

$$\begin{array}{ccc}
\mathrm{Hom}_C(a, b) \otimes \mathrm{Hom}_C(b, c) & \xrightarrow{\circ_{a,b,c}} & \mathrm{Hom}_C(a, c) \\
F_{a,b} \otimes F_{b,c} \downarrow & & \downarrow F_{a,c} \\
\mathrm{Hom}_D(F(b), F(c)) \otimes \mathrm{Hom}_D(F(a), F(b)) & \xrightarrow[\circ_{F(a),F(b),F(c)}]{} & \mathrm{Hom}_D(F(a), F(c))
\end{array}$$