Lewis & Clark College

Department of Mathematical Sciences

Problem of the Week #3 (Fall 2011)

You are to design three cubic dice, named A, B, and C. You may put any one of the numbers 1, 2, 3, 4, 5, 6 on any face of any die. The requirement is that if all the dice are tossed,

$$\Pr(A > B) > \frac{1}{2}, \quad \Pr(B > C) > \frac{1}{2}, \quad \text{and} \quad \Pr(C > A) > \frac{1}{2},$$

where, for example, $\Pr(A > B)$ is the probability that the number showing on die A is greater than the number showing on die B. Show how to do it.

- Solvers should include their name, address, and status at the College. Solutions can be mailed to MSC 110 via campus mail or placed in Yung-Pin Chen's mailbox in the Math Department Office. Solutions to the above *Problem of the Week* should be received by 5:00 p.m. Monday, September 19, 2011.
- Kathleen Daly (jr.), Colin Gavin (fr.), Dan Sakaguchi (special), John Sibandze (fr.), and Sean Stroud (so.) solved *Problem of the Week* #2. Colin gives a beautiful proof by contradiction. Congratulations to them.