8. Consider $L = \{n \in \mathbb{Z} \mid n \leq 7\}$. For $a$ and $b$ in $L$, define $a \ast b = \min\{a, b\}$. Does $(L, \ast)$ have an identity element? If yes, what is it and why does it work? If no, why not? (I know that $(L, \ast)$ is not a group. You do not have to show that, but you do have to answer my question.)

\[
\text{yes} \quad 7 \quad \text{is the identity element of } (L, \ast).
\]

If $n$ is an element of $L$, then $n$ is an integer with $n \leq 7$.

So $n \ast 7 = \min\{n, 7\} = n$

and $7 \ast n = \min\{7, n\} = n$.