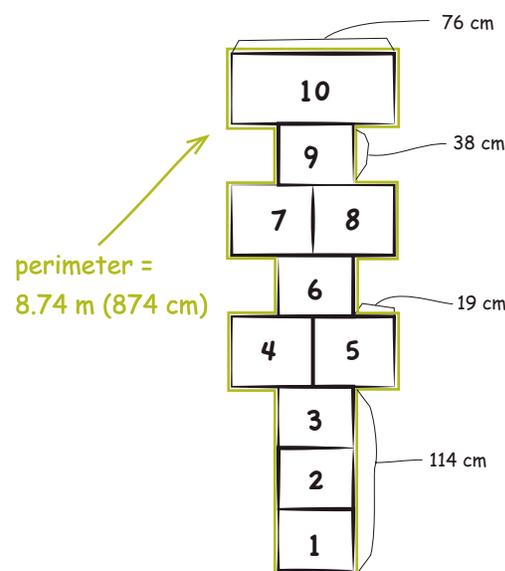
- When using your Stride Ruler, remember to multiply your number of baby steps by the length in centimeters of your average baby step to find a distance in centimeters.
- To convert your measurements from centimeters to meters, divide by 100.

Background

A map is a diagram of some area such as a city or a park—or even the hiding place of a pirate's treasure. A map shows the area it represents in miniature: The relationships among the various parts of the map (length, width, and so on) are exactly the same as those in the actual area. To create a map, you first have to take measurements of the area in question. Then you have to reduce all the measurements by a certain amount—the *scale factor*—which you'll learn how to do in this activity.

Try This

1. Choose a playground court to measure. (Four square courts are the simplest.)
2. Draw the *perimeter*, the distance all the way around the court.
3. Measure the perimeter, and record your measurement on your drawing. Be sure to use appropriate units.
4. Sketch at least four additional lines or shapes that are part of the court—more if you have time.
5. Measure these additional lines or shapes and label them on your drawing.
6. At your indoor workspace, plan how you'll make your map. A good way to begin is to count the number of squares along the length of your grid paper and to compare that number with your longest measurement. For example, your paper might be 50 squares long, and your longest measurement might be 23 meters (the length of the basketball court). You could let each square equal 1 meter—but then you'd be using only about half of your grid paper. How could you use the full size of the paper?



Measuring and Mapping the Playground (continued)

Did You Know?

A person whose job is to make maps is called a *cartographer*.

7. If you let 1 square equal 0.5 meters, then 2 squares equal 1 meter, so 23 meters would be represented by 46 squares:

$$23 \text{ m} \times 2 \text{ squares/meter} = 46 \text{ squares}$$

Figure out the scale factor you'll use for your map, and write it at the bottom of your grid paper.

8. Use your ruler to carefully draw the scaled perimeter of your court. Label the length of the entire perimeter with its actual measurement.
9. Use your scale factor to determine the scaled lengths of the other lines and shapes on your sketch, and use your ruler to carefully draw these lines and shapes. Label these with their measurements.
10. Share your map with your group.