



Building
Mathematics-
Education
Partnerships

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Building Mathematics-Education Partnerships

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The Partners

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- Mathematicians are necessarily interested in mathematics.
- They also have to know something about teaching and learning.
- Mathematics educators (both researchers and practitioners) are necessarily interested in teaching and learning.
- They also have to know something about mathematics.
- How can we co-ordinate the expertise of these groups?



The Problem of Building Partnerships

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- To what extent do existing collaborations depend on special talent?
- How can we build a capacity to contribute to educational engineering into the professional formation of mathematicians and educators?

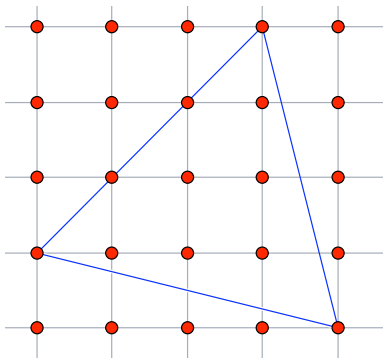
We need activities that

- Open eyes, that is, cause people to see the value of an need for the expertise from other professions
- Win recruits to collaborative work
- Provide something useful for people to work on



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The Making Connections Project

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- Brings together mathematicians, educators, and teachers in regional teams at a summer workshop to undertake a joint analysis of school algebra problems and student work
- All participants look at and analyze the problems, teacher participants collect student work from their own classes
- The summer workshop is a laboratory for developing a model for partnership between these three groups by focusing on concrete examples
- Each team uses the workshop to develop instructional materials and collaborative activities in their own regions



Sample problem

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- 1 Say whether each equation has a positive solution, a negative solution, a zero solution, or no solution.

$$7x = 5$$

$$3x + 7 = 5$$

$$7x + 3 = 5$$

$$5 - 3x = 7$$

$$3 - 5x = 7$$

$$x + 11 = 2x + 3$$

$$11 - 2x = 8 - 4x$$

$$8x + 3 = 8x + 11$$

$$8x + 3x = 2x + 11x$$

- 2 Could you have predicted the answers for any of the equations without solving it? Which ones, and how?



Any Eye-Opening Moment

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Activity Based On Sybilla Beckmann's Essay About Scaling

- 1 Using squares of paper, show that when you multiply the side length of a square by 2, you multiply the area by 4.
- 2 Using s stand for the side length of the square, and using $A(s)$ to stand for the area of a square of side length s , write an algebraic equation and an algebraic justification for each statement.

- Statement: $A(2s) = 4A(s)$
- Justification: $A(2s) = (2s)^2 = 4s^2 = 4A(s)$



Essay Writing Activities

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- Mathematicians Writing for Teachers
- Noyce/Dana Project
- Spring IM&E Curriculum Workshops



Spring IM&E Curriculum Workshops

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- Mapping the High School Algebra Curriculum, February 19–21, 2009
- Mapping the High School Geometry Curriculum, March 19–21, 2009
- Mathematicians in Mathematics Education, April 2–4, 2009
- Mapping the Calculus Curriculum, April 18–20, 2009