

$$\begin{array}{ccc}
 \mathbf{C}_1 & \xrightarrow[\mathbf{Cat}]{f_1} & \mathbf{D}_1 \\
 \downarrow \mathbf{Cat} \begin{array}{l} F \\ H \end{array} & & \uparrow \mathbf{Cat} \begin{array}{l} G \\ K \end{array} \\
 \mathbf{C}_2 & \xrightarrow[\mathbf{Cat}]{f_2} & \mathbf{D}_2 \\
 \downarrow \mathbf{Cat} \begin{array}{l} H \end{array} & & \uparrow \mathbf{Cat} \begin{array}{l} K \end{array} \\
 \mathbf{C}_3 & \xrightarrow[\mathbf{Cat}]{f_3} & \mathbf{D}_3
 \end{array}$$

$$\begin{array}{ccc}
 \mathbf{C}_1 & \xrightarrow[\mathbf{Cat}]{f_1} & \mathbf{D}_1 \\
 \downarrow \mathbf{Cat} \begin{array}{l} F \circ H \end{array} & & \uparrow \mathbf{Cat} \begin{array}{l} K \circ G \end{array} \\
 \mathbf{C}_3 & \xrightarrow[\mathbf{Cat}]{f_3} & \mathbf{D}_3
 \end{array}$$