

**Definition** (Equivalence of categories). Let  $\mathbf{C}$  and  $\mathbf{D}$  be categories. An *equivalence* between  $\mathbf{C}$  and  $\mathbf{D}$  is the following data:

1. A functor  $L : \mathbf{C} \rightarrow \mathbf{D}$ ;
2. A functor  $R : \mathbf{D} \rightarrow \mathbf{C}$ ;
3. Natural isomorphisms  $\text{un} : \text{Id}_{\mathbf{C}} \Rightarrow L \circ R$  and  $\text{co} : R \circ L \Rightarrow \text{Id}_{\mathbf{D}}$ .