Assignments Mtht 400: Methods of Teaching Secondary Mathematics I

John T. Baldwin

August 21, 2005

Fall 2005

AT denotes the book Algebraic Thinking, published by NCTM which is available from NCTM.

Aug. 22:
1. Pages 9-13 of The Teaching Gap will be discussed on Aug. 30.

2. Turn in Aug. 24: A bottle of wine contains 1 liter of wine. Next to it is a glass which holds .4 liter of water. One teaspoon (2 ml) of water is taken from the glass and mixed into the wine. Then a teaspoon of the mixture is stirred back into the glass.

   Is there more water in the wine or more wine in the water?

   Write out both 'intuitive' and 'algebraic' solutions of this problem. Think about the use of variables in each solution.

3. Two articles expand on the first class; we will discuss them on Wednesday. They are being handed out today.

   (a) The article 'From Words to Algebra, mending misconceptions' by Lochhead and Mestre, page 321 of AT

   (b) Some Misconceptions Concerning the Concept of Variable, Rosnik, page 313 of AT.

- **Turn in August 31.** In each of the following label your variables very carefully and write the solution in a form you would like to read on a blackboard. Write a few sentences of English explanation about how you set the problem up.

  1. It takes a bicyclist 4 minutes to ride a mile a against the wind and 3 minutes with the wind. How long would it take her to ride a mile with no wind. (Hint: not 3.5 minutes).

2. Joe walks from Jackson south to Taylor on Halsted. At the same time, Hank walks from Taylor north to Jackson on the same sidewalk. Each maintains a steady pace. Joe arrives at Taylor 5 minutes before Hank arrives at Jackson and 4 minutes after the two pass.

   (a) What is the ratio of their speeds?
   (b) Would it be possible to actually find the speed of Joe or Hank?
   (c) Do you know how the length of the trip: in minutes, in feet?
   (d) If you get any extraneous solutions to equations in the middle of your solution explain how you decide which one to take and why the extraneous solutions arose.