

**Definition** (Semi-functor). Given two semi-categories  $\mathbf{C}$  and  $\mathbf{D}$ , a *semi-functor*  $F : \mathbf{C} \rightarrow \mathbf{D}$  from  $\mathbf{C}$  to  $\mathbf{D}$  is defined by the following constituents and conditions.

Constituents:

i) A map

$$F_{\text{ob}} : \text{Ob}_{\mathbf{C}} \rightarrow \text{Ob}_{\mathbf{D}}.$$

ii) For every pair of objects  $X, Y$  of  $\mathbf{C}$  a map

$$F_{\text{mor}} : \text{Hom}_{\mathbf{C}}(X; Y) \rightarrow \text{Hom}_{\mathbf{D}}(F_{\text{ob}}(X); F_{\text{ob}}(Y))$$

Conditions:

1. It holds that

$$\frac{f : X \rightarrow_{\mathbf{C}} Y \quad g : Y \rightarrow_{\mathbf{C}} Z}{F_{\text{mor}}(f \circ g) = F_{\text{mor}}(f) \circ F_{\text{mor}}(g)}.$$