1086-11-262 **Robert M Sulman*** (sulmanrm@oneonta.edu), S.U.N.Y. Oneonta, Mathematics Computer Science, and Statistics, Department, Oneonta, NY 13820. *Title: Orbits under polynomials that coincide with subgroups of the units of Z/nZ.* Preliminary report.

Let G=(Z/nZ)* be the group of units of the ring (Z/nZ, +n, •n), and suppose that f is a polynomial with integer coefficients. We explore the orbits under f, and ask if any algebraic structure is contained in such orbits. In particular: When is the orbit of 1 under f a cycle? If it is a cycle, do its elements form a subgroup of G? In this case, what algebraic structure is seen in this orbit and other orbits? When f is a product of more than one cycle, the orbit of 1 may coincide with a (proper) subgroup H of G. When this occurs, there is a natural, yet varied correspondence between the cosets of H and the cycles of f. And finally, when we form a conjugate of such an f by another bijection g from G to G, the algebraic structure of the orbit of 1 under f is sometimes altered. (Received August 14, 2012)