

1.37: Double coset

Let G be a group, and H and K be two subgroups of G . One says that the two elements $g_1 \in G$ and $g_2 \in G$ belong to the same **double coset** of G relative to H and K if there exist elements $h_i \in H$ and $k_j \in K$ such that:

$$g_2 = h_i g_1 k_j$$

The complex Hg_1K is called a **double coset**

The partition of G into double cosets relative to H and K is a classification, *i.e.* each $g_i \in G$ belongs to exactly one double coset. It is also a generalization of the coset decomposition, because the double coset Hg_1K contains complete left cosets of K and complete right cosets of H .

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