

Four Facts Most People Don't Know About the Mathematical Sciences

1. MATHEMATICAL SCIENTISTS HAVE VARIED CAREERS AND STYLES OF WORK.

They do not spend all their time calculating—though some do quite a bit—nor do most of them toil in isolation on abstract theories. Most engage in collaborations of some sort. While the majority are professors, there are also many mathematical scientists in pharmaceutical and manufacturing industries, in government and national defense laboratories, in computing and Internet-based businesses, and on Wall Street. Some mathematicians prove theorems, but many others engage in other aspects of quantitative modeling and problem solving. Mathematical scientists contribute to every field of science, engineering, and medicine.

2. THE MATHEMATICAL SCIENCES ARE ALWAYS INNOVATING.

They do not consist of a fixed collection of facts that are learned once and thereafter simply applied. While theorems, once proved, may continue to be useful on a time-scale of centuries, new theorems are constantly being discovered, and adapting existing knowledge to new contexts is a never-ending process.

3. THE UNITED STATES IS VERY GOOD AT THE MATHEMATICAL SCIENCES.

In spite of concerns about the average skill of precollege students, the United States has an admirable record of attracting the best mathematical and statistical talent to its universities, and many of those people make their homes here after graduation. Assessments of capabilities in mathematical sciences research find the United States to be at or near the top in all areas of the discipline.

4. MATHEMATICAL SCIENTISTS CAN CHANGE COURSE DURING THEIR CAREERS.

Because the mathematical sciences deal with methods and general principles, researchers need not maintain the same focus for their entire careers. For example, a statistician might work on medical topics, climate models, and financial engineering in the course of one career. A mathematician might find that insights from research in geometry are also helpful in a materials science problem, or in a research challenge from brain imaging. And new types of mathematical science jobs are constantly being created.

"1 Introduction." National Research Council. *The Mathematical Sciences in 2025*. Washington, DC: The National Academies Press, 2013.

www.national-academies.org