Definition (Subcategory)

A *sub(semi)category* **D** of a (semi)category **C** is a category for which:

1. All the objects in $\mathrm{Ob}_\mathbf{D}$ are in $\mathrm{Ob}_\mathbf{C}$;

2. For any two objects $X, Y \in \mathrm{Ob}_\mathbf{D}$, the morphisms of **D** between of them are a subsets of the morphisms of **C**:

$$\mathrm{Hom}_\mathbf{D}(X;Y) \subseteq \mathrm{Hom}_\mathbf{C}(X;Y);$$

3. If $f : X \to Y$ and $g : Y \to Z$ in **D**, then the composite $f \, \mathring{,} \, g$ in **C** is in **D** and represents the composite in **D**.

4. (Categories) If $X \in \mathrm{Ob}_\mathbf{D}$, then the identity Id_X in $\mathrm{Hom}_\mathbf{C}(X;X)$ is also in $\mathrm{Hom}_\mathbf{D}(X;X)$ and acts as its identity morphism.