Problem 1 (due Monday, September 13)

In certain village there are 333 voters. Each voter belongs to one of two parties: knights or knaves. Knaves sometimes lie and sometimes tell the truth, while knights always tell the truth. Every voter knows the party affiliation of all voters and there are more knights than knaves. You, the mathematician, arrive to the village with the task to meet a knight. You can ask each voter the following question about any voter: is she/he a knight? Find a knight by asking as few questions as you can.

Overview

Every other Monday (starting 08/30/21), we will post a problem to engage our mathematical community in the problem solving activity and to enjoy mathematics outside of the classroom. Students (both undergraduate and graduate) are particularly encouraged to participate as there is no better way to practice math than working on challenging problems. If you have a solution and want to be a part of it, e-mail your solution to Marcin Mazur (mazur@math.binghamton.edu) by the due date. We will post our solutions as well as novel solutions from the participants and record the names of those who’ve got the most number of solutions throughout each semester.

When you submit your solutions, please provide a detailed reasoning rather than just an answer. Also, please include some short info about yourself for our records.

Previous Problems and Solutions

- Problem 1 Solved by
  - Spring 2021
  - Fall 2020
  - Summer Challenge
  - Spring 2020