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

$$\mathbf{S} = \langle \mathbf{S}, \fatsemi_{\mathbf{S}} \rangle \qquad \text{and} \qquad \mathbf{T} = \langle \mathbf{T}, \fatsemi_{\mathbf{T}} \rangle$$

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

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