

SUPPLEMENTAL HOMEWORK PROBLEMS

1B: Let G be a group which acts on a set X .

The action of G on X is transitive (or that G acts transitively on X) if for every $x, y \in X$, there is a $g \in G$ such that $gx = y$.

The action of G on X is regular if for every $x, y \in X$ there is exactly one $g \in G$ such that $gx = y$.

The action of G on X is *faithful* (or G acts faithfully on X) if the kernel of the action is the identity.

Suppose that G is an abelian group that acts transitively and faithfully on X . Prove that the action of G on X is regular.