Cheat Sheet Finite Groups

Groups, silly uniquenesses, $(ab)^{-1} = b^{-1}a^{-1}$. S_n, $\sigma\tau = \sigma \circ \tau$. "Category", homomorphisms, $\varphi\colon S_4 \to S_3$, subgroups, ker, im, isomorphisms. $x^g := g^{-1}xg$. Kernels are normal, cosets, G/N, every normal subgroup is a kernel. $C_G(X)$, $Z(G)$, $N_G(X)$. **1^st^ iso.** $\phi\colon G \to H$ morphism $\Rightarrow G/\ker\phi \simeq \operatorname{im}(\phi)$.

Groups of small order. **Order 0:** $\emptyset$. **Order 1:** $G_{1,1} = \{e\}$. **Order 2:**

Cheat Sheet Rings & Modules

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