Fact Sheet: Fractal Geometry For Girls (FG)² MAA/Tensor Grants 2005–07

**Concept:** Connecticut College, with educational partners, Longfellow School, Bennie Dover Jackson Middle School (BDJMS), Gateway Community College and Yale University presented a series of after-school workshops entitled Fractal Geometry For Girls (FG)² for A.Y. 2005-06 and 2006-07. Middle-school and college teachers worked collaboratively to introduce fractal geometry to girls in contexts that built the students’ confidence and interest in learning more mathematics. The program concluded with college visits for the students in June of each year. **To assist in the continuation of the project, a Web site for workshop materials is under construction.**

The (FG)² project was based on the philosophy and accomplishments of (1) The Connecticut College Teach and Learn Partnership for Math and Science Excellence, Lucent Technologies grant of 2001 with focus on its fractal geometry program and (2) The fractal geometry middle-school workshops sponsored by Yale’s NSF Fractal Geometry Project and those presented at the college for CAMPY (The Connecticut Association of Mathematically Precocious Youth). (FG)² was funded by the MAA/Tensor Foundation; the NSF Fractal Geometry Project at Yale University; the Hostinsky Fund of the Mathematics Department and the Dean’s Fund, both of Connecticut College; and in-kind gifts of use of space and equipment from Longfellow School, Bennie Dover Jackson Middle School, Gateway Community College and Connecticut College.

The methodology used was a spiral learning approach where basic concepts were revisited with increased levels of complexity. It combined math and science lessons with ancillary writing and art projects. Workshops were sometimes attended by other math or art teachers. Connecticut College students have tutored in Bridgeport.

**Goals:** (1) To increase academic self-esteem and to encourage positive student attitude toward mathematics, (2) to increase student interest in post-secondary education (3) to increase middle-grades students and teachers’ knowledge of fractal geometry and (4) to increase teachers’ interest in incorporating elements of fractal geometry into their existing curricula.

**Processes and Activities:** Processes included recognizing patterns, measuring, sketching, calculating, writing, exploring with historical, scientific and artistic reporting.

**Personnel:** Teachers: Bonnie Hole, 8th grade math teacher, Longfellow School, Bridgeport, CT, Nicholas R. Curcio, 8th grade math teacher and math department head at BDJMS, Beth Waller Petersen, past sixth grade math teacher at BDJMS, New London; Participating principals: James F. Adams, Longfellow School and Jaye Wilson, Bennie Dover Jackson Middle School; Technical advisor: Michael Frame, Professor of Mathematics and Head of the NSF Fractal Geometry Outreach Program, Yale University; Additional reviewer: Virginia Jones, retired mathematics lecturer, Central Connecticut State University; Program presenter: Thomas McGrath, Director, Biomedical Technology, Gateway Community College; Programmer/graphics designer: Janet Hayes, Connecticut College; and Project director: Ann Robertson: Senior Lecturer, Department of Mathematics and Computer Science, Connecticut College.

**Reporting and Dissemination:** In addition to official reports, results were presented at the joint meetings of the Mathematical Association of America (MAA) and the American Mathematical Society (AMS) in San Antonio (2006) and in New Orleans (2007). Dissemination includes a presentation/workshop to teachers participating in the Math/Science LEARN Partnership Grant and by a Web site under construction. LEARN is a regional Education Service Center in Southeastern Connecticut.

**Project Outcomes:** Workshop slides, “Fractal Geometry and its Applications”; an outline/instructional guide for the college/university program; assessment measures; a summative report and the creation of a Web site with workshop materials.