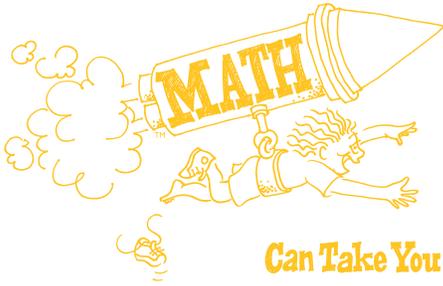


Measure Up

3rd - 6th Grade



Can Take You Places

FOCUS AREA

Measurement

ACTIVITY TYPE

Individual or Pairs

MATH GOAL

To calculate area & perimeter

RECOMMENDED NUMBER OF STUDENTS

Allow children to work alone or paired in a group of no more than 20 children (10 pairs).

TIME NEEDED

30 minutes

OBJECTIVE

To use grid paper to calculate the area and perimeter of different objects, including the children's hands.

MATERIALS

- Rulers (If using a one-centimeter grid paper, make sure the ruler has centimeters.)
 - Tape measure, yardstick, or meter stick (enough for all pairs to share)
 - Pencils (one per pair)
 - Four different colors of marker or pencil per pair
 - Sheets of one-inch grid paper or one-centimeter grid paper (one piece per pair)
 - String or yarn (about two feet per pair)
 - Included with this activity
 - Estimations Recording Sheet (one per pair)
- For Optional Introduction Activity:
- *Math Can Take You Places* DVD, Episode 4: "The Long and Tall of It" (Measurement)
 - TV/DVD player

BEFORE YOU START

- Make sure students measure using the units of the grid paper. If you are using one-inch grid paper, measure in inches, but if you are using one-centimeter grid paper, measure in centimeters.
- Decide for which large objects in the classroom the students will find the areas. Objects must have flat rectangular or square measurable surfaces. (Suggestions: table top, door, wall, chalkboard, shelf, area of the floor, etc.)
- Create a sample drawing of your hand correctly colored out on grid paper.

HOW TO START

Ask the children, “What is area?” and “What is perimeter?” Remind them that area is the amount of space a flat object covers (length x width), and that perimeter is the distance around the edge of an object (the sum of the lengths of all sides). Tell the children that they are going to calculate the area and perimeter of their hands today. Then they will use the calculations to estimate the areas of other larger objects.

Optional Introduction Activity: Watch the *Math Can Take You Places* video, Episode 4: “The Long and Tall of It” with the Dallas Mavericks up until Mrs. Garcia asks the class to give the definitions. Ask the children to define area and perimeter. Remind them that area is the amount of space a flat object covers and that perimeter is the distance around the edge of an object. Tell the children that they are going to calculate the area and perimeter of their hands today. Then they will use the calculations to estimate the areas of other larger objects.

STEPS

Step 1

Have the students trace their hands on grid paper. Ask them to guess how many square inches or centimeters their hand covered (area = space inside their hand tracing; perimeter = the outline of their hand).

Step 2

Instruct students to make a “key.” For whole squares, use color #1, for $\frac{1}{2}$ squares use color #2, for $\frac{1}{4}$ squares use color #3. Squares that are barely included within the perimeter (less than $\frac{1}{2}$) are not counted. Show the students your pre-made example. Quickly review with them how to add fractions (e.g., $\frac{3}{4} + \frac{1}{2} = \frac{5}{4}$ or $1\frac{1}{4}$). Remember to discuss that two halves equal one whole.

Step 3

Once the students have colored their hand according to the key, count the number of squares according to color to calculate area. The total number of squares is the area

Step 4

To calculate perimeter, have students use string to trace their hands. They can have a partner help them hold down the string as they trace the outline of their hands. Now, take the string and measure it with the ruler to get the total number of inches or centimeters. That is the perimeter.

Step 5

When pairs find the areas of their hands, check their work for accuracy. Then, assign each pair an object in the classroom or hall to estimate its area, based on the knowledge of the area of their own hands. Select a large object with a flat surface: table, door, wall, chalkboard, shelf, a section of the floor, etc.

Step 6

Record their estimates on the Estimation Recording Sheet. Then, let the pairs calculate the actual measurement of the area using a yardstick, tape measure or meter stick (area = length x width) The team with the closest estimate wins.

WRAP UP

Have them guess the area and perimeter of their feet, head and other items in the room.

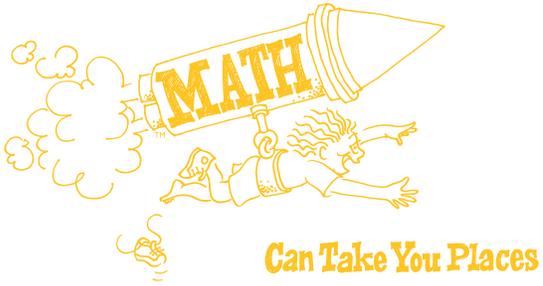
Optional Wrap Up Activity: Finish watching the rest of the Math Can Take You Places Measurement video. Allow students to use the grid paper to draw what they think the hand of a 7 1/2-foot basketball player would look like. Let them calculate the area and perimeter. Ask for volunteers to share their examples with the class.

OPTIONAL ACTIVITIES

- Extend the activity to allow students to calculate the area and perimeter of other objects that they can trace (for example, their shoes or feet, a cookie, etc.)
- Invite various professionals (carpenters, home builders, land surveyors, architects, etc.) to share how they use measurement, stressing its importance.

SUGGESTED *MATH CAN TAKE YOU PLACES* CONNECTIONS

- *From Math Can Take You Places Classroom Materials, Lesson Plans: “Mavericks and Measurement” (Measurement)*
- *From Math Can Take You Places Classroom Materials, Games & Activities: “Weigh Too Much” (Measurement)*



Activity Cue Card

- Students will find the area and perimeter of their hands using one-inch or one-centimeter grid paper.
- Calculate area using a color coding key.
- Calculate perimeter with a string.
- Use calculations to estimate the area of larger objects, then record estimates on their estimation recording sheet.
- Measure the actual area of the larger object and compare to the student estimate.
- The closest estimate to the actual area wins.

