PROBLEM OF THE WEEK

Welcome to Spring Semester everyone! Now that your first few days of classes are behind you, it’s time for another problem of the week. This is a problem from Stan Wagon, often organizer of another long-standing Problem of the Week and author the book *Which Way Did the Bicycle Go?* You can see a picture of him riding an interesting bicycle on the bulletin board between the offices of Professors Brink and Pruim.

49. Alice: Here’s the deal. You give me $10. Then I will deal four cards (from a regular 52 card deck), chosen randomly, face down. You get to look at #1 first and decide whether to keep it. If not, look at #2 and decide whether to keep that one. If not look at #3, and decide. If you don’t take that, then #4 is your choice. If your chosen value is $n$, I will pay you $n$. Then we can reshuffle the entire deck, you give me another $10, and we can play again, and again, and again.

Bob: Hmmmm....I need a good strategy to beat you at this game, but I think I can do it.

Help Bob out with a strategy that will win. Note that the cards all have face value with the following exceptions: Ace = 1, Jack = 11, Queen = 12, and King = 13.

How the Problem of the Week works:

1. **ANY CALVIN STUDENT** is invited to participate in the Problem of the Week on any week. Solutions (or partial solutions) may be submitted by individual students or by groups of students.

2. **COPIES** of the Problem of the Week will be hung on the bulletin board outside the Department office and in various locations around the Department of Mathematics and Statistics. Additional copies are available in one of the boxes outside the office and on the web at [http://www.calvin.edu/~rpruim/pow/](http://www.calvin.edu/~rpruim/pow/)

3. **SOLUTIONS** to this problem are due on **February 7**. Solutions should be turned in to Professor Pruim (NH 284). Be sure to include your name(s) on your paper.

4. **A LIST OF SOLVERS AND EXAMPLE SOLUTIONS** will be posted on the bulletin board outside the Mathematics Department office.