UC Merced Applied Math Problem of the Month

November 12 – December 8, 2021

Game rules: In Lucky Crystals, Professor X and Magneto each chooses randomly and simultaneously from a jar containing p purple and g green crystals. Professor X wins if they have the same color, and if not, Magneto wins.

Questions:
1. Find all $p, g > 0$ for which this game is fair---that is, for which Professor X and Magneto have an equal probability of winning. In this case, what can you say about $p + g$?
2. If there are n crystals in the jar and Professor X is more likely to win, express $|p - g|$ in terms of n.

To submit your solutions for a chance to win an Amazon gift card, and to find out detailed contest rules,
- scan the QR code to the right, or
- go to https://appliedmath.ucmerced.edu/news-events/problem-month