Challenge 3 (Spring 2018)

Blue Problem

Suppose we put a (real) number at every point in the plane such that if any 4 points make the corners of a square then their numbers add up to 0. It is obviously possible to do this if we put 0 at every point. Is any other such assignment possible?

Gold Problem

Suppose that you have a function $g$ that takes a rational number and returns a rational number. Furthermore, for all rational $x$ and $y$, $g(x + y) = g(x) + g(y)$. (One example of such a function is $g(z) = 2z$ for every $z$). What are all possible functions $g$?

Due on Friday, April 20th:
www.sjsu.edu/math/sjsu-problem-solvers
Math-Problem-Solvers-Submissions-Group@sjsu.edu