Math 10460 - Honors Mathematics II
Homework 7b - Due Wednesday, March 2

(7) The following are products of symmetries of a regular pentagon, i.e., they are elements of D_5. Using the group relations, rewrite each of them in the form $r^n s^m$, where n and m are the smallest *nonnegative* integers possible.
   (a) $rsrsrsr$
   (b) $r^2s^3r^7srs^8$
   (c) $r^4sr^3sr^{-1}$

(8) Find the symmetry group of diamond shape you picked up in class today.

(9) Find the symmetry group of irregular pentagon you picked up in class today.

(10) Choose one of the two stars (5 or 6 pointed) you picked up in class today and find its symmetry group. (These are "regular" stars in the sense that all the lengths are the same, and all of the corresponding angles are equal). This has the same symmetry group as a certain regular polygon; which one? Draw a picture that explains why this is true.