Show that if A and B are commutative rings and if $f: A \rightarrow B$ is a ring homorphism, then there is a natural B-module isomorphism from

$$
\left(B \otimes_{A} M\right) \otimes_{B}\left(B \otimes_{A} N\right)
$$

to

$$
B \otimes_{A}\left(M \otimes_{A} N\right)
$$

for A-modules M,N.

