

Summer Math Content Intensive
July 29 – August 9, 2002
Teaching and Learning Partnership

Facilitators:

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This two week intensive will focus on two goals, learning mathematics and learning about the teaching of mathematics. We will examine two mathematical content areas, rational numbers and geometry, to better understand the conceptual issues at play in the mathematics. For part of each day we will act as students of mathematics, digging into mathematical problems germane to the middle school curriculum and uncovering big mathematical ideas. Although this may be mathematics that you have learned before we encourage you to push yourself to understand why something works and how do you know. On many occasions we will ask you to approach more “typical” problems in non-standard ways. It is our intent that you will deepen your understanding of these two mathematical areas so that you are better prepared to support your middle school students. In addition, during another part of the day we will be learning about teaching mathematics. This will primarily take place by analyzing Seattle’s middle school instructional materials, the Connect Mathematics Project (CMP). CMP will serve to ground our work on teaching standards-based mathematics. We will be examining the mathematical ideas in lessons, teaching pedagogy underlying lessons and issues middle school students experience with the ideas.

We consider learning mathematics and teaching mathematics as two explicit goals; however, we acknowledge that they will inform one another such that we may be discussing mathematics and shift to talking about teaching mathematics and vice versa. We believe that each goal is important to you becoming mathematics teachers with deep understandings of mathematics teaching and learning. This summer is a chance to familiarize ourselves with some of the mathematics and curriculum that

you will see during the school year as well as discuss underlying teaching principles. Learning about teaching is an on going process and we will be discussing issues of teaching throughout the year. We encourage you to comment and ask questions about how each of our goals relates to your experiences and thoughts of teaching next year.

Your progress during these two weeks will be assessed by completing mathematics problems including written mathematically coherent and articulate explanations of your work. In addition you will be asked to write reflective pieces on your learning mathematics and the teaching of mathematics. These will be in the form of responses to a series of questions that arise while we are engaged in mathematical activities or in the analysis of CMP. We also encourage you to extend mathematical problems posed in the class, solve “challenge” problems presented, and/or create your own mathematical tasks that explore ideas within the areas of investigation. Participation is essential to being successful with the ideas we will explore these two weeks. There will be readings and discussions that will advance our understandings by connecting research and student thinking to our experiences. We expect all assignments to be completed. Assignments receiving an incomplete may be resubmitted.

Grades will be assigned using the following criteria:

Below 3.0 incomplete participation and incomplete assignments

3.0 near full participation in class activities
successfully completed all required exercises/reflective assignments with written explanations

3.5 fulfillment of 3.0 requirements plus
full participation in class activities
written responses show mathematical insights using coherent and articulate explanations
solve one or more of the challenge problems

4.0 fulfillment of 3.0 & 3.5 requirements plus
solve all challenge problems with written explanations that justify your reasoning for a general case
or, create an extension to one or more of the exercises and solve
or, create a relevant challenging problem and show solution

Agenda

	<u>Topic of the Day</u>	<u>Homework Due for the Day</u>
Monday July 29	<i>Developing fractional ideas</i>	
Tuesday July 30	<i>What is the whole?</i>	<i>Reading – Ball article</i>
Wednesday July 31	<i>Conceptual representations of fractional operations</i>	<i>1- 4 of Diagramming Fractions</i>
Thursday August 1	<i>CMP analysis and discussion Division of fractions</i>	<i>CMP group presentations</i>
Friday August 2	<i>Wrap – up of developing conceptual understandings of fractions</i>	<i>Reading – Mack article Diagramming and explanation of four fraction problems</i>
Monday August 5	<i>Introductory hands-on activity Analysis of CMP curriculum Stretching and Shrinking</i>	<i>Set of mathematics problems</i>
Tuesday August 6	<i>CMP presentations & discussion Similarity wrap-up</i>	<i>CMP group presentation</i>
Wednesday August 7	<i>Volume & 3-D Introduction Analysis of CMP curriculum Wrapping and Filling</i>	<i>Written reflection</i>
Thursday	<i>CMP presentations & discussion</i>	<i>CMP group presentation</i>

August 8 *Volume & 3-D wrap - up*

Friday *Pythagoras & optional activities*

August 9

Written reflection