MATH 122

The Community Algebra Initiative
Fall 2008

[1] Technical Information

Math 122, The Community Algebra Initiative meets twice a week. We will meet every Monday and Wednesday from 10am-12pm. Mondays will be regular class meetings in DRL A5, whereas on Wednesdays we will visit Sayre High School.

Course web page: http://s89940423.onlinehome.us

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[2] Goals of the Course

In this course, you will:

- Learn new ideas in mathematics and examine your understanding of previously learned mathematics, especially algebra;

- Develop effective methods for teaching with understanding; and

- Explore the context in which algebra is taught in high school.

[3] Course Structure

In the Penn Classroom

This class will be split between sessions at Penn and sessions at Sayre High School, located at 58th and Walnut. For the first two weeks of class, we will be at Penn full-time. We will use this time to refresh your mathematical knowledge, to discuss pedagogical strategies, and to learn about the context in which you will be teaching. After the introductory period, we will spend Monday's class period at Penn, and Wednesday's class will be held at Sayre.

The Penn session will be devoted to specific preparation for the upcoming high school session: discussing issues brought up in the previous week's session, exploring the algebraic topic of the week, and analyzing the week's activity in preparation for teaching it.

Activities

The activities are designed to do one or more of the following:

- Reinforce concepts taught during the regular class with which students usually have trouble;
- Place concepts in new contexts and make connections between them;
- Enrich the students' experience by showing them mathematics they ordinarily would not see.

Penn at Sayre

During the high school sessions, the class will accompany Dr. Stovall, Dhinakaran and Britney to Edward Hook's 9th grade algebra class at Sayre. We will take over the algebra class in order to do the activity discussed during the Monday session with the students. You are responsible for bringing copies of the labs and any materials necessary to do them (materials and copies will be given to you in class at Penn on Monday). You will usually be working two-on-two or one-on-two with the high school students, guiding them through that week's activity. At the end of the lab, both you and your student(s) will evaluate how the lab went, and you will provide additional feedback to your student(s).

Weekly Readings

You should come to Monday classes having read:

- The chapters of the algebra textbook that the high school students have gone through that week. We'll hand out a schedule, but you can take a look at the Philadelphia Planning and Scheduling timeline for Algebra I at:
    - http://www.phila.k12.pa.us/offices/curriculum/supports/08-09/Psts/Math_HS/01_Philly08_9Alg1_PST.pdf
- The week's lab (posted to the course web page each Wednesday).
- Any articles handed out the previous Monday (which will generally be short but pertinent).

All course materials will be provided by the Penn Math Department and the Access Science program.

Assignments and Grading

Your grade in this course will be based on the following **three** criteria:

Class Participation (50%)

This includes your contribution to class discussions and math activities at Penn as well as your dedication to teaching in the high school classroom. By taking this class, you are making a commitment to your student(s), so attendance is essential. Even one unexcused absence will be detrimental to your class participation grade.

Journal (20%)

You should keep a journal (with at least weekly entries) that records your thoughts about:

a) Your experience in the high school classroom: What motivates your student(s)? What are your students' preconceptions about the material? What techniques worked and

should be continued or emphasized? What needs to be improved, and how will you improve it?

b) The readings and in-class activities: How (if at all) do they relate to your own educational experience? How (if at all) do they relate to your experience in the high school classroom? How can you incorporate their ideas into your teaching?

These questions are, of course, just a guideline; you should feel free to explore what interests you–you can even write about the geometry itself if you want. You should keep your journal in electronic format on the course webpage as discussed in class; the weekly journal entries should be submitted each Friday. It doesn't have to be long (a couple of paragraphs each week is fine), but you should put a fair amount of thought into it. Last but not least, every week, one or two journals of the week will be nominated. Upon your agreement, we will be sharing your thoughts with your classmates. Criteria mainly include completeness, and originality of thought.

Final Project (30%)

You will work in groups of four or less to design your own activity, which should convey a math concept that your student(s) covered, or needed to cover, placed in a real world context. You will then teach your group's lesson during the last week of class to your students. The process of completing your lab will be spread out over the duration of the semester, with both individual and group milestones. In designing your lab it is important to consider the strengths and weaknesses of the students that you and your group members work with weekly. Please keep in mind that gathering this information will take up a larger part of the semester, and our best indication that you're learning about your student(s) is via your journal entries.

[4] Math 122 Weekly Schedules – Fall 2008. (*Subject to change)

Monday	Wednesday
	3rd September Introduction to course
8th September Teaching Styles	**10th September** Introduction to the School District of Philadelphia
15th September Number systems Dry Run	**17th September** First Visit to the Sayre Multiplication Lab
22nd September Dry Run	**24th September** Number Line Lab
29th September Dry Run	**1st October** Fractions / Percentages
6th October Dry Run	**8th October** Fractions Part II / Order of Operations
13th October Fall Break	**15th October** Class at Penn
20th October Dry Run	**22nd October** Slopes
27th October Economic Models	**29th October** Fruit Stand / Nielsen Ratings
3rd November Dry Run	**5th November** Functions and Economics / Fahrenheit-Celsius Lab
10th November Statistics	**12th November** Steroids, Part 1 / Intro To Probability
17th November Final Project Discussion	**19th November** Steroids Part 2
24th November Final Project Presentation	**26th November** Thanksgiving break
1st December Final Project Presentation	**3rd December** Implement Final Project