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# PROBLEM OF THE WEEK

1/10/12 due NOON 1/23/12

CAN YOU GIVE US A SOLUTION?

## Problem No. 1 (Spring 2012 Series)

Three hundred men sit around a circular table. The men are numbered 1–300 and each man has two neighbors. (The neighbors of 1 are 2 and 300, and the neighbors of 300 are 1 and 299.)

There are three hundred waiters, also numbered from 1 to 300. Each waiter has an urn containing three balls, one lettered  $L$ , and  $C$  and one  $R$ . Each waiter  $y$  draws a ball at random from his urn and if the ball is lettered  $L$ , delivers a dessert to the man to the left of man  $y$ . If the letter is  $C$  man  $y$  gets the dessert, and if the letter is  $R$  the man to the right of man  $y$  gets the dessert. Call a man lucky if he gets three desserts. Find the greatest possible number of lucky men, and the probability that this many men are lucky.

A panel in the Mathematics Department publishes a challenging problem once a week and invites college & pre-college students, faculty, and staff to submit solutions. The objective of this is to stimulate and cultivate interest in good mathematics, especially among younger students. Solutions are due within two weeks from the date of publication. They can be faxed to (765) 494-0548 or sent by campus or U.S. mail (no E-mail please) to:

PROBLEM OF THE WEEK, **5th Floor**, Math Sciences Bldg., Purdue Univ.,  
150 North University St., West Lafayette, IN 47907-2067

Solvers should include their name, address, and **status at the University or school**.

The names of those who submitted correct solutions will be posted in the Math. Library, along with the best solution. Every Purdue student who submits three or more correct solutions will receive a Certificate of Merit. A prize fund of \$300.00 will be distributed among the Purdue undergraduates who have contributed at least six correct solutions for the total Spring 2012 series.