ALLAN J. GOTTLIEB, '67

Domino-How

Mark Lively believes that it would be helpful if I include the graduation year (if given) of each respondent. Although I am not against this in principle, I am worried about the extra space involved. In fact, in order to save space, I am only listing first initials and only listing each responders name once per issue rather than for each problem solved (see the "other responders" section below). Recall that the column now must fit within one page, less than half its previous size. I felt that reducing from five problems to three and economizing on the space for names was better than reducing to two problems.

Nob. Yoshigahara sent me a 1991 calendar containing photos of some of his "glass puzzles." Readers wishing information on these and other Nob. puzzles should write to him at 4-10-1-408 Iidabashi Tokyo 102 Japan.

Problems

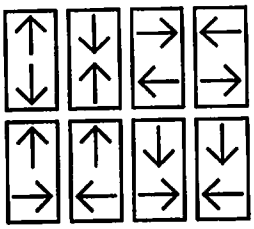
M/J 1. A computer-related problem from Robert High who has a Black Box with two buttons: RED and GREEN. The Black Box can be in any of three states, one of which is known as SUCCESS. (High suggests brave souls try three non-SUCCESS states but we have space only for solutions to the original problem.) When the box is in the SUCCESS state, a bell rings. Pressing either button leads to a change of state. From any initial state, there is a sequence of RED and GREEN that will ring the bell.

How many such Black Boxes are there? What is the minimal number of moves guaranteed to ring the bell at least once? How good is the strategy of choosing RED or GREEN randomly, i.e., what is the expected number of moves required?

M/J 2. John Rule has a right triangle with integer sides without any common factor. When each digit is replaced by a code letter, the sides are SSWTVU, PTWTS, and RRWWQ. Break the code.

SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO ALLAN J. GOTTLIEB, '67, THE COURANT INSTITUTE, NEW YORK UNIVERSITY, 251 MERCER ST., NEW YORK, N.Y. 10012, OR TO: gottlieb@nyu.edu

M/J 3. Nob. Yoshigahara has a strange set of 8 dominoes.



He wants you to arrange them into a 4×4 square so that four vertical, four horizontal, and two diagonal lines each contain all four kinds of arrows. The solution to this "ALHAMBRA" problem is not unique.

Speed Department

While working on Y1991, Don Gall noticed that 1991 is a palindrome; 1991 is the product of two primes, 11 and 181, that are both palindromes. When was the last year in which this occurred and when is the next year?

Solutions

JAN 1. This bridge problem is from Donald Boynton who wants to know the least number of high card points between declarer and dummy that permits declarer to make three no trump against best defense.

Perhaps it was not clear from the problem that the proposer intended that you choose all four hands. Some readers interpreted the problem to find declarer and dummy hands that could make three no trump against any distribution as well as any defense. Daniel Pratt did interpret the problem as intended and offers the following six point solution:

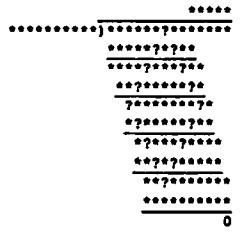
North
♠ Void
♥ T 9 8 7 6 5
♦ T 9 8 7 6 5 4
♣ Void

West	East
♠ A K	♠ Q J
♥ A	♥ K Q J 3 2
♦ Void	♦ A K Q J 3 2
♣ K J 9 8 7 6 5 4 3 2	♣ Void

South (Declarer)
♠ T 9 8 7 6 5 4 3 2
♥ 4
♦ Void
♣ A Q T

The best West can do is to win his three top honors immediately, exit with a club, and eventually win one more club.

JAN 2. Nob. Yoshigahara sent us the following division problem in which every * is replaced by a digit and all occurrences of ? must be replaced by the same digit. Nob. attributes the problem to T. Kato and notes that as usual the leftmost * must not be 0.



There were no takers on this problem although Winslow Hartford (who is nearing 25 years of solving "Puzzle Corner" problems) declared it solvable.

Better Late Than Never

1990 M/J 4. Richard Steuer would like to see an analytic basis for the recursive relations given and has found that the asymptotic value of the "a" values is approximately 5.828.

APR 3. Ermanno Signorelli believes that proofs should be given for several of the claims made.

Other Responders

Responses have also been received from V. Patter, J. Grossman, G. Doerre, D. Wachsman, S. Feldman, J. Rudy, and R. Hess.

Solution to Speed Problem

1661 (11×151) and 3443 (11×313).