Definition (Semigroup morphism). A morphism $F: S \to T$ between semigroups

$$\mathbf{S} = \langle \mathbf{S}, \S_{\mathbf{S}} \rangle \quad \text{and} \quad \mathbf{T} = \langle \mathbf{T}, \S_{\mathbf{T}} \rangle$$
 is a function $F : \mathbf{S} \to \mathbf{T}$ such that for all $x, y \in \mathbf{S}$,

 $F(x \circ_{\mathbf{S}} y) = F(x) \circ_{\mathbf{T}} F(y).$