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 $L : \mathbf{C} \to \mathbf{D}$;
2. A functor $R : \mathbf{D} \to \mathbf{C}$;
3. Natural isomorphisms $\mathrm{un} : \mathrm{Id}_{\mathbf{C}} \Rightarrow L \fatsemi R$ and $\mathrm{co} : R \fatsemi L \Rightarrow \mathrm{Id}_{\mathbf{D}}$.