1152-05-38   **Hayan Nam*** (`hayann@uci.edu`), 4225 Lincoln Swing St, ames, IA 50014. *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 the set of non-negative integers not in 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 August 09, 2019)