The MAA, through grants from the Tensor Foundation, and the Lilly Foundation have sponsored the annual Mathematics Minicamp for Women, a two-day camp at Valparaiso University, for young women currently enrolled in Algebra I in their schools. Teams of three students from each school participate in seminars applying mathematics in engineering, environmental science, cryptography, and other disciplines, interact with professional women from a variety of fields requiring quantitative skills, and are guests overnight of VU undergraduate women who are majoring in mathematics, science, and engineering. Over 100 volunteers, faculty, staff, and students from VU and professional women from the community, have made this camp a successful annual event. The program provides experiences that enable young women, who as a group are underrepresented in mathematics, science, and engineering, to understand and to consider choosing careers in these fields; it encourages them to continue to study mathematics in their schools so that they are prepared for these majors in college. This talk will describe the camp and detail the lessons its organizers have learned. (Received September 15, 2000)