

Definition (Group morphism). A morphism $F : \mathbf{G} \rightarrow \mathbf{H}$ between groups

$$\mathbf{G} = \langle \mathbf{G}, \circ_{\mathbf{G}}, \text{id}_{\mathbf{G}}, \text{inv}_{\mathbf{G}} \rangle \quad \text{and} \quad \mathbf{H} = \langle \mathbf{H}, \circ_{\mathbf{H}}, \text{id}_{\mathbf{H}}, \text{inv}_{\mathbf{H}} \rangle$$

is a function $F : \mathbf{G} \rightarrow \mathbf{H}$ such that for all x, y in \mathbf{G} ,

$$F(x \circ_{\mathbf{G}} y) = F(x) \circ_{\mathbf{H}} F(y).$$