

1158-05-50

Hayan Nam* (nckaplan@math.uci.edu), 4225 Lincoln Swing St, unit 34, Ames, IA 50014, and
nathan kaplan. *Counting numerical semigroups using polytopes.*

A numerical semigroup is an additive monoid that has a finite complement in the set of non-negative integers. For a numerical semigroup S , the genus of S is the number of elements in $\mathbb{N} \setminus S$ and the multiplicity is the smallest nonzero element in S . In 2008, Bras-Amorós conjectured that the number of numerical semigroups with genus g is increasing as g increases. Later, Kaplan posed a conjecture that implies Bras-Amorós conjecture. In the second half, we prove Kaplan's conjecture when the multiplicity is 4 or 6 by counting the number of integer points in a polytope. Moreover, we find a formula for the number of numerical semigroups with multiplicity 4 and genus g . (Received February 16, 2020)