

# Representation theory of finite groups

## Formalization project

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# Outline

- 1 Representation Theory
- 2 Finite abelian groups
- 3 Formalization
- 4 Mathlib
- 5 Future work

# Definition Representation

## Definition

For a group  $G$  and a field  $k$ , a **representation** of  $G$  over  $k$  is a pair  $(V, \rho)$  where  $V$  is a vector space over  $k$  and  $\rho : G \rightarrow \mathrm{GL}(V)$  is an action of  $G$  on  $V$ .

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Convention:  $V$  has finite dimension, unless explicitly stated otherwise.

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$\dim(V)$  is the **dimension** or **degree** of  $(V, \rho)$ .







