

Mathematics Competition

Problem #1 - February 21 to February 28, 2014

There is a 4×5 table which you want to fill with arbitrary numbers. The only restriction for filling the table is the following: the 9 sums—the 4 sums along the 4 rows and the 5 sums along the 5 columns—must be the same.

- (a) Can these 9 sums all be equal to 10? If YES, show an example. If NO, explain why not.
- (b) Find all values of S for which the 9 sums can be equal to S . For these values of S , show an example with all distinct integers in the squares.

Direct any questions to Gregory Galperin, OM 3361.

Rules and Awards

- Any undergraduate currently enrolled at EIU is eligible to participate.
- Each solution is to be the work of one individual and is to be submitted with the solver's name, year in school, email address, local address and home address.
- Each solution is to be written or typed and is due in the main Mathematics Department office (OM3611) by 2:00 p.m., Friday, February 28, 2014.
- Entries will be judged on the basis of clarity of exposition and elegance of solution.
- Up to \$40 will be distributed as prize money for each problem. It will be distributed based on the quality of the solutions, but roughly, an award of \$10 will be awarded for the best solutions and \$5 will be awarded for partial solutions. In the case that there are many correct solutions, we will have a drawing for the prizes and in case no award is made, the prize money will be added to the next problem's prize fund.
- **Challenges, solutions, names of all solvers, and comments will be posted on the Challenge of the Week homepage:**
<http://www.eiu.edu/math/challenge.php>.