

## HOMWORK 7 FOR M343K

- Please label your homework clearly with your name.
- Homework must be neatly written and stapled.
- Feel free to discuss your solutions with other students but try to solve the problems by yourself first.
- All solutions must take the form of complete sentences.

DUE THURSDAY NOVEMBER 3RD

- (1) Let  $H$  be a subgroup of  $G$ . Show that the relation  $\sim_L$  defined by
$$a \sim_L b \text{ if and only if } b^{-1}a \in H$$
is an equivalence relation on  $G$  and then show that for each  $a \in G$  the equivalence class of  $a$  is the left coset  $aH$ .
- (2) Find all abelian groups of order 360 up to isomorphism.
- (3) Explain why any finite subgroup of the group of plane isometries must be discrete.
- (4) Each of the following figures has one of the 7 Frieze groups as its symmetry group and no two figure have the same symmetry group. Associate each figure with the appropriate Frieze group.