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

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

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

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