Definition (Strong monoidal functor). Let $\langle \mathbf{C}, \otimes_{\mathbf{C}}, \mathbf{1}_{\mathbf{C}} \rangle$ and $\langle \mathbf{D}, \otimes_{\mathbf{D}}, \mathbf{1}_{\mathbf{D}} \rangle$ be two monoidal categories. A *strong monoidal functor* between **C** and **D** is given by:

1. A functor
$$F : \mathbf{C} \to \mathbf{D};$$
2. An isomorphism
$$\mathrm{iso} : \mathbf{1}_{\mathbf{D}} \to F(\mathbf{1}_{\mathbf{C}});$$
3. A natural isomorphism μ
$$\mu_{X,Y} : F(X) \otimes_{\mathbf{D}} F(Y) \to F(X \otimes_{\mathbf{C}} Y), \quad \forall X, Y \in \mathbf{C},$$

satisfying the following conditions:

a) *Associativity*: For all objects $X, Y, Z \in \mathbf{C}$, there are *associators* $\mathrm{as}^{\mathbf{C}}$ and $\mathrm{as}^{\mathbf{D}}$ such that the diagram in **??** commutes.

b) *Unitality*: For all $X \in \mathbf{C}$, there exist left and right *unitors* $\mathrm{lu}^{\mathbf{C}}$ and $\mathrm{ru}^{\mathbf{C}}$, the diagram in **??** commutes.