Missing the first part
Let $MnF = \{n \times n\}$
$A, B \in MnF$, $A_{ij} = ijthentryofA$
then $A = B$ iff $A_{ij} = B_{ij}$ $\forall i_j$
Define:
$+$ on MnF by $(A + B)_{ij} = A_{ij} + B_{ij}$
$\cdot$ on MnF by $(AB)_{ij} = \sum_{k=1} nA_{ik}B_{kj}$