GBMP 2007 Summer Courses Recap:
More Courses, Participants and Positive Results

During three 2-week sessions, beginning in early June and extending through mid-July 2007, the Greater Birmingham Mathematics Partnership (GBMP) offered its annual professional development summer courses for teachers. Eleven classes were delivered in all. Five sessions of the prerequisite ***Patterns, Functions and Algebraic Reasoning*** course were offered. Two sessions each of ***Numerical Reasoning*** and ***Geometry and Proportional Reasoning*** were held, as well as 1 session each of ***Probability and Data Analysis*** and the brand new ***Extending Algebraic Reasoning Using a Functional Point of View.*** A total of 325 participants completed at least one GBMP summer course in 2007 and many completed more than one course. Participants included 215 5th-12th grade teachers and 81 K-4 teachers from our (9) participating school districts, 10 university/college faculty, 16 pre-service teachers (undergraduate college students), and 3 university staff. This summer, GBMP set program records for the number of classes delivered, the number of different courses offered, the number of participants enrolled, and the number participants completing courses.

At the same time GBMP was setting these quantitative records, participant surveys continued to illustrate the courses' high quality and benefits, just as they have in past years. When asked for their reactions after taking their courses, across the board (for all the courses offered), between **97 and 100%** of all participants agreed with the following statements:

- This course improved my mathematical skills and understanding.
- The mathematical ideas presented in this course will be useful in my teaching during the upcoming school year.
- The teaching modeled in this course will be useful to me during the upcoming school year.
- This course improved my understanding of pedagogy/teaching practices.
- I found the course interesting and engaging.

Here are some quotes from teachers after having just taken their first GBMP course, ***Patterns, Functions and Algebraic Reasoning***:

"I came into this course very skeptical. By the end of the 1st week, I was thoroughly engaged. By the end of the course, I was hooked! I feel like I have gained so much confidence in 'owning' mathematical concepts and being able to communicate them to others. I have really come to appreciate a 'discover' based learning experience."

"*This course opened my eyes to how teaching math can, and should, be so different than the traditional way. Understanding that not all students will learn the same way, or see things the same way and that's okay is a good thing to know! Learning to look for patterns in problems is very empowering and it makes sense to the problem!"*

"Taking this course has really changed my view of mathematics and my view of teaching mathematics. I learned that math can be a lot of fun! Seeing and discussing different ideas has opened my eyes to the beauty of mathematics. Being so actively engaged in the tasks has been a real joy! I can't believe how much I learned and how quickly I caught on to concepts I had difficulty with in my own school days."

"I have always loved math and it has come relatively easy to me. However, I had never made the connection between algebra and geometry. After taking this class, I not only can see the pattern and find the algebraic expression, I can also relate it to the geometry of the pattern. I also see the value of manipulatives and group work. I can't wait to try this with my students!"

More important than their positive feedback about the courses is the fact that teachers are taking what they have learned back to their classrooms. Teachers in all courses except "Patterns" (those who had taken "Patterns" during a prior summer) were asked how their

instruction had changed as a result of participating in GBMP. The following themes emerged from their responses:

- More inquiry-based instruction; more hands-on problem solving and exploration
- Teaching for understanding; helping students make sense of mathematics
- Using manipulatives more effectively; using menus and number talks
- Allowing students to struggle and create their own understanding through self discovery
- More small group tasks, written reflections, class discussions about different ways to solve problems
- Improved questioning skills; learning how to question students as they solve problems rather than giving answers

Participant Quotes related to changes in instruction:

"I greatly enjoyed the course. I feel as if I have made a turn around in my teaching process. I hope to incorporate more investigative lessons during the school year. I feel as if I have a better understanding of the geometry concepts. I will be questioning my students more."

"I have been a strong proponent in the past of teaching the 'traditional way' because it worked for me and prepared me for mathematical fields of study in college, but through these courses I have realized that I did not always understand why things worked the was they did or be able to prove it. This geometry course really forced me to be able to prove things. Keeping that in mind, getting kids to be able to prove and reason will help them 'own' their knowledge and not memorize it."

"(I have changed) Drastically. I now strive for understanding of concepts and not memorization of procedures. Constructing to reach conclusions and getting big idea are also a major part of my instruction…"

"I have been teaching public school for 25 consecutive years now. Taking the GBMP/MEC classes has completely changed for the better my own conceptual mathematical abilities and these courses have completely transformed how I teach math"