1056-20-122 **Stephen M. Gagola, Jr.*** (gagola@math.kent.edu), Department of Mathematics, Kent State University, Kent, OH 44242. *Subgroups of S_{n+1} normalized by and coprime to a regular subgroup of order n.* Preliminary report.

Let H be a regular subgroup of the symmetric group S_n, and regard $S_n < S_{n+1}$ so that H may be viewed as permuting $n+1$ points and having two orbits, one regular and one trivial. We determine conditions on H so that H normalizes a nontrivial subgroup $K < S_{n+1}$ of order coprime to that of H, and are interested in determining the number of such subgroups K.

As an example, if $n = p$ is a prime number, then H must be cyclic and generated by a p-cycle. Furthermore, $p = 2^q - 1$ must be a Mersenne prime, and the number of subgroups K of order not divisible by p that are normalized by H is $(2^q - 2)/q$. (Received July 28, 2009)