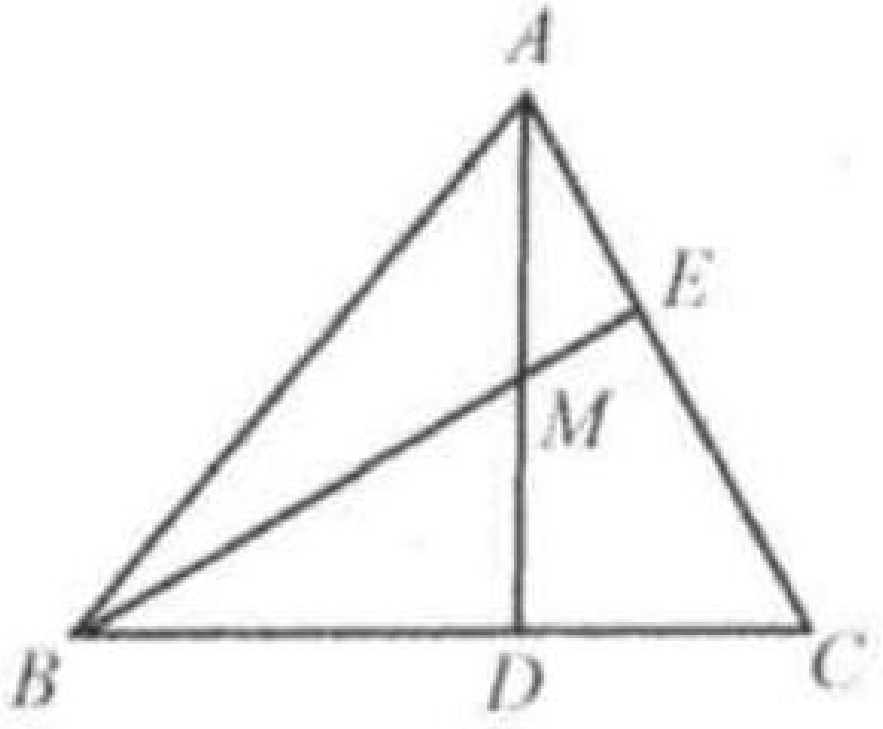
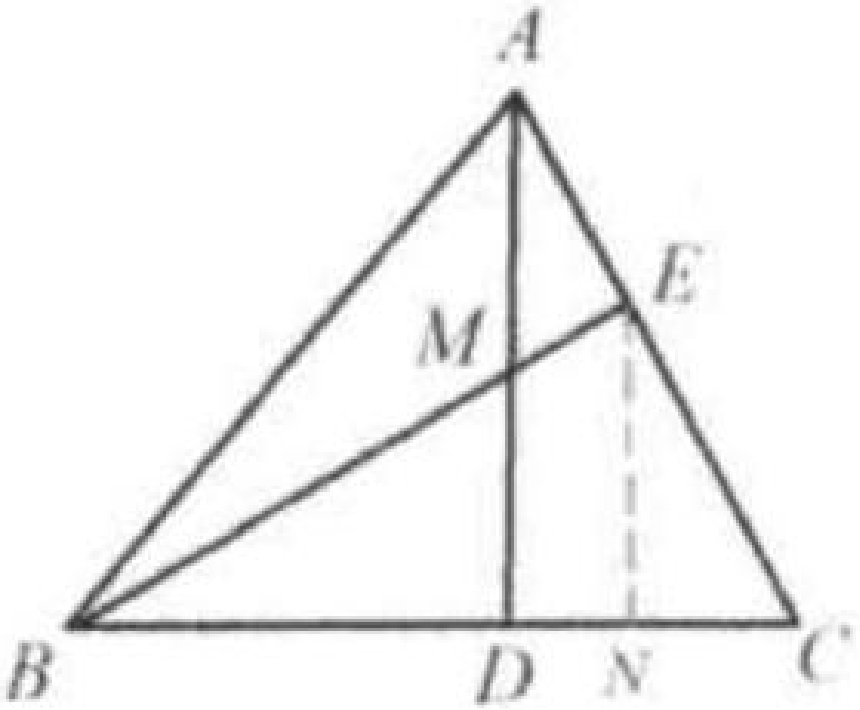
# Example 6

In triangle $ABC$, a point $D$ is taken on $AB$ and a point $E$ is taken on $AC$ such that $BD : DC = 3 : 2$, and $AE : EC = 3 : 4$.$AD$ and $BE$ intersect at $M$. Find the area of triangle $BMD$ if the area of triangle $ABC$ is 1 .

Solution: $\frac{4}{15}$.




Draw $EN//AD$ to meet $BC$ at $N$.
Since $BD : DC = 3 : 2$ and $AE : EC = 3 : 4, NC : DN : BD = 8 : 6 : 21$.
We know that $S_{\triangle BCE} = \frac{4}{7} S_{\triangle ABC} = \frac{4}{7}$. Thus




$S_{\triangle BNE} = \frac{27}{35} S_{\triangle BEC} = \frac{27\times 4}{35\times 7}$.
Since $DM//EN, \triangle BDM \sim \triangle BNE$. Then
$S_{ABDM} = \left(\frac{21}{27}\right)^2 S_{ABNC} = \frac{49}{81} \times \frac{27\times 4}{35\times 7} = \frac{4}{15}$