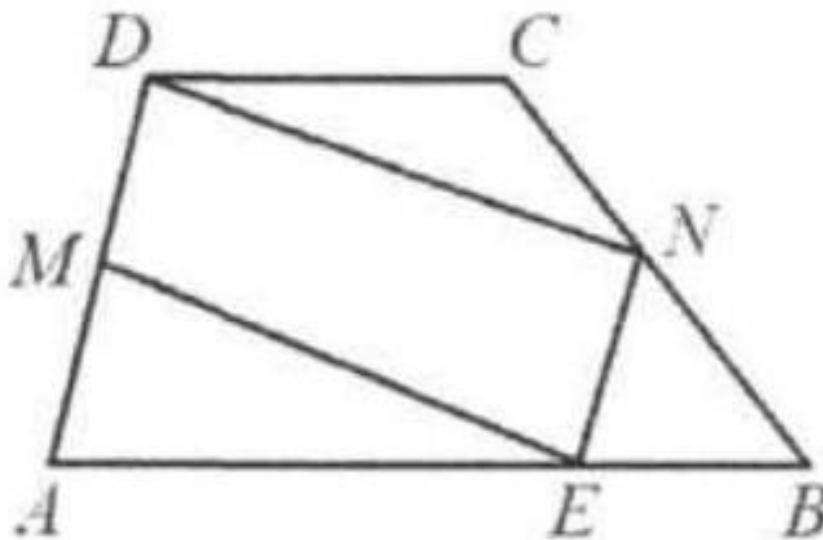


Problem 10

Problem

$ABCD$ is a trapezoid with $AB \parallel DC$. M and N are midpoints of AD , BC , respectively. $ME \parallel DN$. ME meets AB at E . Show that $NE = DM$.



Solution

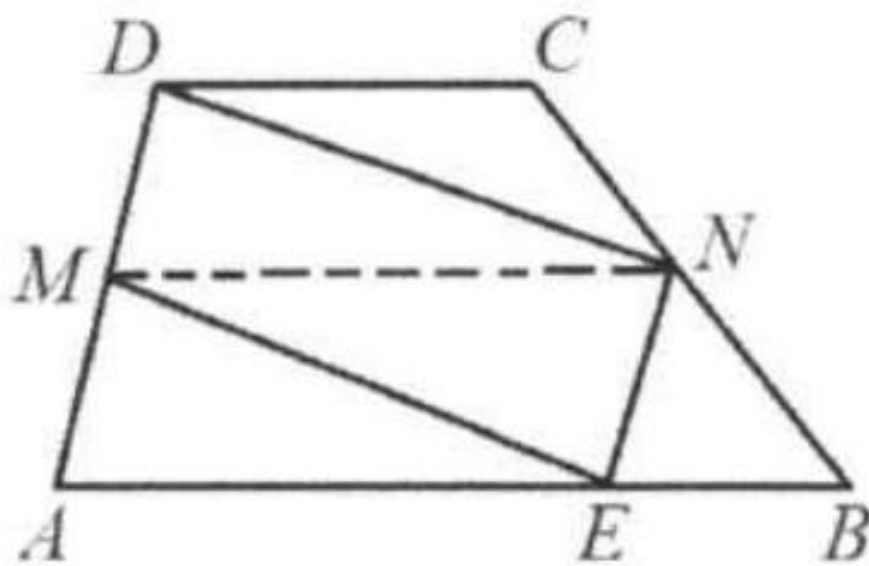
Connect MN . MN is the median of the trapezoid $ABCD$. So

$$MN \parallel AB, \angle DMN = \angle MAE.$$

Since $ME \parallel DN$, $\angle MDN = \angle AME$.

We also know that $DM = MA$. Thus $\triangle DMN \cong \triangle MAE$. So $DN = ME$.

We also know that $ME \parallel DN$. Therefore $DNEM$ is a



parallelogram. Thus $NE = DM$.