Math391 Second Meeting
Assignments to Be Completed Prior to Third Meeting

a. **Classroom observation:** Describe at least one situation where a student makes a procedural error during a class discussion or in a solution on the board. Write down the error, *exactly as the student(s) said or wrote it*. Do you think this error is evidence of deeper misunderstanding? Explain how the teacher uses the procedural error to direct teaching. If the error is not used to direct teaching, describe how you would use it. (For example, what would you do the immediately after the error was made? How would it affect what you do later in the course? How would it change the way you would teach the same topic to a future group of students?)

b. **Reading:** Read Chapters 2 and 3in the book (*Connecting Mathematical Ideas* by Jo Boaler and Cathy Humphreys). Also, watch the corresponding videos from the CD. Write a brief summary (no more than two pages) of these texts and video. Again, your summary should be focused on what you think are the most salient and interesting points, and express your overall opinion of the texts.
Please also include your opinion about the following question: Would the border problem well suited for one (or more) of the classes you observe? Explain your opinion. Would you be willing to do the activity with the permission of your teacher? Would you do this activity in your classroom when you will be teaching your own classes? Explain.

c. **Interesting Problem: The Trouble with Toothpicks: Generating a Pattern**

1 2 3 4

Consider the first two given stages of this pattern.

Create diagrams of stages 3 and 4 that are consistent with the first two given stages.

More Trouble with Toothpicks: Exploring Patterns

1. Explore the AREA of the stages of the pattern.
   a) Describe how the area changes from one stage to the next.
   b) Color the square(s) that were added at each stage.
   c) Use words to write a recursive relationship for the area.
   d) Use symbols to write a recursive relationship for the area.
   e) Use words to describe how to obtain the area of the n^{th} stage.
   f) Use symbols to write a closed form for the area of the n^{th} stage.

2. Explore the PERIMETER of the pattern.
   a) Describe how the perimeter changes from one stage to the next.
   b) Color the toothpick(s) in the perimeter that were added at each stage.

c) Use words to write a recursive relationship for the perimeter.
d) Use symbols to write a recursive relationship for the perimeter.
e) Use words to describe how to obtain the perimeter of the n^{th} stage.
f) Use symbols to write a closed form for the perimeter of the n^{th} stage.

3) Explore the NUMBER OF TOOTHPICKS in the pattern.
a) Describe how the number of toothpicks changes from one stage to the next.
b) Color the toothpick(s) that were added at each stage.
c) Use words to write a recursive relationship for the number of toothpicks.
d) Use symbols to write a recursive relationship for the number of toothpicks.
e) Use words to describe how to obtain the number of toothpicks in the n^{th} stage.
f) Use symbols to write a closed form for the number of toothpicks in the n^{th} stage.