8. (Recall that <u>index</u> of the subgroup H of the group G is the number of left cosets of H in G and this number is denoted $|G : H|$.) Let G be a group and $H \subseteq K$ be subgroups of G of finite index. What formula relates the three numbers $|G : H|$, $|G : K|$, and $|K : H|$? Prove your formula. Notice that H and K are not assumed to be normal subgroups of G, and they are also not assumed to be finite.