Math 235 Fall 2000
Weekend Puzzles #4

The following puzzles are for your enjoyment only. I will never ask questions like these on quizzes or tests. You may do them or not do them as you see fit. Answers to these puzzles will be given on the next Weekend Puzzle sheet.

This week's puzzles concern making choices in money games. The first puzzle is a classic, and is harder than it looks. The second puzzle is a sort of paradox and many intelligent people support both answers (usually depending on whether they are a believer in free will or determinism); can you make an argument for both possible answers?

1. The infamous "Monty Hall Problem:" Suppose you're on the game show *Let's Make a Deal*; the host, Monty Hall, shows you three boxes, one of which conceals a thousand dollars. You select one of the boxes (but don't get to look in it yet), and Monty opens one of the remaining two boxes and shows you that it is empty. Now two boxes remain; the one you chose, and the one that Monty didn't show you. Monty gives you a choice: do you want to keep the box you originally chose, or switch to the other box? Does it matter? Why?

(Be careful; many people get the wrong answer at first! In fact, many people are absolutely convinced that the wrong answer is right; can you justify your answer enough to convince someone? You might try doing this with actual boxes and a friend 10 or 20 times to "test" your answer.)

2. Mr. Know-it-all knows it *all*. Really. Everything. He can predict any decision you make before you make it with great accuracy. Mr. Know-it-all likes to play the following game: He puts two boxes on the table, which we'll call Box *A* and Box *B*. Into Box *A* he always puts one thousand dollars. Into Box *B* he puts either nothing, or one million dollars. You have a choice: you can either choose both boxes, or you can choose to take only Box *B*. Here's the catch: if Mr. Know-it-all predicts that you will take both boxes, then he won't put anything into Box *B* (and you'll get only $1,000); if Mr. Know-it-all predicts that you will take only Box *B*, then he will put a million dollars into box *B* (and you'll get $1,000,000). Should you take both boxes or only Box *B*?

Answers to last week's puzzles (more detailed keys to puzzles are posted on the class website): (1) Smith is the cashier, Brown is the manager, and Jones is the teller. (2) Carter is the grocer, Flynn is the banker, Milne is the druggist, and Savage is the architect. (3) Abbot is going to the hardware store, Briggs is going to the bank, Culver is going to the grocery, and Denny is going to the shoe store. (4) Alice, Betty, Carol, and Dorothy are married to George, Harry, Frank, and Ed, respectively; they are dancing with Frank, Ed, Harry, and George, respectively.