Assignment 14 MAT 347

Q2: We claim that $\mathbb{Z}/(m) \otimes_{\mathbb{Z}} \mathbb{Z}/(n) \cong \mathbb{Z}/(m,n)$. Consider the following commutative diagram:

$$\mathbb{Z} \left/ (m) \times \mathbb{Z} \left/ (n) \mathbb{Z} \left/ (m) \otimes_{\mathbb{Z} \mathbb{Z} / (n)} \mathbb{Z} \left/ (m,n) \right["f(x,y) = xy"', from = 1-1, to = 2-1] \right[" \otimes ", from = 1-1, to = 1-2] \right["\tilde{f}", from = 1-1, to = 1-2] = xy'' + yy'' + yy$$