I recently returned from attending my 50th reunion, a wonderful experience, which the beautiful Alice Gottlieb refers to as a trip down my memory lane. We actually stayed in a Baker House double rather than a hotel, which added to my enjoyable nostalgia. Although we are not really into the modern idea of coed bathrooms, we survived with minimal embarrassment.

The '67 tour of Baker was the high point for me, although it wasn't clear whether my classmates and I were giving or getting the tour. The "Head of House" was more than gracious and very generous with his time, and I believe all present enjoyed themselves immensely.

I was interviewed twice about Puzzle Corner. The first time was by phone shortly before the reunion; you can see excerpts at slice.mit.edu/2017/06/07/allan-gottlieb-puzzle-keeper-50-year-reunion. The second was a videotaping during the reunion. If the folks at the Alumni Association are able to salvage anything coherent from my ramblings, it will be uploaded to YouTube.

As great as the reunion was overall, the very beginning was far from auspicious. The online, official reunion instructions said that parking would be available all day at 252 Albany Street; however, Albany has neither an address of 252 nor a lot with a nearby address. We went up and down Albany and then called the phone number given and received help of negative value. After going up and back again, we gave up, went to a Vassar Street lot, and dumped the car there. In addition to a number of unrepeatable comments, we were heard to mimic the old sitcom and yell, "Two-fifty-two, where are you?!" (Rumor has it that 252 Albany was there when the reunion was planned but was demolished in the interim.)

Space considerations force us to defer Better Late Than Never until the next issue. Better later than never, after all.

Problems

S/O 1. Larry Kells is now interested in what I might call "lazy bridge," where the declarer need only play legally to succeed. Specifically, he asks if it is possible to construct a deal that guarantees North and South will make a game in any suit or no-trump regardless of the line of play by both sides. He also wonders: What is the largest number of tricks for which a deal exists such that North and South are assured of that many tricks no matter what the contract is or how poorly the declarer plays?

S/O 2. This problem, from Victor Barocas, looks hard to me, but I've been wrong many times before. Is anyone up to the challenge? Barocas writes, "I remember from my younger days a non-transitive dice game in which there are three dice numbered as follows:

A: 1, 2, 3, 4, 5, 6
B: 3, 3, 3, 3, 4, 4
C: 2, 2, 2, 4, 6, 6

"Each player selects a die and rolls it. A goes 16-14-6 (expected W-L-T out of 36 games) against B, B goes 18-16-2 against C, and C goes 16-14-6 against A. Thus the second player can always select a die to produce an advantage over the first. The question is, if we want to set up such a game with *N* dice, how many faces must a die have, and how do you number the faces on each die?"

S/O 3. Dick Miekka and three friends have to cross a narrow footbridge in the dark using only one flashlight, which has 17 minutes of battery power. No more than two people can be on the bridge at one time, and anyone on the bridge must be with the flashlight. The four people—A, B, C, and Dick—take respectively one, two, five, and 10 minutes to the cross the bridge. How can all get across before the battery runs out?

Speed Department

Sorab Vatcha drives at a constant speed when on the highway. At one point he noticed that his odometer displayed 15,951, a palindrome. Exactly two hours later he again encountered a palindrome. How fast was he driving?

Solutions

M/J 1. Jim Larsen, Robert Virgile, and the proposer independently sent us nearly identical solutions to the first three parts of Larry Kells's bridge problem. Because of space limitations, I must omit the diagrams and describe the hands and play rather briefly. Also present is the proposer's solution to the fourth part.

First consider 7 no-trump. If the defensive cards were located arbitrarily, declarer would need all the aces as immediate stoppers, plus the KQ and seven other cards in one of the suits to be able to run it. Thus, declarer needs 21 points and the defense could have at most 19.

However, we are looking for the most defensive points that can fail to set the contract, so we need to consider the distribution most disadvantageous for the defense. In this case declarer (South) needs only AQJxxxxxxxxx in one suit and A in another. The key is that West has the singleton K in South's long suit and the other 12 cards in South's short suit, nine points in total. East has all 20 points in the other two suits, but those suits are never led. Thus the defense has 29 points and makes no tricks.

Six no-trump is similar. The difference is that East gets the Q in declarer's long suit and South gets another small card, which loses the last trick. Thus East has 22 points and the defense has 31.

Three no-trump differs. South has QJ in two suits and West has AK in each. Each has five non-honors in one of the two suits and four in the other. But all of South's are higher than all of West's. East again has 20 points in suits never led. So West wins just the two AKs, and South captures nine tricks. The defense has 20+14 = 34 points.

For 1 no-trump their solutions differ; this is from Virgile.

♠ J432
♥ J432
♦ 5432
♣ 2

♠ AKQ1098
♥ AKQ1098
♦
♣ K

♠ 76
♥ 76
♦ AKQJ10987
♣ Q

♠ 5
♥ 5
♦ 6
♣ AJ109876543

M/J 2. This solution to David Dewan's cryptarithmetic problem is from John Ebert, who reports that as a fellow '67 Baker House alumnus, this is only his second or third solution in 50 years.

Ebert writes: "Clearly $P = 0$. Y can only be 2 or 3, as any greater exponent will yield a result of five or more digits. (A five-digit sum of the form $xxx + Yxxx$ can only happen if $Y = 9$, but a two-digit number to the ninth power will have many more than five digits.) If $Y = 2$, then we need the square of a two-digit number to have a leading digit of 2 or 3, since sums of the form $xxx + 2xxx$ can only have a leading digit of 2 or 3. Similarly, if $Y = 3$, then we need the cube of a two-digit number to have a leading digit of 3 or 4, since sums of the form $xxx + 3xxx$ can only have a leading digit of 3 or 4. Only the squares of integers 45 through 63 have leading digits of 2 or 3, and only the cubes of integers 15 through 17 have leading digits of 3 or 4. By trial and error the only solutions are: $H = 1, A = 6, P = 0, Y = 3, N = 8, E = 2, W = 7$ or 9, and $R = 9$ or 7. Thus $16^{003} = 827 + 3269 = 829 + 3267 = 4096$."

M/J 3. Greg Muldowney's solution to Ermanno Signorelli's two-part triangle problem contains two beautiful diagrams. Indeed, several of the solutions contained diagrams far better than I could produce. I appreciate all the efforts.

An equilateral triangle having sides three units in length, containing an isometric triangular grid parallel to the sides with points one unit apart, leads to two triangles whose sides are not an integer multiple of the unit length (Figure 1). The side length s_3 is

$$s_3 = \sqrt{(\sqrt{3}/2)^2 + (3/2)^2} = \sqrt{3}$$

An equilateral triangle having sides four units in length and containing a similar triangular grid leads to eight triangles whose sides are not an integer multiple of the unit length (Figure 2): six triangles identically sized to those above, and two for which the side length s_4 is

$$s_4 = \sqrt{(\sqrt{3}/2)^2 + (5/2)^2} = \sqrt{7}$$

Figure 1

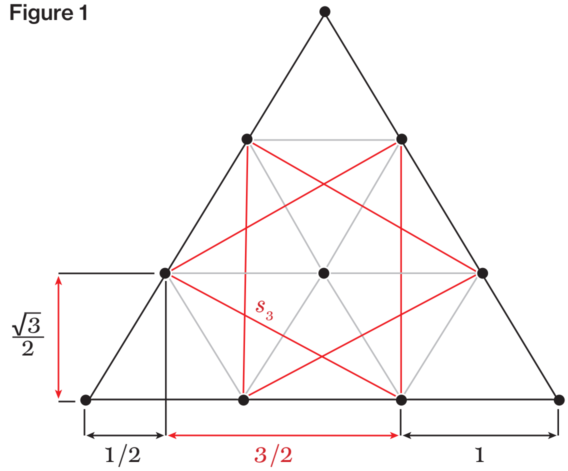
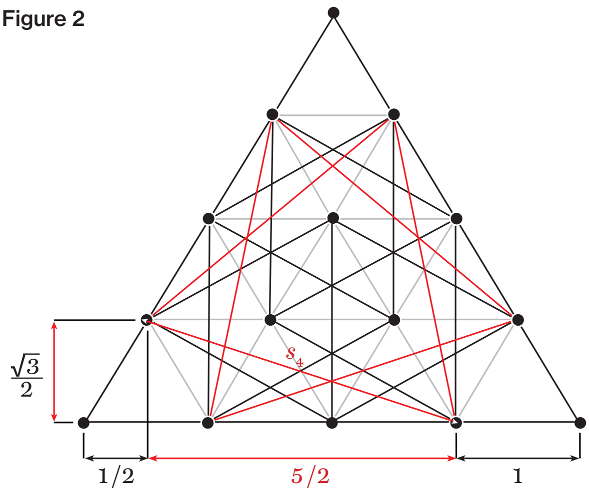


Figure 2



Other Responders

Responses have also been received from A. Becerra, J. Bergmann, S. Berkenblit, C. Brooks, G. Coram, C. Fee, E. Friedman, M. Galatin, L. Gershun, R. Giovanniello, E. Leria, R. Leuba, J. Mackro, F. Marcoline, D. Mellinger, Z. Mester, T. Mita, R. Morgen, A. Ornstein, L. Pang, M. Pavloff, S. Peters, J. Prussing, E. Sard, S. Silverberg, B. Simon, J. Sinnett, G. Stoked, M. Strauss, A. Wasserman, P. Winterfield, K. Zeger, and Y. Zuss.

Proposer's Solution to Speed Problem

He was going 55 miles per hour.

Send problems, solutions, and comments to Allan Gottlieb, New York University, 715 Broadway, Room 712, New York, NY 10003, or to gottlieb@nyu.edu. For other solutions and back issues, visit the Puzzle Corner website at cs.nyu.edu/~gottlieb/tr.