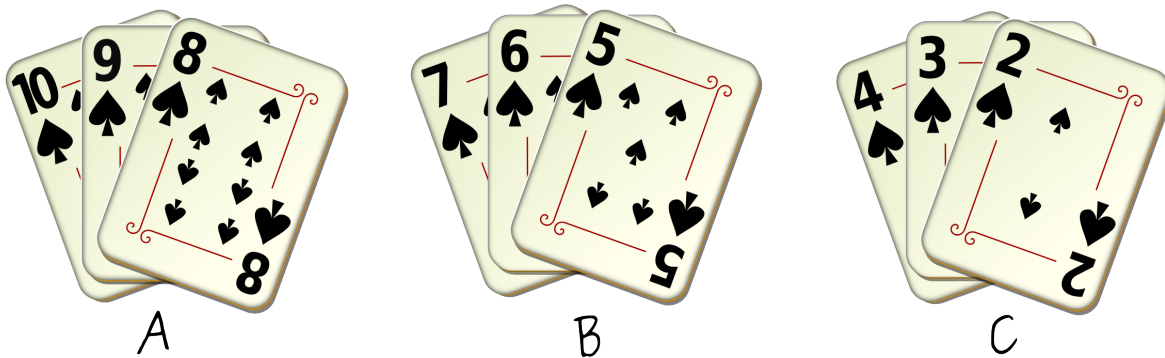# Math Challenge Problem
for April 2013

Probably Not Transitive

Consider the following card game: the 2 through 10 of spades are placed in three piles of three cards each. Player 1 picks any pile, then player 2 picks one of the remaining piles. Each player picks one of their three cards at random - high card wins.

Now in the piles pictured above, player 1 has a winning strategy: pick pile A, as any card in that pile would be a winner. But if the cards were arranged differently, things might not be so simple.

The Challenge: Find an arrangement of the cards into three piles so that player 2 has a winning strategy. That is, player 2 can always pick a pile that has a greater than 50% chance of beating the pile picked by player 1. Or prove that this is impossible.

Submit solutions to Ross 2239G or to oscar.levin@unco.edu by *Wednesday, May 1*.

The best solution will be posted on the Math Challenge Problem webpage, and the submitter will receive a *PRIZE!*.

At the end of the semester, all submitters of correct solutions to challenge problems will be entered into a drawing for a *BIG PRIZE*.