

# Finite groups via their action

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Group action is a main source of applications of group theory, as well as an effective way of studying groups. As a motivating example, I will show how group action can be used to count the number of cyclic subgroups of a given finite group up to conjugacy. The full explanation of this phenomenon would involve Burnside's orbit counting lemma, the Moebius function (on the poset of subgroups) and (single and double) Burnside rings of finite groups. I will discuss some of these ingredients as time permits, trying to give the flavor of the techniques and related problems. This talk is intended as an introductory talk for a general audience.