

Math Challenge Problem

for November 2012

Gumball Triangles



After Halloween, you find yourself in possession of a large number of orange and black gumballs. Instead of eating them, you decide to arrange them into a triangular grid. To make things interesting, you decide to arrange the gumballs so that *no three of the same color lie on the corners of an equilateral triangle* (of any size). For example, the triangle above is acceptable.

The Challenge: What is the largest number of gumballs you can arrange in a triangular grid without three of the same color being the corners of an equilateral triangle?

An Extra Challenging Challenge: What if you start stacking gumballs to form a tetrahedron? How many can you stack without four of the same color being the corners of a regular tetrahedron?

Submit solutions to Ross 2239G or to oscar.levin@unco.edu by *Friday, November 30*.

The best solution will be posted on the Math Challenge Problem webpage, and the submitter will receive a *PRIZE!*

At the end of the semester, all submitters of correct solutions to challenge problems will be entered into a drawing for a *BIG PRIZE*.