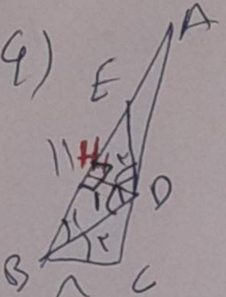
۶)



BD نیمساز $\hat{ABC}$ → $\hat{B}_1 = \hat{B}_2$

$BC \parallel BH$ ، BD مورب → $\hat{B}_2 = \hat{D}_1$ } → $\hat{D}_1 = \hat{B}_1$

$\hat{B}_1 + \hat{D}_1 = 180 - \hat{H}_1 = 90$ ↳ $\hat{H}_1 = 90°$ → $\hat{B}_1 = \hat{D}_1 = 45°$

$D = \hat{D}_1 + \hat{D}_2 = 90°$ ↳ $\hat{D}_2 = 45°$ ↳ $B\hat{H}D$ متساوی‌الساقین ↳ $HD = BH$

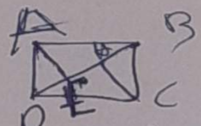
→ $\hat{D}_2 = 45°$; $\hat{E}_1 = 180 - \hat{D}_2 - \hat{H}_2$ → $\hat{E}_1 = 180 - 45 - 90 = 45°$

→ $B\hat{D}E$ متساوی‌الساقین → DH میانه وارد بر قاعده → BH = EH = ۴/۵ = DH

$DH \parallel BC$ → $\frac{AH}{BA} = \frac{DH}{BC} = \frac{۴/۵}{۸}$ → AE = ۶/۵

(۹/۵ + AE ، AE + ۹)

۷)



$S_{A\hat{B}D} = \frac{AD \times AB}{۲}$

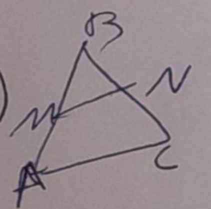
$S_{B\hat{C}D} = \frac{CD \times CB}{۲}$ → $S_{A\hat{B}D} = S_{B\hat{C}D}$ → $S_{ABCD} = ۲ S_{A\hat{B}D}$

$S_{ABCD} = S_{A\hat{B}D} + S_{B\hat{C}D}$

$S_{A\hat{B}D} = \frac{AE \times BD}{۲}$

$S_{A\hat{D}E} = \frac{AE \times DE}{۲}$ → $\frac{S_{A\hat{B}D}}{S_{A\hat{D}E}} = \frac{BD}{ED} = ۴$ → $\frac{S_{ABCD}}{S_{A\hat{D}E}} = ۸$

۸)

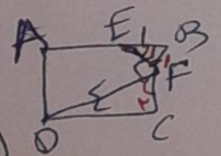


$S_{A\hat{B}C} = \frac{1}{۲} AB \times BC \sin\hat{B}$ → $\frac{S_{A\hat{B}C}}{S_{B\hat{M}N}} = ۳$

$S_{B\hat{M}N} = \frac{1}{۲} BM \times BN \sin\hat{B}$

→ $\frac{AB}{BM} = ۳$ → $\frac{AB}{BM} = \frac{۹}{۵}$ → $\frac{BM}{AM} = \frac{۱}{۴}$

۹)

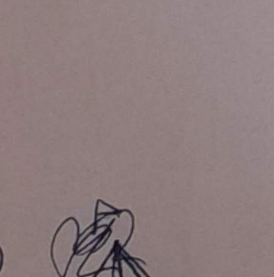


$F\hat{B}E$: $\hat{E}_1 + \hat{F}_1 = 90$; $\hat{F}_1 + \hat{F}_2 + 90 = 180$ } → $\hat{E}_1 = \hat{F}_2$ ، $B = C = 90$ } (ز ز) → $B\hat{F}E \sim C\hat{F}D$

→ $\frac{BE}{CF} = \frac{FE}{FD} = \frac{BF}{CD} = \frac{۱}{۴}$ → ۴BF = CD

→ $B\hat{E}F = BE^2 + BF^2 = EF^2$ ، BC = DC } → $BDC^2 = \frac{۲۵۶}{۲۵}$

۱۰)



GE = EC ، $A\hat{G}C$ → GE = EC → AE میانه وارد بر ضلع GC

G مرکز ثقل $A\hat{B}C$ ، G مرکز ثقل → BD میانه وارد بر ضلع AC → AD = DC → GD میانه وارد بر ضلع AC

→ F مرکز ثقل $A\hat{G}C$ → $\frac{GF}{FD} = ۲$ → $\frac{GD}{FD} = ۳$

→ G مرکز ثقل $A\hat{B}C$ → $\frac{BG}{GD} = ۲$ → $BD/DG = ۳$ → $\frac{BD}{DF} = ۹$