Professional Development

Mastering the Common Core: We Have the Practices

http://mathforum.org/pd/

Community

The Math Forum is a community of mathematicians, teachers, and researchers working together to improve math education. We draw on our strengths in mathematics, technology, and professional collaboration to create high quality mathematical experiences that directly connect to the individual learner’s thinking and interests.

1992 to the Present

The Math Forum community has been developing mathematical communication and problem solving every day since 1992. From mentoring thousands of students’ problem-solving and carefully researching what helped students reflect, revise, and learn, we have developed best practices in supporting students’ mathematical thinking and communication. We now support teachers to mentor their own students, whether online through the Problems of the Week software, or through effective classroom practices and curriculum implementation.

Opportunities

We have a spectrum of opportunities that includes online courses focused on math content knowledge for teaching, understanding student thinking, and effective feedback and facilitation of academically productive math talk. Our facilitated courses cost $149 (including CEU administration costs) per participant. We also offer free unfacilitated workshops and orientation sessions that are a great introduction to online learning.

Online Courses for Teachers

Incorporating Financial Education into the Math Classroom

Explore problem solving activities that can help students engage with financially-situated math. The course also introduces software tools that encourage exploration of financial topics and the learning of particular math concepts that support understanding of financial topics.

Moving Students from Arithmetic to Algebra...One Step at a Time

In this course we will examine a continuum of student work from the Math Forum’s Problems of the Week archive. Selected work will include a range of examples from “not knowing how to start” to “it’s perfect. What could I possibly say to her?” We will consider specific ways to move students’ thinking from arithmetic to algebraic reasoning and symbolic representations and manipulations.

Problem Solving in Geometry and Measurement

This course will provide teachers an opportunity to deepen their understanding of topics and student learning in geometry and measurement and the problem solving process. Teachers will discuss their own solutions to problems about perimeter, area, volume, and properties of triangles. Exploration will include the use of interactive applets and dynamic geometry software. Teachers will analyze student work to discover strengths and weaknesses in order to make more effective instructional decisions.

Problem Solving Strategies

Participants will solve challenging middle school and high school algebra, geometry, and probability problems and develop a supplemental curriculum outline supporting the development of mathematical approaches to problems. We will discuss how to support students developing high levels of competence and sophistication with a wide range of mathematical approaches from “guess and check” to “consider a simpler problem” to “building mathematical models.”

Teaching Mathematics with The Geometer’s Sketchpad®

We will explore ways in which the teaching and learning of math in grades 6 through calculus can be enhanced by appropriate use of dynamic mathematics software such as Sketchpad. We’ll construct sketches from scratch and use existing activities and sketches to cover topics in middle school, algebra, geometry, pre-calculus, and calculus (you don’t need to know or remember calculus!). We will also learn about Sketchpad topics such as animation, action buttons, presentation sketches, transformations and iterations, and the construction and use of custom tools.
Learning and Teaching Calculus with Geometer’s Sketchpad®

In this course, we will collaboratively explore the fundamental ideas of calculus, including limits, derivatives, antiderivatives, and integrals, through the use of dynamic geometry software. While the course will cover a variety of calculus content, it is not a calculus course. This course is designed to enrich students’ understanding of calculus ideas, to collaboratively explore these ideas with colleagues, and to engage in professional conversations about the implications of these developing experiences and technologies on the learning and teaching of calculus.

PoW Class Membership: Resources & Strategies for Effective Implementation

After completing this six-week course, current subscribers of the Problems of the Week (PoWs) will be familiar with all the resources associated with PoW membership. You will be able to make an informed decision about how to start implementing PoWs with your students, and you’ll have an idea of ways to deepen the development of their mathematical thinking when you are ready.

Learning from Student Work: Make the Most of Your PoW Membership

The long-term outcome for students working with the Problems of the Week is a combination of good problem solving and strong mathematical communication. Figuring out how to encourage students to reflect and revise is as much a process for a teacher as it is for their students. In order to remove the evaluation component that often is present when working with your own students, you will have the opportunity to mentor student work submitted to the Math Forum from classrooms around the world. The goal is for you to become comfortable as well as successful in prompting students to develop sound mathematical practices.

Mentor Your Own: Supporting Strong Development of Mathematical Practices

After you have become oriented to all of the possible ways to use the resources that come with a PoW membership and you have a foundation of mentoring skills, this course provides an opportunity to apply what you’ve learned with your own students and focus on the development of their mathematical thinking and problem solving, individually and collectively.

Differentiated Math Instruction: Using Rich Problems to Reach All Learners

Rich problems invite a variety of solution strategies. They provide an effective vehicle for accommodating a range of levels and learning styles. In this six-week online course you will explore strategies for using problem solving to build skills and concepts for struggling students and to provide challenge for those who soar.

Our online workshops are community-facilitated. A Math Forum facilitator monitors the workshop to respond to technical questions and support the community, but does not “instruct” the course in a traditional sense. We rely on a critical mass of participation from those who have registered so that there are active discussions resulting in a successful workshop experience for everyone.

Using Technology and Problem Solving to Build Algebraic Reasoning

Teachers will explore how technology can help students build algebraic reasoning as they model and solve contextualized problems using a variety of representations, including graphs, tables, equations, and words.

Technology Tools for Thinking and Reasoning about Probability

Teachers will investigate some mathematics topics common to middle school curricula within the theme of probability. In this context we will explore the Math Tools digital library and several software tools that contribute in some way to mathematical understanding, problem solving, reflection and discussion.

The self-paced, week-long session includes activities to help you learn about the different features of (1) Problems of the Week or (2) Technology Problems of the Week or (3) Math Tools. You may choose to spend an hour a day or, perhaps, a few hours over the weekend, trying the activities and posting to the discussions. It really is up to you how much time you spend. There are no requirements.

If you have a specific question or are interested in a customized course for a group of teachers at your school or in your district, contact Suzanne Alejandre <suzanne@mathforum.org> or 215-895-1586.

If you are ready to register, please call Tracey Perzan, Monday to Friday, 8 am to 6 pm Eastern time, 215-895-1080 or 1-800-756-7823.