



IMPressions

A NEWSLETTER ABOUT THE INTERACTIVE MATHEMATICS PROGRAM®

SPRING 2003

IMP Launches Work on Second Edition

The Interactive Mathematics Program has begun work on a second edition of the curriculum. A new National Science Foundation (NSF) revision grant, entitled “IMP for the 21st Century,” will encompass three major components: curriculum, professional development, and dissemination/implementation. Dan Fendel will lead the effort, and will work closely with Sherry Fraser, Jean Klanica, Matt Bremer, and Lynne Alper. Dan, Sherry, and Lynne are three of the four original IMP directors. (The fourth original IMP director, Diane Resek, will serve on the Project’s Steering Committee.) Jean was

an early IMP user, starting in 1990 at Eaglecrest High School in the Denver, Colorado area. She is now director of IMP’s Rocky Mountain Region. Matt was one of the original IMP pilot teachers at Berkeley High School (starting in 1989), and played an important part in the revisions that led to the first published version of the program. He continues to teach IMP at Berkeley High, and is a leader in Berkeley’s mentor program for new teachers.

The leadership of the project will be aided by a Steering Committee of both IMP and non-IMP mathematics education experts, including representatives of NSF-funded middle school projects, technology experts, specialists in mathematics professional development, and individuals with experience in dealing with parent audiences. A group of current IMP teachers has been assembled into an electronic Teacher Advisory Group to give input as work progresses.

Strengthening the Curriculum
Ways in which the project will strengthen the curriculum include:

- making structural changes that give the program greater flexibility to address the needs of students entering secondary school with diverse mathematical preparation;



Sherry, Dan, and Jean meet to discuss the future of IMP.

- adding a major technology component to the curriculum;
- making content changes as needed to respond to recent state and national policy documents; and
- incorporating the experience of several years of classroom use of the published curriculum.

One key element in the structural changes in the curriculum will be to incorporate more of the algebra strand into *Year 1*. One part of the plan for this is to include ideas from the *Year 2* unit *Solve It!* as they apply within current *Year 1* units. For example, current plans call for *The Game of Pig* to be augmented by work on a “Pig Equation” that finds the break-even point for deciding when to stop rolling. (See *A Pig Equation* on page 3 in this issue.) *The Overland Trail* is also going to be modified to include more work with equations of straight lines.

continued on page 2 ▶

INSIDE

3 ACTIVITY:
A Pig Equation

4 Regional IMPressions

7 IMP Summer 2003
Inservice Dates
IMP National and
Regional Centers
Contact List

8 Key Comments

PUBLISHED BY



Key Curriculum Press grants teachers the right to reproduce these pages for use in their own classroom and teaching community. For any other uses of this material, please contact Key Curriculum Press. For information about *IMPressions*—or for a free subscription—write Key Curriculum Press or call toll free at (800)995-MATH.



IMPressions is published by Key Curriculum Press each fall and spring. We invite readers to send IMP-related ideas and comments to us at:

IMPressions
1150 65th Street, Emeryville, CA 94608
Publisher: Steve Rasmussen
Editor: Lynne Alper
Design and Production: Caroline Ayres

www.mathimp.org

IMP Launches Work on Second Edition

continued from page 1

The technology component, as currently envisioned, will begin with the use of *The Geometer's Sketchpad*® in the unit *Shadows*. The revision team will be working with *Sketchpad*™ experts at Key Curriculum Press and with teachers who have used *Sketchpad* in their IMP classes. Computer enhancements will be included only if they genuinely enhance the learning, and alternatives to computer-based work will be provided for schools that lack the necessary equipment.

Strengthening Professional Development

As all IMP teachers know, professional development support is a crucial component of IMP success. From the start, IMP has provided workshops for teachers to deepen their understanding of mathematics and help them incorporate student-centered pedagogy in their classrooms.

The new grant will synthesize IMP's work in professional development. Goals include:

- expanding professional development capacity through leadership programs that increase the number of IMP-qualified professional development leaders;
- promoting consistency and sustainability through the creation

of an IMP Professional Development Handbook that articulates IMP's vision of successful professional development; and

- improving the Teacher's Guides to clarify the underlying mathematical structure of the curriculum and bring out the interconnections within the program.

Jean Klanica will coordinate this aspect of the project, working closely with Sherry Fraser. Under Jean's leadership, the Rocky Mountain Regional Center has done pioneering work with mentoring and assessment, and the grant will seek to incorporate that vision on a national basis. Planning is underway for a leadership institute in summer, 2003.

Strengthening Dissemination and Implementation

Making IMP a success involves more than teachers and students. It also involves the larger education community of parents, administrators, and other stakeholders. The grant will strengthen the dissemination and implementation aspects of IMP by developing new materials about all aspects of IMP that will inform and address the



The next generation begins with IMP.

concerns of this larger community.

These materials will facilitate outreach and expansion of IMP by clarifying the strengths and advantages of the program and will make it easier for administrators and textbook committees to examine the IMP curriculum, see how the mathematics is developed, and determine its suitability for their needs.

Stay Tuned

IMpressions will include occasional reports on the progress of the revision and its related components. If you have ideas you want to share about how to make IMP better, send them to Dan Fendel at fendel@math.sfsu.edu. ■

Chicago Academic Standards Exams (CASE) Cancelled!

The twice-yearly tests that have been forcing Chicago IMP teachers to rearrange their curriculum have finally been laid to rest as an experiment gone bad. The tests, which were conceived to encourage schools and teachers to beef up their curriculum, instead forced mathematics teachers to emphasize trivial mechanical processes to the detriment of problem solving and worthwhile mathematical content. The idea of citywide testing fell prey to poor planning and amateur test writing.

The cancellation of the tests accompanies other encouraging

developments in the Chicago Public Schools (CPS). The newly appointed CPS chief of mathematics and science, Marty Gartzman, from the University of Illinois at Chicago, has been a long-time supporter of standards-based and NSF-developed curricula. In particular, he has been involved in the development of *Math Trailblazers* and has supported the implementation of IMP in Chicago. The Chicago IMP team has continued to support the schools using IMP with summer and academic year curriculum workshops. But during the last several

years, schools who implemented IMP were made to feel like outsiders to the CPS establishment. Now, with positive support from CPS, IMP schools and teachers will be able to concentrate on more important issues. We can teach the curriculum in the order in which it functions best, the order originally designed by the authors. We can concentrate on student learning instead of preparation for substandard tests. And we can work on becoming better teachers. ■



A Pig Equation

The article on page 1 of this issue reports on the work that is underway for a second edition of the IMP curriculum. One goal of that work is to include, within the first year of the program, more ideas from the *Year 2* unit *Solve It!*

This article describes one example of the plans for achieving this goal. It occurs in *The Game of Pig*, the second unit in *Year 1* of the curriculum.

The Game

The unit centers around a dice game called “Pig.” Each turn of the game consists of one or more rolls of an ordinary die. You keep rolling until you decide to stop or until you roll 1. You may choose to stop rolling at any time. If you choose to stop rolling before you roll 1, your score for that turn is the sum of all the numbers you rolled on that turn.

However, if you roll 1, your turn is over, and your score for that turn is 0. The challenge of the unit is to determine a strategy for playing the game that will produce the best average score per turn in the long run.

Finding the Break-Even Point by Trial and Error

Most of the unit involves developing basic concepts of probability, leading to the idea of expected value, which generalizes the intuition notion of “average in the long run.”

Toward the end of the unit, IMP students use expected value to find the best strategy for Pig, by comparing two hypothetical classes of students. (See *Homework 26: Big Pig Meets Little Pig*.) The students in these fictional classes are in the midst of playing Pig, and each student has 10 points so far. In one class, all students stick with that score; in the other class, they each roll again one more time and then stop.

IMP students then find the expected value for each class and compare. They determine that for the class in which students roll once more, each has an expected value of $11\frac{2}{3}$ points, which is more than the 10 points students each have in the other class. IMP students conclude that with 10 points, it’s best (in the long run) to roll again. They then consider specific starting scores other than 10—that is, they use a trial-and-error approach—to determine the “break-even” point at which it doesn’t matter whether they roll again or not.

Finding the Break-Even Point Using an Equation

In *A Pig Equation*, an activity being tested for the second edition, students develop an equation they can use to determine the break-even point. After reviewing the steps they followed for the starting score of 10 points, students are asked to use a variable, S , to

represent the number of points that each student in the fictional classes has at the start. They are also told that each class has 60 students.

IMP students see that in Class A (where students don’t roll again), the total point score for the class can be represented by the simple expression $60S$. But representing the total score for Class B, in which students each roll one more time, is more complex. The key to the activity is this series of questions:

4. Now suppose each student starts with S points.
 - a. Describe in words or symbols all the possible scores that students in Class B could have after one more roll. (Hint: What arithmetic did you do in Question 3a [the case where students each had 10 points] to get the scores? How would you represent this arithmetic using the letter S ?)
 - b. How many students [based on the probabilities] will end up with each of those possible scores?
 - c. Describe in words or symbols the arithmetic you would need to do to get the total score for Class B.

Students see that the break-even score for the game is the value they can substitute for S so that their expression from part c gives the same numerical value as $60S$. In other words, they see that they want to solve the following (unsimplified) “Pig equation”:

$$10 \cdot 0 + 10 \cdot (S+2) + 10 \cdot (S+3) + 10 \cdot (S+4) + 10 \cdot (S+5) + 10 \cdot (S+6) = 60S$$

This is the first serious encounter IMP students have with the use of a variable to solve a complex problem. Through a series of activities adapted from the current *Solve It!*, students learn to apply the distributive property and combine terms, and they simplify the equation to

$$50S + 200 = 60S$$

Finally, using the balance scale model currently in *Solve It!* (introduced in *Homework 6: The Mystery Bags Game* of that unit), they learn the basic techniques for working with linear equations, and discover that $S = 20$ is the break-even point.

In the revision plan, this early encounter with the distributive property and with linear equations will be reinforced in later units, so that by the end of *Year 1*, students should be comfortable with these key algebraic concepts and techniques.



Regional IMPressions

CALIFORNIA

Cindy Hendrix and Debby Chappell, IMP teachers at Lancaster High School, held student-led parent conferences at the end of the first quarter. Over 80 students from their IMP classes presented their portfolios to their parents or another adult. Students signed up for a 15-minute time interval during which the student would discuss the mathematics in his or her portfolio and the progress they had made.



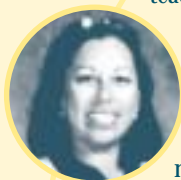
The conference gave parents an opportunity to see the quality of their students' work and the mathematical concepts being studied. For teachers, it was an opportunity to make a personal connection with the parents. Many students had not discussed their academic work with their parents since elementary school. The pride students showed in their work and accomplishments was evident on their faces. Parents were impressed by the level and quality of the work. One mother observed, "Wow, this is way beyond any math I did in high school." Another parent commented that these conferences were so worthwhile they ought to happen in every subject. For students who were struggling with the math, the discussions provided an opportunity to seek ways to improve. The teachers made available tutoring schedules and a handout of strategies students could use at school and at home to increase their learning.

Debby and Cindy plan to hold these student-led conferences again in the spring. They encourage other math teachers to join them, and believe that these efforts will help the IMP enrollment at their school continue to grow.

The IMP community continues to thrive in California thanks to the dedication, hard work, and ability of teachers around the state. This past year, three more IMP teachers received National Board Certification.

Congratulations to Ana England, Mike Bryant, and Susan Ford who all successfully completed the 200 hours required.

According to them, while the process is arduous, it is also very worthwhile. The time spent in reflection on teaching practice is a powerful professional development experience in its own right, and they encourage other IMP teachers to do the same.



No Child Left Behind Act ("Every Child Included") and its implications for mathematics education. The next day, Sherry flew to Maui to speak to mathematics teachers, counselors, and administrators from King Kekaulike High and Kalama Intermediate schools. The session provided information on IMP and included topics such as the mathematical content of IMP, college admissions requirements, standardized test results, and overall student performance. On Saturday, at a High School Articulation and Training Session on Oahu, Sherry's presentation focused on reform mathematics. Hawaii's educators truly appreciated the sharing of her expertise and knowledge.

ILLINOIS

See article on page 2.

MIDWEST

Changes in district leadership, curriculum leadership, and high school reorganization have made it difficult for Minneapolis IMP teachers to get together on a regular basis. At a rare but welcome gathering last week, experienced IMP teachers came to a consensus opinion based on their own "research": IMP students end up being nicer!

Everyone knows that growing up in Minnesota makes all our students nice. If there are exceptions, we blame it on the cold. But this group of teachers, many of whom were delivering both IMP and sequential curricula during the current school year, agreed that IMP students outperform their non-IMP peers in this quality of being nice.

What are the variables in this research? The teachers listed a number of them:

- First and foremost, the group work helps to prevent isolation.
- The presentations help students develop a sensitivity to the other students when they are up in front of the whole class... "I want to be respectful of their ideas so they'll be respectful of mine when I'm up there!"
- The presentations also help students think on their feet, resulting in increased confidence.
- The IMP classroom fosters improved relationships between students and teachers. The students get to know the teacher better in the inquiry-based classroom, and vice-versa. The teacher tends to be more encouraging of students in the IMP classroom. In fact, students occasionally recognize that the teacher is also a human being!
- Even teachers who bring IMP instructional strategies into their sequential math classes find that it is difficult to eliminate the increased competition that tends to occur there.

HAWAII

Hawaii was honored when Sherry Fraser, one of the authors and national directors of IMP, visited over a fall weekend this past year. We kept her very busy.

As the luncheon speaker for the Fall Statewide Mathematics Conference for department chairpersons and elementary grade level liaisons on October 31 in Waikiki, Sherry addressed the

Many of these teachers have supported IMP in the past because they were committed early on to leaving no child behind academically. But as they shared pop and pizza last week, they also realized that IMP helps them keep kids connected socially and emotionally as well. “Minnesota nice” now has a mathematical bent to it and these teachers have verbalized another important reason to work hard at their implementation of the IMP curriculum.

NEW ENGLAND

Congratulations to New England IMP’s three new nationally-certified teachers: William Blatner, South Hadley High School, Massachusetts; Sharon Hessney, Milton High School, Massachusetts; and Kevin Sawyer, Silver Lake Regional High School, Massachusetts.

Bill Blatner commented, “For National Board Teacher Certification, teachers submit four portfolio entries, two of which include videotaped segments from the classroom. The process asks teachers to document evidence of students engaged in problem solving, working in cooperative group settings, and using technology. In this respect, I didn’t have to make up anything for my portfolio. Much of what the board is looking for is what we do every day in IMP. I held back on showing my students how to solve systems using matrices and videotaped them struggling to translate the theory into a calculator procedure. They did most of the work! I made extensive use of student portfolios for my entry focusing on assessment. My best portfolio entry related to professional development and making connections with the community. The four-year IMP training model, through which I have passed and now teach to other teachers, comprised about half of that entry. My work to establish IMP at South Hadley High School, including publication of the parent brochure, family math nights, and other community outreach, made up the other half of the entry. It is affirming that the work we all do as IMP teacher leaders is recognized by the National Board for Professional Teaching Standards.”

Sharon Hessney offered, “The emphasis of the extensive national certification process was like one big IMP class—student-centered teaching and self-reflection. It is not surprising that my highest score was on my IMP class. And, now I have produced a 15-minute IMP video for presentations.”

“Achieving National Board Certification is a significant milestone in my career as a mathematics educator,” noted Kevin Sawyer. “I credit the Interactive Mathematics Program curriculum, in part, for my readiness for such an endeavor. Teaching IMP exposed me to the mathematical content needed for success on the written assessment portion of the National Board Certification process. I felt especially comfortable with topics in discrete mathematics and probability and statistics, having trained for and taught such units as *Pennant Fever*, *The Pit and the*

Pendulum, and *The Pollster’s Dilemma*. Also, adopting the pedagogy that goes along with teaching such an interactive curriculum made it easy to reflect on my teaching practice, which is what National Board Certification is really all about.

“I have grown tremendously as a learner, teacher, and teacher leader through my involvement with IMP,” Sawyer continued. “I am frequently called upon to conduct teacher-training workshops for my district and for local schools and colleges. Just last week at Bridgewater State College, I conducted a workshop for middle and high school teachers on the use of graphing calculator technology. IMP gave me my foundation in this area by making graphing calculators a necessary tool for teaching the curriculum. I have high expectations for my students, and in earning this certification I am showing my students that I also have high expectations for myself”.

PENNSYLVANIA

At Carver High School of Engineering and Science, a predominantly minority high school in North Philadelphia, mean scores shot up an astounding 100 points on the 2002 Pennsylvania System of School Assessment (PSSA), reaching 1470 compared to 1370 last year. Prior to 2002, Carver’s mean PSSA math scores ranged from 1340 to 1370. Sue Tischler, department chair at Carver, credits the raise in scores to the decision to enroll all Carver ninth and tenth graders in IMP. The students who took the PSSA in April 2002 were the first Carver class to be entirely enrolled in IMP.

Our second item concerns the release of the results of a longitudinal study sponsored by the National Science Foundation. The focus was on the joint impact of IMP and block scheduling on algebra achievement and course taking at Strath Haven High School—now an all-IMP school. The study comprised the Ph.D. dissertation of Dr. Steven Kramer of the University of Maryland. Dr. Kramer compared the achievement of this first all-IMP group to the last group that was all-traditional. He reported that the joint innovation of IMP and block scheduling, with extra time allocated to planning and staff development, was followed by improvements in student mathematics achievement. Specifically, compared to an earlier cohort of students who had used a traditional schedule and curriculum, the IMP students were better able to formulate algebraic models, interpret graphs and tables, solve algebra problems presented in context, and work in pairs to solve an extended, open-ended, applied algebra problem. Students who had used a traditional schedule and curriculum were better able to translate a line graph into an equation and to simplify expressions with integer (but not fractional) coefficients. Furthermore, the IMP students elected to take more math courses. Indeed, 58% of students using the block schedule and IMP completed four IMP courses and went on to enroll in at least one additional advanced

continued on page 6 ►

Regional IMPressions *continued from page 5*

mathematics class. In contrast, only 48% of students using a traditional curriculum and schedule completed three core courses (algebra 1, geometry, and algebra 2) and went on to enroll in at least one additional advanced mathematics class.

Finally, Dr. Kramer found that IMP students did extraordinarily well in the demanding BC Advanced Placement Calculus. And, not only was the number of students taking the exam higher, but of the 20 IMP students taking the BC Calculus exam, 18 received a score of “5” and the other two received a score of “4” for a mean score of 4.9. As Dr. Kramer pointed out, that year there were only seven other high schools in the United States where at least 20 students completed the BC Calculus exam and the school-wide mean score was 4.9 or higher.

Details of both the Carver High School results and Kramer study can be found online at www.gphillymath.org/StudentAchievement/.

ROCKY MOUNTAIN

Don't forget the counselors! As Pueblo East High School IMP teachers began their second year of implementation, they were discouraged with the low enrollment in their two IMP 1 classes. Each class had fewer than 20 students and did not represent the range of student ability of East freshmen. Rather, the students in these classes were predominantly those who had not been successful in mathematics. The four IMP teachers, George Anderberg, Shirley Muniz, Lori Quigley, and Linda Sanchez believed that counselors were not well informed about IMP and this was affecting the low enrollment. As George said, “Counselors control our lives. If the counselors don't know what is happening, the students don't know what is happening.”

The IMP teachers decided to take action. In February, as middle school registration approached, they gave a presentation at a meeting of counselors, which included all four East counselors and all of the counselors from their two primary feeder middle schools. Their goals for the presentation were two-fold: they wanted the counselors to realize there is an alternative route to learning mathematics that might be more suitable than the traditional route, and they wanted counselors to know that IMP is not a remedial program. George began the presentation by providing background on the need for change in mathematics education. He shared results from the Third International Mathematics and Science Study (TIMSS) along with some of the problems students were tested on.

Shirley introduced the counselors to the content of the IMP curriculum. Her presentation explained the integration of the curriculum in each year and provided counselors with a sense of the level of mathematics that students were getting in IMP using, in part, a clip from the PBS video, “Life by the Numbers.” She shared

with counselors a “route map” that the four teachers had designed as a way for counselors to understand how IMP fits with the traditional sequence of courses also offered at East.

Lori talked with counselors about the colleges and universities across the United States where IMP students have been accepted for admission. She also wanted counselors to “hear” from a mathematics professor at one of these colleges. She accomplished this by summarizing the foreword to the IMP 3 book written by Graeme Fairweather, head of the Department of Mathematical and Computer Sciences at Colorado School of Mines. Counselors received handouts of the college list and foreword to share with parents and students. Linda concluded the presentation by showcasing student work on POW's from *The Game of Pig*. She discussed the writing and problem solving that students engage in while solving POW's and emphasized how their work is much more in depth than simply showing an answer. She also shared the comments of a parent whose son is in his second year of IMP at East. Despite some writing limitations, he has been successful in the program and is engaged in the mathematics he is learning. At the end of the presentation, counselors indicated that they were amazed—no one had previously shared this information with them.

The four IMP teachers deemed the presentation a success when the scheduling process began. The number of students requesting IMP 1 enrollment necessitated the scheduling of five IMP 1 classes. According to the IMP teachers, these classes had higher numbers and were more heterogeneous than in the past. Furthermore, counselors helped to schedule students already having completed one or more years in the traditional sequence into IMP classes. In short, counselors had developed an understanding of the challenging mathematics contained in IMP, mathematics that is, in fact, accessible to a wide range of learners.

VERMONT

In the best tradition of interactive mathematics team work and problem solving, each student at Brattleboro Union High School, Brattleboro, Vermont, who completes the *High Dive* unit problem receives a T-shirt celebrating the event. The diver's position is on the front of the shirt and the cart's position is on the back—all done by iron-on computer transfer. The sleeve identifies the class that solved the problem.

This past semester, the T-shirt had a new look: a special graphic created by IMP student Dan Allen, Class of 2003. Dan's mathematical skills, as well as his artistic talent, have been a welcome addition throughout his IMP career. We hope this success will follow him as he heads off to the University of Vermont next year. ■



2003 SUMMER INSERVICES FOR THE INTERACTIVE MATHEMATICS PROGRAM

Key Curriculum Summer Institutes

IMP with *The Geometer's Sketchpad*®
Oakland, California July 20–27
For information, please call 800-995-MATH
or visit www.keypress.com/pdc.

Arizona Regional Center

For information, please call 480-731-8062.

California Regional Center

IMP 1, 2, 3, 4—Berkeley June 16–20
Meaningful Algebra—Berkeley June 16–20
Statistics—Berkeley June 16–20
IMP 1, 2—Oxnard August 11–15
Meaningful Algebra—Oxnard August 11–15
Calculus—Oxnard August 11–15

Hawaii Regional Center

IMP 1, 2, 3 June 23–27

Illinois Regional Center

For information, please call 773-534-3954.

Midwest Regional Center

IMP 1, 2, 3, 4 August 4–8

New England Regional Center

IMP 3, 4 June 23–27
IMP 1, 2 August 11–15

New York Regional Center

For information, please call 718-320-2711.

Northwest Regional Center

IMP 1, 2, 3—Tacoma June 23–27
IMP 1, 2, 3, 4—Hillsboro July 28–August 1

Pennsylvania Regional Center

For information, please visit www.gphillymath.org.

Rocky Mountain Regional Center

IMP 1 June 16–27
Cognitive Coaching (days 5–7) June 18–20
IMP 2, 3, 4 June 23–27

Vermont

IMP 1, 2, 3 July 7–11

IMP NATIONAL AND REGIONAL CENTERS CONTACT LIST

NATIONAL OFFICE/Sherry Fraser

Call: (415)332-3328 Fax: (415)332-3381
Email: imp@math.sfsu.edu

OUTREACH COORDINATOR/Lisa Doak

Call toll free: (888)MATH IMP
Email: Lisa_Doak@ceo.cudenver.edu

ARIZONA REGIONAL CENTER/Nora G. Ramirez

Call: (480)731-8062 Fax: (480)731-8060
Email: nora.ramirez@domail.maricopa.edu

CALIFORNIA REGIONAL CENTER/ Margaret DeArmond

Call: (661)827-4511 Fax: (661)827-4592
Email: margaret_dearmond@khsd.k12.ca.us

HAWAII REGIONAL CENTER/Kathleen Nishimura

Call: (808)733-4780 Fax: (808)394-1304
Email: kathleen_nishimura@notes.k12.hi.us
iris_mizuguchi@notes.k12.hi.us

ILLINOIS REGIONAL CENTER/Anne Horn

Call: (773)534-3954 Fax: (773)413-7411
Email: annehorn@uic.edu

MIDDLE COLLEGE HIGH SCHOOL CONSORTIUM CENTER/Cece Cunningham

Call: (718)609-2025 Fax: (718)349-4003
Email: cecullen@aol.com

MIDWEST REGIONAL CENTER/Anne Bartel

Call: (612)668-5365 Fax: (612)668-5305
Email: anne.bartel@mpls.k12.mn.us

NEW ENGLAND REGIONAL CENTER/Carla Oblas

Call: (617)373-2328 Fax: (617)373-8562
Email: oblas@neu.edu

NEW YORK REGIONAL CENTER/Suzanne Libfeld

Call: (718)960-8416 Fax: (718)960-8054
Email: suzli@aol.com

NORTHWEST REGIONAL CENTER/Brent McClain

Call: (503)431-5545 Fax: (503)916-2725
Email: bmcclain@ttsd.k12.or.us

PENNSYLVANIA REGIONAL CENTER/Joe Merlino

Call: (215)951-1203 Fax: (215)951-5089
Email: merlino@lasalle.edu

ROCKY MOUNTAIN REGIONAL CENTER/Jean Klanica

Call: (303)756-9141 Fax: (303)756-9256
Email: jean_klanica@ceo.cudenver.edu

VERMONT REGIONAL CENTER/JoAnn Vana

Call: (802)334-6116
Email: jvana@pshift.com

NEW BRUNSWICK, CANADA/Marcel Lavoie

Call: (506)453-2326 Fax: (506)453-3325
Email: marcel.lavoie@gov.nb.ca

NOVA SCOTIA, CANADA/Antoine Jarjoura

Call: (902)424-6500 Fax: (902)424-0820
Email: jarjoura@ednet.ns.ca

Key Comments

National IMP 2003 Summer Institute

IMP™ with *The Geometer's Sketchpad*® July 20–27

Enroll today!

Visit www.keypress.com/pdc or call 800-995-MATH for details or to receive a Summer Institute brochure.

Bring the Power of *Sketchpad*™ to Your IMP Curriculum

IMP and *Sketchpad* are a natural match! Spend an extraordinary week this summer learning how you can make IMP an even more effective program for students at all levels, by integrating the dynamic, visual power of *Sketchpad* into the IMP curriculum. Versatile and easy to use, *Sketchpad* is a dynamic construction and exploration tool that enables students to understand mathematics in ways that are not possible with traditional tools or with other software programs. *Sketchpad* will enhance your students' learning from *Year 1* through *Year 4*, bringing power to the study of algebra, geometry, trigonometry, precalculus, and beyond.

Experience *Sketchpad*

As a participant in this institute, you will work with Jim Barys and Jerry Neidenbach, experienced IMP teachers who use technology in their classrooms. You will see how integrating *Sketchpad* into your IMP curriculum provides you with new means for addressing the need for technology inclusion in all levels of the student mathematics experience. Build dynamic, draggable constructions that lead to insights into topics covered in IMP, while you learn how *Sketchpad* works as a mathematical modeling tool and an exploratory environment for mathematics. Among other activities, you'll use *Sketchpad* to model in IMP's *Shadows* unit, and in *Orchard Hideout*, you'll watch the trees grow.

Relax, Enjoy . . .

The institute is held on the Mills College campus, nestled in the scenic foothills of Oakland, California. Historic buildings are shaded by palm, eucalyptus, and scores of other trees on the verdant grounds of the oldest women's college west of the Rockies. Your math-intensive schedule will also allow ample opportunities for relaxation and fun, including a daylong excursion to San Francisco or the Napa wine country.

The Presenters—Leaders in IMP—*Sketchpad* Integration

Jim Barys has over 30 years experience teaching high school mathematics and is the Master Teacher of Mathematics at the Massachusetts Academy of Mathematics and Science in Worcester, Massachusetts. At local, regional, and national conferences, he has made presentations on implementing *Sketchpad* and graphing calculators into mathematics classrooms. He is an Interactive Mathematics Program trainer who has used *Sketchpad* in classes for IMP *Years 1–4*.

Jerry Neidenbach teaches at Oxnard High School in Oxnard, California using *Sketchpad* in her algebra and geometry classes. She has nine years of experience teaching with the Interactive Mathematics Program and has prepared teachers on the IMP *Year 4* curriculum. She is a recipient of the 2002 George Polya Award from the California Mathematics Council for her sustained, outstanding service in the mathematics classroom.

Valuable Take-aways

Institute participants receive . . .

- A Single-User Package of *The Geometer's Sketchpad* Version 4 software (for Windows® and Macintosh®)
- Resource material for IMP–*Sketchpad* integration
- *Exploring Geometry with The Geometer's Sketchpad* module
- *Shadows* Teacher's Guide
- A *Sketchpad* mousepad
- A binder of institute materials
- An attractive institute T-shirt ■

Interactive Mathematics Program and *The Geometer's Sketchpad* are registered trademarks of Key Curriculum Press. IMP and *Sketchpad* are trademarks of Key Curriculum Press. ©Key Curriculum Press, 2003.



1150 65th Street • Emeryville • California 94608

Mail Room:
If addressee is unknown, please deliver to an IMP math teacher.

PSRST STD
U.S. POSTAGE
PAID
PERMIT NO. 470
SANTA ROSA, CA