Project 2

Recommended length: 2-3 pages.
Format: You must turn in BOTH

- **A typed paper copy turned in during class,**
- **A .pdf or .ps file emailed to me.**

The goal of this assignment is to better understand the subgroup $H \subseteq S_{2n}$ (to give it a name) of "centrally symmetric" or "reflective" permutations you found in Project 1. The main result of this project should be an explicit isomorphism between H and $W_{2,n}$ (see Homework 7 for a definition of $W_{2,n}$).

Some things to do in the course of the paper:

(1) Describe both H and $W_{2,n}$ carefully,

(2) Give the explicit isomorphism in general, though you can use a specific example to illustrate general principles.

(3) Prove that your isomorphism is an isomorphism.

(4) As a corollary, find the order of H (using the isomorphism).

In doing this you should

(a) Briefly introduce the topic.

(b) Give the necessary definitions and results you will need for your main theorems. You do not need to prove the results that are in the book, but both the results and the definitions should be stated in your own words in a way that focuses them on the theorem. You may assume that the reader has read up through Chapter 15 of the textbook.

(c) State and prove the main theorem(s).

Note that this is a writing assignment, so the main focus should be on clearly communicating the ideas in the proof. I recommend looking at your favorite mathematics texts and trying to emulate their style. I also suggest you have another member of the class read through a draft before handing it in.