Keywords, statements, definitions

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1. Burnside's transfer theorem: Let G be a finite group and $P \in Syl_p(G)$ with $P \leq Z(N_G(P))$. Then there exists a normal subgroup of G such that $N \cap P = \{1\}$ and $NP = G$.
2. In this case N is called a normal p-complement in G.
3. Steps of the proof of the theorem:
   - Transfer is a homomorphism
   - Transfer dos not depend on the choice of the transversal
   - Efficient way to calculate transfer
   - If the Sylow p-subgroups of G are abelian and if two elements a and b contained in the same Sylow p-subgroup P are conjugate in G, then a and b are conjugate in $N_G(P)$.
   - $\tau(x) = x^{|G:P|}$ if $P \leq Z(N_G(P))$.

   Definition 0.1.
   - $[a, b] := a^{-1}b^{-1}ab$
   - $G' := \langle [a, b] \mid \ a, b \in G \rangle$
4. G' is a characteristic subgroup of G.
5. If N is a normal subgroup in G such that G/N is abelian, then $G' \leq N$.