Abstract: We will introduce how the geometry of the upper half plane model of the hyperbolic plane can be used to calculate Dedekind sums. Using this geometric perspective, “generalize” Dedekind sums can emerge from the existence of very particular (non-arithmetic) Fuchsian groups sitting inside of $\text{PSL}_2(\mathbb{Q})$. We will conclude by discussing the difficulties in forming an analogue of Dedekind reciprocity and other avenues for further investigation.