

$g_1 H = g_2 H$ happens precisely when $g_1^{-1} g_2 \in H$, i.e. if the two elements differ by an element of H .
 Similar considerations apply to the right cosets of H . The left and right cosets of H may or may not be equal. If they are, i.e. for all g in G , $gH = Hg$, then H is said to be a normal subgroup.