## PROBLEM OF THE WEEK Solution of Problem No. 3 (Fall 2012 Series)

Problem: There are M gold fish and K silver fish in a lake. They are caught and eaten one at a time at random until only one color of fish remains in the lake. One of the silver fish is named George. Find the probability George is not eaten. (Answer should be in a very simple form.)

Solution: (by Kipp Johnson, High School Teacher, Valley Catholic School, Oregon)

The probability is 1/(M + 1). The easiest way to see this is to realize that the K - 1 fish not named George are irrelevant to the problem. George survives if and only if all the M gold fish are eaten first. There are M + 1 ways that we can permute M gold fish and George, giving the solution above.

## The problem was also solved by:

<u>Undergraduates</u>: Scott Podlogar (Fr. Engr), Lirong Yuan (Jr. Math & CS)

<u>Graduates</u>: Jeremy Troisi (Stat), Tairan Yuwen (Chemistry)

<u>Others</u>: Pierre Castelli (Antibes, France), Hubert Desprez (Paris, France), Carl Landskron (Student, East Tipp. Middle School, Lafayette, Indiana), Steven Landy (Physics Faculty, IUPUI), Wei-Xiang Lien (Graduate Student, National Kaohsiung Univ., Taiwan), Matthew Lim, Christopher Nelson (Graduate Student, UCSD), Charles Roldan (BS Math 2010, Purdue), Sorin Rubinstein (TAU faculty, Tel Aviv, Israel), Craig Schroeder (Postdoc. UCLA), Patrick Soboleski (Math teacher, Zionsville Community HS), Steve Spindler (Chicago), Catalin Zara (Assoc. Professor, U. Mass., Boston)