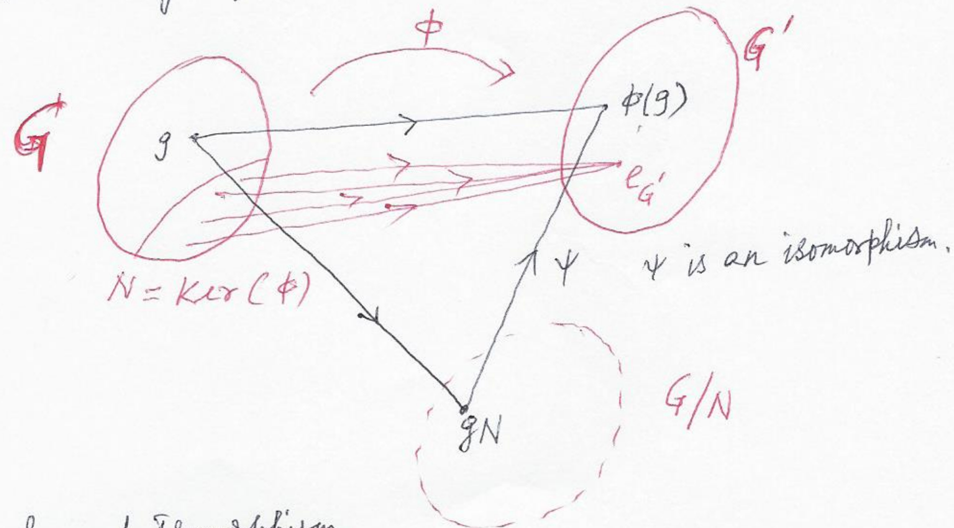
Fundamental theorem on homomorphism
[First Isomorphism theorem]

Statement: Let G and G' be two groups and
$\phi : G \to G'$ be an onto homomorphism.
Let $N = \text{Ker}\,\phi$.
Then the quotient group $G/N \simeq G'$

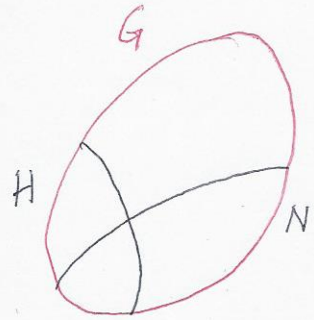


[Done in class]

- Next before going to the Second Isomorphism theorem, the following results should be understood.

If
(G, *) is a group
(H, *) is a subgroup of (G, *)
(N, *) is a normal subgroup of (G, *)

Given.



then
i) $HN = NH$
ii) HN is a subgroup of G
iii) N is a normal subgroup of HN
iV) $H \cap N$ is a normal subgroup of H.

☆ Second Isomorphism theorem:
Let H, N be subgroups of a group G and N be normal in G.
Then $H/H \cap N \simeq HN/N$