

$$\begin{array}{ccc}
 (A, B) & \xleftarrow{(\pi_1, \pi_2)} & \Delta(A \times B) \\
 & \nwarrow (f_1, f_2) & \uparrow \Delta f \\
 & & \Delta(C)
 \end{array}$$

$$\begin{array}{ccc}
 A \times B & & \\
 \uparrow f & & \\
 C & & 
 \end{array}$$