

FOCUS ON MATHEMATICS 2009 SUMMER INSTITUTES

August 3 – 6 • August 10 – 13

Summer mathematics institutes offering content-based professional development for mathematics teachers

Overview

Focus on Mathematics is a unique partnership funded by the National Science Foundation to provide mathematics teachers and administrators the opportunity to deepen their own content knowledge and mathematical skills in order to improve student achievement in their school districts.

Summer Institutes are intensive week-long courses offering teachers an immersion experience in mathematics as part of the 2009 *Focus on Mathematics* professional development program.

Stipend

Focus on Mathematics teachers who are qualified through their districts to participate in Summer Institutes will receive a stipend of \$350 after the completion of an institute. FoM teachers should contact their district leader for details.

Professional Development Points

Participants will be awarded PDPs equivalent to the number of hours spent in each FoM institute. A maximum of 28 PDPs is available per session. Graduate credits are not offered for summer institutes.

Fees

Teachers from districts outside of the *Focus on Mathematics* partnership are invited to participate in the FoM Summer Institutes, pending space availability. The cost for each institute is \$500 per participant. Content materials, breakfast and lunch will be provided.

Contact Information

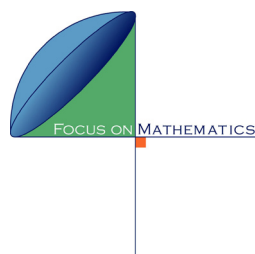
For general information:

Mary Beth LeFaivre
Project Liaison, EDC
Phone: 617-618-2510
E-mail: mlefaivre@edc.org

Submit registration form to:

Melody Hachey
Project Coordinator
Mail: EDC
Division of Mathematics Learning and Teaching
55 Chapel Street
Newton, MA 02458
E-mail: mhachey@edc.org
Fax: 617-969-1527

Focus on Mathematics is a unique partnership of mathematicians and educators from Boston University, Education Development Center, Inc., University of Massachusetts Lowell, Lesley University, and five Greater Boston school districts: Arlington, Chelsea, Lawrence, Waltham, and Watertown.



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Please visit our Web site at www.focusonmath.org

2009 Summer Institutes

Each institute looks at the core ideas within a foundational topic in mathematics and reflects on the development of these big ideas throughout the curriculum. Teachers will be able to see how mathematical ideas arise at their grade level, and how those ideas develop as students move through the grades. Little by way of background is assumed, but we promise new and elegant results every day!

Session 1: *Algebra Connections*

In this institute teachers will trace the “big ideas” that help students achieve success in algebra. We will explore arithmetic as an important foundation for learning algebra, and trace the development of core algebraic concepts and connections between them that foster deep understanding of algebra. By focusing on the big ideas of algebra and the mathematical ways of thinking that are central to algebraic reasoning, we hope to bring greater coherency to the algebra topics we teach, from upper elementary through middle and high school mathematics. Through inquiry-based problem solving, collaboration, and reflection on practice, we will deepen our own knowledge of algebra and what learning experiences build and strengthen students’ procedural fluency and conceptual understanding of algebra. Topics include: transition from arithmetic to algebra, linearity and proportional reasoning, equations and expressions, and functions and problem solving.

Facilitators: Nadine Solomon, Arlington Public Schools, and Kittery Wagner, Watertown High School
Dates: August 3–6, 2009; M.–Th.: 8a.m.–3:30p.m.
Location: Watertown High School, Watertown, MA

Session 2: *Problem Solving and Modelling with Graph Theory*

Graph Theory is almost unique among the mathematical disciplines: the basic concepts are very simple, and most everyone has encountered problems that involve graph theory. It is not a huge step to get from basic definitions to asking interesting questions, some of which are easily settled, and some of which are among the major unsolved problems of mathematics. Graph Theory is a branch of Discrete Mathematics that studies structures expressed as points connected by lines. Graphs are used as models in fields as diverse as psychology, physics, political science, and drama.

This institute will look at graphs as they occur in mathematical problems and at graphs as mathematical models both to represent and to solve problems in a variety of areas. Although no prior background is required, we’ll see how the study of graphs makes it possible for all of us to understand how (and why) mathematicians work. We will explore both familiar and unfamiliar puzzles and see how using graphs as models help us find solutions while at the same time allowing us to think deeply and more abstractly. All of the puzzles will be easily understood by middle and high school students, and can be made the basis of various problem-solving activities. Yet, as we’ll see, they extend naturally into problems that challenge even the best mathematicians. They serve as an ideal tool for developing and refining mathematical habits of mind – such as geometrical visualization, algebraic abstraction, and logical induction and deduction – both in our students and in ourselves.

Topics will include familiar problems like those involving paths (The Konigsberg Bridge, the Traveling Salesman Problem) and map colorings, applications to other fields such as social psychology and electrical circuits, applications of other mathematical concepts to graphs, and some notions that are simply fascinating and fun!

Facilitator: Dennis Geller, Arlington High School, Arlington Public Schools
Dates: August 10–13, 2009; M.–Th.: 8a.m.–3:30p.m.
Location: Kennedy Middle School, Waltham, MA

Registration Form

There are two ways to register for FoM Summer Institutes. You can complete an online registration form by visiting the FoM website: www.focusonmath.org/fom/programs/summer, or complete the registration form below. Space is limited; institutes are filled on a first-come, first-served basis. **Registration deadline is June 22.**

Session	Institute	Sessions Attending
1	<i>Algebra Connections</i> (August 3–6 @ Watertown High School, Watertown)	<input type="checkbox"/>
2	<i>Problem Solving and Modelling with Graph Theory</i> (August 10–13 @ Kennedy Middle School, Waltham)	<input type="checkbox"/>

Please Print ; *We prefer the address and phone number best for contacting you during summer months.

Name: _____

Title: _____

Address: _____

Phone: _____ Preferred E-mail: _____

District: *Must be included to receive confirmation.*

Arlington

Waltham

Chelsea

Watertown

Lawrence

Other _____

School: _____ Grade level: _____

Signature: _____

What do you hope to learn by attending the summer institute(s) for which you are registering?

Submit a completed registration form to Melody Hachey at EDC in one of three ways:

1. Mail: Melody Hachey
Center for Mathematics Education
EDC
55 Chapel Street
Newton, MA 02458
2. E-mail: mhachey@edc.org
3. Fax: 617-969-1527

Deadline for registration for *Focus on Mathematics* teachers is **June 22, 2009**. If you must cancel, please do so by **June 26, 2009**. Registration for teachers in districts outside of the FoM partnership begins July 1st; applications will then be accepted until the institutes are full. Tuition for non-FoM teachers is \$500 per session. Confirmation will be sent via e-mail to each successful registrant. Information regarding the institute, including an agenda, map, and directions, will be mailed two weeks prior to the start of each session.