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## 0.1 Abelian groups

A commutative group, that is where  $a \odot b = b \odot a$ .

The following are abelian groups:

- Integers and addition
- $\{-1, 1\}$  and multiplication

The following are not abelian groups:

- Natural numbers above 0 and addition
- Rational numbers and division
- Natural numbers and addition
- Natural numbers up to 10 and addition
- $n \times n$  matrices with determinants other than 0