Conversation with Karene

May-17-09 9:06 AM

$G = \langle a_1, a_2, \dots \mid R_1, R_2 \dots \rangle$

$H < G$ is given by a choice of a representative in every coset in G/H, as specific words K in $F(a_i)$. Then

$H = \langle S_{K, a_i} \mid$

challenge Convert all this to a statement about presentations of categories.

Given $H < G$, let $\mathcal{C}$ be the "group action of G on G/H category":

objects: cosets γH with $\gamma \in G$

$H \backslash G$ will lead to nicer notation: $\{(H\gamma, g)\}$

morphisms: For each pair $(g, \gamma H)$ a morphism

$$\gamma H \xrightarrow{g} g\gamma H$$

with composition

$$(g_1, \gamma H) \circ (g_2, g_1 \gamma H) = (g_2 g_1, \gamma H)$$

Claim H is the group of automorphisms of the object $H \in \mathcal{C}$

<u>Claim</u> If $G=\langle a_i \mid R_j\rangle$ then

$$\mathcal{G}=\langle (a_i,\gamma H) \mid (R_j,\gamma H)\rangle$$

<u>Claim</u>