subnormal subgroup

Canonical name	SubnormalSubgroup
Date of creation	2013-03-22 13:16:27
Last modified on	2013-03-22 13:16:27
Owner	yark (2760)
Last modified by	yark (2760)
Numerical id	21
Author	yark (2760)
Entry type	Definition
Classification	msc 20D35
Classification	msc 20E15
Synonym	subinvariant subgroup
Synonym	attainable subgroup
Related topic	SubnormalSeries
Related topic	ClassificationOfFiniteNilpotentGroups
Related topic	NormalSubgroup
Related topic	CharacteristicSubgroup
Related topic	FullyInvariantSubgroup
Defines	subnormal
Defines	subnormality

Let G be a group, and H a subgroup of G. Then H is a *subnormal subgroup* of G if there is a natural number n and subgroups $H_0, \ldots, H_n$ of G such that

$$H = H_0 \triangleleft H_1 \triangleleft \cdots \triangleleft H_n = G,$$

where H_i is a normal subgroup of H_{i+1} for $i = 0, \ldots, n-1$.

Subnormality is a , as normality of subgroups is not transitive.

We may write $H \operatorname{sn} G$ or $H \triangleleft \triangleleft G$ or $H \trianglelefteq \trianglelefteq G$ to indicate that H is a subnormal subgroup of G.

In a nilpotent group, all subgroups are subnormal.

Subnormal subgroups are ascendant and descendant.