



Everyone's Playing Basketball

The goal of the “Problem Solvers” department is to foster improved communication among teachers by presenting one problem each month for teachers in grades K–6 to try with their students. Pose the problem to your students, reflect on their work, analyze the classroom dialogue, and share your analyses with others by submitting the resulting insights to this department. Every teacher can help us all better understand children’s capabilities and thinking about mathematics with their contributions to the journal. Remember that even students’ misconceptions are interesting.

The following problem is suggested for students in grades 1–6, although it may be appropriate for students in other grades as well.

PROBLEM

During a thirty-minute physical education class, Mrs. Lach’s 15 students want to play basketball. If only 10 students can play at a time, and if each student plays the same amount of time as every other student, how many minutes does each student play? How would you set up a schedule that indicates how to rotate students in and out of the game?

**Lynae Sakshaug and
Conrad Van Voorst**



As you reflect on your experience, keep in mind these questions:

- What difficulties did the children encounter with interpreting the problem?
- What kind of models did the children create to help them think about the problem?
- How did the children organize their work?

Lynae Sakshaug, lsakshau@brockport.edu, and Conrad Van Voorst, cvanvoor@brockport.edu, teach in the Department of Education and Human Development, SUNY at Brockport, Brockport, NY 14420.

Edited by Melfried Olson, Melfried_Olson@ccmail.wiu.edu, and Judith Olson, Judy_Olson@ccmail.wiu.edu, Mathematics Department, Western Illinois University, Macomb, IL 61455, and Lynae Sakshaug, lsakshau@brockport.edu, Department of Education and Human Development, SUNY at Brockport, Brockport, NY 14420

- How did the students' understanding of time affect their ability to solve the problem?
- How well did the children explain their reasoning?

Please discuss this problem with your students. Although they may need help understanding the problem and the constraints under which they are to work, avoid giving too much guidance. Collect students' work, and jot down notes about the guidance you provided, discussions that occurred, and the variety of approaches used. To gain a deeper understanding of students' thinking, ask them to write about how they solved the problem. View this task as more than an exercise for which children are seeking a correct answer.

Please send us your thoughts and reflections. Include how you posed the problem and samples of students' work. Send your results with your name, grade level, and school by **1 July 2001** to Lynae Sakshaug, Department of Education and Human Development, SUNY Brockport, 350 New Campus Drive, Brockport, NY 14420.

Selected submissions will be published in a subsequent issue of *Teaching Children Mathematics*

Where's the Math?

The mathematics in this problem comes from several areas. Mathematical problem solving is embedded in real-life experiences that children have when taking equal turns and sharing limited time. Creating a model that could be used for the rotation of children in and out of the game is also an important area of mathematics that is tapped by this problem. Mathematics is evident, too, in the number sense needed to solve the problem and to reason about possible solutions. Another area of mathematics is making sense of time and how units of time are counted.

and acknowledged by name, grade level, and school unless otherwise indicated. If you would like an acknowledgement and a set of solution strategies before that time, send a self-addressed, stamped envelope to Lynae Sakshaug at the address shown. ▲