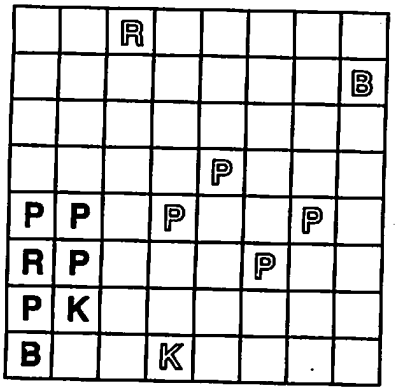
Out on a Limerick

I must be very brief this issue as I am about to leave for Australia and New Zealand. After the "short" flight from New York to Los Angeles, I change planes for the hop to Sydney, which is your basic 14-hour nonstop endurance test. Wish me luck.

Problems

A/S 1. Unfortunately, APR 1 was misprinted so that white and black pieces were indistinguishable. As a result we are offering it again (now as A/S 1) but with the colors indicated as intended. We apologize for the error.

White is to move and mate in 12.



A/S 2. A real cute one from Jan Davis who writes:

The wife of a man who grew barley
Was also the sister of Charlie.
Her Neighbour grew hay
And was married to Ray,
And one of these girls was named Carly.

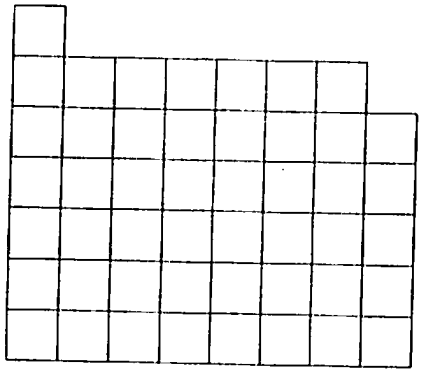
The girl who was married to Wayne
Lived next to the farm that grew grain.
She liked to eat celery
That was grown by Valerie,
And she weighed 80 pounds more than Jane.

The woman whose husband grew dill
Was never married to Bill
When Jane married Benny
And Ray married Jenny,
She went out drinking with Jill.

NOTE: ONLY ONE COUPLE HAS RHYMING NAMES.

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

A/S 3. Our last regular problem is "Golomb's Gambits" edited by Solomon Golomb in the *Johns Hopkins* magazine. You are to dissect the figure below into four congruent pieces.



Speed Department

Tom Lydon asks: Two days ago I was 38. Next year I start my 42nd year. How old am I, what is my birthday, and what is today's date?

Solutions

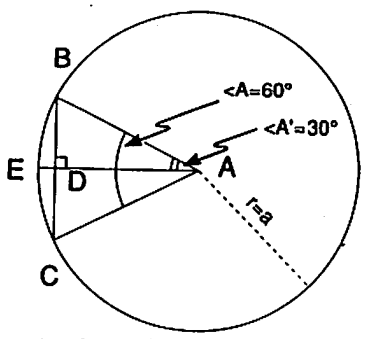
APR 1. As indicated this problem was misprinted in April and the corrected version appears above.

APR 2. Arthur Waserman sent us the following solution. The general problem of minimizing the number of training sessions required when there are n robots serving n+k users is solved as easily as the n=7, k=3 case. Clearly no robot can be trained to less than k+1 users; if a robot has only k potential users and precisely those users do not require the services of a robot then the remaining n users cannot be satisfied. Thus the minimum is at least n(k+1). This number is easily seen to be adequate. Number the users from 1 to n+k and train robot j to user j and also to the k users n+1 to n+k. If any of the first n users require the services of a robot, they use the correspondingly numbered robot; if they do not require the use of a robot their robot is freed up to serve one of the k users n+1 to n+k.

Robert High notes that we are assuming that when it is time to assign robots to workers, we know in advance all the workers to whom robots are to be assigned.

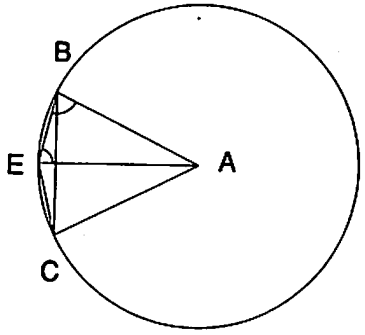
APR 3. Our final solution is from Joel Brainard:

First, draw an equilateral triangle in a circle of radius "a" and bisect the triangle with another radius as shown below. (While it is not necessary to use the circle, it is a convenient device that helps show what is going on.)



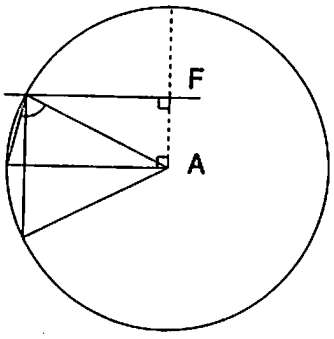
By construction we know that the length of line segment BD is a/2 and that angle A is 60 degrees. Hence angle a' is 30 degrees.

Second, draw chords BE and EC.



By construction, triangle ABE is isosceles with the length of sides AE and AB equal to a. This means that angles B and E must equal one another and be 75 degrees each.

By drawing parallel (and perpendicular) lines as shown below we can see that we have constructed the figure presented in APR 3 where AF is a/2 in length and the angle in question is 75 degrees.



Other Responders

Responses have also been received from M. Fountain, K. Rosato, S. Theriault, L. Steffens, R. Whitman, A. Cangahuala, W. Hartford, R. Arrison Jr., E. Sard, G. Stallings, E. Signorelli, H. Hodara, P. Card, S. Root, N. Wickstrand, B. Gunther.

Proposer's Solution to Speed Problem

39, 31 December, 1 January.