

$$\begin{array}{ccc}
 C_1 & \xrightarrow[\text{Cat}]{f_1} & D_1 \\
 \downarrow \text{Cat} \scriptstyle F & & \uparrow \text{Cat} \scriptstyle G \\
 C_2 & \xrightarrow[\scriptstyle f_2]{\text{Cat}} & D_2 \\
 \downarrow \text{Cat} \scriptstyle H & & \uparrow \text{Cat} \scriptstyle K \\
 C_3 & \xrightarrow[\scriptstyle f_3]{\text{Cat}} & D_3
 \end{array}$$

$$\begin{array}{ccc}
 C_1 & \xrightarrow[\text{Cat}]{f_1} & D_1 \\
 \downarrow \text{Cat} \scriptstyle F \circ H & & \uparrow \text{Cat} \scriptstyle K \circ G \\
 C_3 & \xrightarrow[\scriptstyle f_3]{\text{Cat}} & D_3
 \end{array}$$