1003-05-1446 **Kevin Iga*** (`kevin.iga@pepperdine.edu`), Natural Science Division, 24255 Pacific Coast Hwy, Malibu, CA 90263. *The semigroup of equitable distributions of points in a convex polygon.* Preliminary report.

Given a convex n-gon P, and a positive integer k, there exist sets S of $k(n-2)$ points in the interior of P so that every triangle whose vertices are vertices of P contain exactly k points in its interior. We consider two such solutions to be equivalent if there is a bijection between their points that preserves which triangles contain each point.

The operation of disjoint union gives the set of solutions the structure of a semigroup graded by k, and solutions can be reduced to a union of "prime" solutions, though unique factorization may fail.

One way of analyzing this interesting semigroup is completing this semigroup to a group by allowing "negative" points in regions, and this gives rise to a free abelian group, with a basis that turns out to have a simple and beautiful structure. (Received October 05, 2004)