

Definition (Semi-category action). A semi-category action of a semi-category \mathbf{C} is defined by

- ▷ a map φ that associates from each object $X \in \mathbf{Ob}_{\mathbf{C}}$, a set $\varphi(X)$:

$$\varphi : \mathbf{Ob}_{\mathbf{C}} \rightarrow \mathbf{Ob}_{\mathbf{Set}}$$

- ▷ a map γ that associates to each morphism a function:

$$\gamma : \mathbf{Hom}_{\mathbf{C}}(X; Y) \rightarrow \mathbf{Hom}_{\mathbf{Set}}(\varphi(X); \varphi(Y))$$

Moreover, this condition must hold:

$$\gamma(f \circ g) = \gamma(f) \circ \gamma(g).$$