Answer on Question #36915 – Math - Geometry

In a given pentagon ABCDE, triangles ABC, BCD, CDE, DEA and EAB all have the same area. The lines AC and AD intersect BE at points M and N. Prove that BM = EN.

Solution

$\triangle BCD$ and $\triangle CDE$ are of the same area. BCDE is trapezoid, where $CD \parallel BE$

likewise, $\triangle BCD = \triangle ABC$, so ABCD is trapezoid, where $BC \parallel AD$

for $\triangle CDE$ and $\triangle DEA$ $DE \parallel CA$

from this we can say that *BNDC* and *MCDE* are parallelograms

now, $BN=CD=ME$

so, $BM=EN$