

Definition (Functor composition). Consider categories \mathbf{A} , \mathbf{B} , \mathbf{C} and functors $F : \mathbf{A} \rightarrow \mathbf{B}$, $G : \mathbf{B} \rightarrow \mathbf{C}$. Functor composition is given by $F \circ G : \mathbf{A} \rightarrow \mathbf{C}$, where:

- ▷ Given $X \in \text{Ob}_{\mathbf{A}}$, one has $(F \circ G)(X) := G(F(X))$;
- ▷ Given $f \in \text{Hom}_{\mathbf{A}}(X; Y)$, one has $(F \circ G)(f) := G(F(f))$.