

0.1 Lagrange's theorem

Lagrange's theorem states that for any finite group G , the order of every subgroup is a divisor of the order of G .

Consider subset H . We know that all cosets are disjoint, and that the union of all cosets is G .

As cosets are the same size, we know that:

$|G| = m|H|$, where m is the number of cosets.

This means that if a group has order 10, a subgroup must have order 1, 2 5 or 10.