PuzzleCorner

It has been a year since I specified the size of the backlogs for the various kinds of problems that are printed. Currently, I have a multi-year supply of regular problems, and over a year of speed problems. Bridge problems, however, are in short supply. Chess, go, and computer problems are now considered regular problems.

Problems

Apr 1. We start with a bridge problem from Doug Van Patter.

North
♠ K J 10 4
♥ K Q 6 5 2
♦ A Q 8
♣ 4

South
♠ A Q 9 3
♥ 7 4
♦ 7
♣ A K Q 9 7 6

South dealt and the bidding went as follows with East-West silent: 1♣ 1♠ 4NT 5♦ 6♠. What is South's best line of play?

Apr 2. Ermanno Signorelli wonders if there is a right triangle with integer sides such that both legs are odd integers.

Apr 3. An illuminating question from Chuck Livingston:

Lamp posts are to be installed on the equator of a perfectly spherical planet in such a way that they illuminate the entire equator. A few very tall lamps could be used—three is the minimum—or many short lamps. In what way should this be done so that the total height of the posts is as small as possible?

Speed Department

Each item below contains the initials of words that will make it correct. Ron Bianchini wants you to complete the missing words. For example, 16 = O. in a P. would be "Ounces in a Pound."

90 = D. in a R. A.
200 = D. for P. G. in M.
8 = S. on a S. S.
3 = B. M. (S. H. T. R.)
4 = Q. in a G.

SEND PROBLEMS, SOLUTIONS, AND COMMENTS TO: ALLAN GOTTLIEB NEW YORK UNIVERSITY 715 BROADWAY, 10TH FLOOR NEW YORK, N.Y. 10012, OR TO: GOTTLIEB@NYU.EDU

Solutions

N/D 1. Here is an offering from Joesph Keilin, who writes: On their way home from an evening of bridge, a couple was commiserating with each other. "Can you imagine that? We had 39 high card points between the two of us, I played perfectly, and still we went down one at 3 no trump. And it wouldn't have made a difference if you had been declarer." said one. "The opponents played perfectly, also. Besides, it would have been even worse in any suit contract, again regardless of who was declarer," said the other. What was the hand that all four players held?

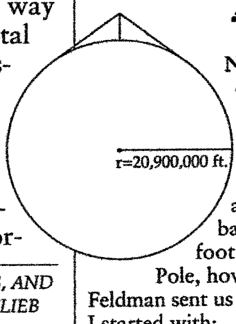
The key, as you might well guess, is to inhibit communication between the declarer and dummy. Warren Himmelberger sent us the following solution diagram with the remark that if North leads a spade or South leads a club, a game is not possible in any suit or no trump.

North
♠ J 10 9 8 7 6
♥ 10 9 8 7 6 5 4
♦
♣

West
♠ A K Q 5 4 3
♥ A K Q J 3 2
♦
♣ A

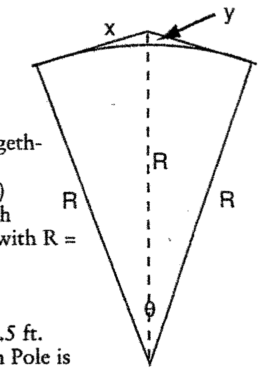
East
♠ 2
♥
♦ A K Q J 3 2
♣ K Q J 4 3 2

South
♠
♥
♦ 10 9 8 7 6 5 4
♣ 10 9 8 7 6 5



N/D 2. Perhaps Richard Hess is considering some flagpole sitting in cold climates. He writes: Imagine a rubber band stretched around the world and over the North Pole as shown at right. Given that the rubber band has had to stretch an extra foot to accommodate the North Pole, how high is the North Pole? Steve Feldman sent us the following solution:

I started with:
$2\pi R+1=((2\pi-\theta)/2\pi R+2x$
which yields:
$x=(1+R\theta)/2$



I then looked at the right triangle which requires that:
$\tan(\theta/2) = x/R$
Putting these two together, I got:
$(1+R\theta)/2 = R\tan(\theta/2)$
which yields (through numerical solution, with R = 20,900,000 ft.):
$\theta = .008312046$
$x = 86861.38$ ft.
$y = \sqrt{(x^2+R^2)}-R=180.5$ ft.
Therefore, the North Pole is 180.5 feet high.

John Prussing notes that interestingly, if one numerically determines an "exact" zero of the equation without approximating the tangent function, one obtains h = 102.13 ft. in a standard single-precision computation. Only by using double-precision arithmetic does one obtain h = 180.47 ft., the same result as the (single or double precision) solution obtained by approximating the tangent function by the first two terms of its Taylor series. The approximate solution is more accurate than the "exact" single-precision solution.

N/D 3. Warren Himmelberger just loves to have 8 numbers add up to 260.

Write the numbers from 1 to 64 in the checker board square so that all columns and rows add up to 260, and also that the following groups of squares add up to 260:

+	o	+	⋰	⋱	+	o
o	+	⋰			⋱	+
+	⋰	□	*	*	□	⋱
⋰		*	□	□	*	
⋱		*	□	□	*	
–	⋱	□	*	*	□	⋰
o	–	⋱			⋰	–
–	o	–	⋱	⋰	–	o

Only the proposer solved this problem. Along with the checkerboard of numbers printed below, he included the comment that "The solution is derived from combinations of 65 in two vertical halves. Amazing!" Amazing indeed.

- Any of the 70 arrangements of 2 by 4 squares.
- The sum of the 4 middle squares and 4 corner squares.
- The sum of any two adjacent half-diagonals (indicated by - - -).
- The sum of the interior half-diagonals (indicated by □).
- The sum of the top 3-square diagonals and the 2 corner squares enclosed (indicated by +), and the sum of the bottom 3-square diagonals and the 2 corner squares enclosed (indicated by –).
- The sum of the 4 2-square diagonals (indicated by o).
- The sum of the pairs of squares adjacent to the 4 middle squares (indicated by *).
- The sum of the pairs of squares midway between the edge squares and those pairs adjacent to the 4 middle squares (the 8 blank squares).

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Puzzle

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52	61	4	13	20	29	36	45
14	3	62	51	46	35	30	19
53	60	5	12	21	28	37	44
11	6	59	54	43	38	27	22
55	58	7	10	23	26	39	42
9	8	57	56	41	40	25	24
50	63	2	15	18	31	34	47
16	1	64	49	48	33	32	17

Other Responders

Responses have also been received from J. Abbott, H. Amster, S. Feldman, M. Garelick, M. Lindenberg, C. Muehe, A. Ornstein, K. Rosato, E. Sard, S. Shapiro, and J. Varnadore.

Proposer's Solution to Speed Problem

Degrees in a Right Angle
Dollars for Passing Go in Monopoly
Sides on a Stop Sign
Blind Mice (See How They Run)
Quarts in a Gallon