

# Mathematicians' Group to Provide Advice on Math Standards

In July 2004, during the Park City Mathematics Institute (PCMI), a group of thirteen mathematicians met to discuss state mathematics standards documents and offer advice on school mathematics standards. Roger Howe of Yale University, former chair of the AMS Committee on Education, is the leader of the group. Its goal is to prepare a document that will comment generally on standards and also highlight a small number of topics the group believes are central in school mathematics curricula.

The formation of the group came about partly as a way of contributing to a project of the National Council of Teachers of Mathematics (NCTM) and the Association of School Supervisors of Mathematics (ASSM) to analyze state standards. Johnny Lott of the University of Montana, past NCTM president, is heading the NCTM-ASSM effort. After discussions last year between Howe, Lott, and PCMI director C. Herbert Clemens of Ohio State University, two companion proposals were submitted to the National Science Foundation (NSF) for two meetings to take place at the PCMI. One of these was the meeting of the group of mathematicians led by Howe. Because the funding decision came very late, many fewer mathematicians could participate than were invited.

The other meeting was organized by Lott and the past president of the ASSM, Kathleen Nishimura of the Hawaii State Department of Education. This meeting brought together about seventy-five people, including representatives of the NCTM and the ASSM and several mathematicians, some of whom were also in Howe's group. The goal of this meeting was to explore the question, To what extent does the United States have a de facto national curriculum for school mathematics? Unlike many countries around the world, the United States does not have a national mathematics curriculum.

Instead, curricula are chosen at the state and local levels. Starting in 1989, the NCTM issued a number of reports providing principles and guidelines for developing school mathematics standards. These reports were enormously influential and sparked the creation of mathematics standards in all fifty states, as well as standards in other academic disciplines.

During the meeting at the PCMI, mathematics standards documents were brought in from the fifty states, as well as from the District of Columbia and Department of Defense schools. Groups of the meeting attendees were assembled to examine the standards by grade level, and they pored over the documents and compiled information about similarities and differences. Lott explained that the aim is simply to get a "snapshot" of the content of current standards and to see to what extent the states might be moving toward common standards. In particular, this is not an effort to see whether the

## Committee of Mathematicians

Jerome Dancis, University of Maryland, College Park  
Jerry Dwyer, Texas Tech University  
Solomon Friedberg, Boston College  
Bert Fristedt, University of Minnesota  
Daniel Goroff, Harvard University  
Roger Howe, Yale University  
Harvey Keynes, University of Minnesota  
W. James Lewis, University of Nebraska, Lincoln  
Andy Magid, University of Oklahoma  
Frank Quinn, Virginia Polytechnic Institute  
and State University  
James Milgram, Stanford University  
Alan Tucker, State University of New York, Stony Brook  
Steve Wilson, Johns Hopkins University

state standards align with the principles set forth in the NCTM standards reports.

The information gleaned during the meeting is in the process of being analyzed, and Lott said that the aim is to prepare a draft report sometime during the fall of 2004 and the final report by April 2005, when the NCTM annual meeting will take place. Plans call for sessions about the report to be held during conferences later in 2005 and possibly also at the Joint Mathematics Meetings in January 2006.

At the end of the meeting during which the standards documents were analyzed, in a discussion led by Lott, the suggestion was made that Howe's group should offer a mathematical perspective on important issues in creating standards. While perhaps not unprecedented, this kind of direct interaction between mathematicians and people from groups such as the NCTM and ASSM has been rare, at least in the recent history of mathematics education reform. "It's a new stage, it's a new development," Howe said.

What the group of mathematicians will do is to write a document that first outlines some general principles for standards and then focuses more closely on a small number of mathematical ideas that it believes could help improve school mathematics instruction. The group also intends to produce an annotated set of problems that exemplify those ideas. They do not plan to cover the whole of K-12 mathematics. "We are selecting only a set of focused issues where we feel we have something definite to contribute," Howe explained. "Writing good mathematics standards is a complex task, and we have a long way to go before we can develop ideal standards. We hope to provide useful guidance and advice for the next generation of standards writers." The work of the group of mathematicians will proceed on a parallel but separate track from the work headed by Lott to analyze existing state standards.

Sponsored by the Institute for Advanced Study in Princeton, the PCMI is a yearly event in Park City, Utah, that brings together mathematicians, graduate students, postdocs, mathematics educators, and teachers for three weeks of activities designed to promote connections between teaching and research. Further meetings focused on school mathematics standards may take place at the PCMI in the summer of 2005. The report of the mathematicians' group will be posted on the PCMI website and may be produced in hard copy. "If our document is seen as being interesting, there might be a follow-up meeting, and then we will talk about next steps," Howe said. "I'm hoping it will have a positive effect on standards development in the future."

—Allyn Jackson