بنام خدا

SUBJECT: تکلیف ۲۲ — یازدهم A — رایان معماریان

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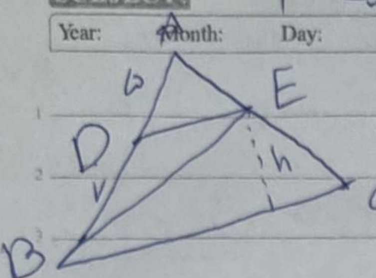

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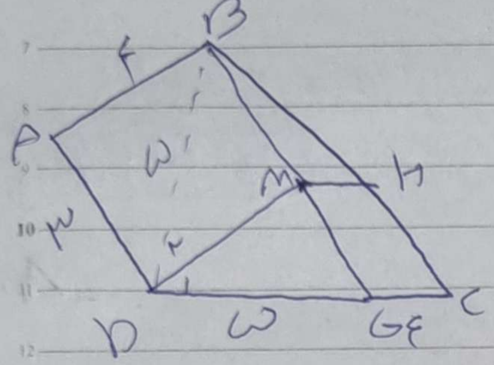
$\frac{AD}{AB}=\frac{DE}{BC} \Rightarrow \frac{5}{12}=\frac{DE}{BC} \Rightarrow BC=2.4DE$

$\frac{S_{BCE}}{S_{BDE}} \Rightarrow \frac{\frac{h\times 2.4DE}{2}}{\frac{h\times DE}{2}} = \boxed{2.4}$



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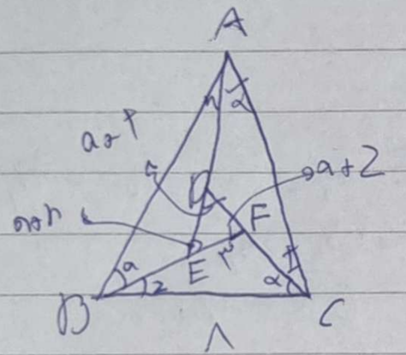
$D_1=D_2$ / $M=90^\circ$

$\left.\begin{array}{l}\hat{M}=\hat{M}=90^\circ \\ D_1=D_2\end{array}\right\} \Rightarrow \triangle BMD \sim \triangle DMG$

$\frac{MH}{GC}=\frac{1}{1} \Rightarrow \boxed{MH=2}$



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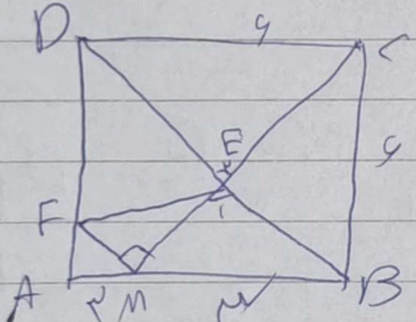
$\left\{\begin{array}{l}\hat{E}=\hat{A} \\ \hat{C}=\hat{C} \\ \hat{F}=\hat{B}\end{array}\right. \Rightarrow \triangle EFD \sim ABC$

$\frac{AB}{EF}=\frac{BC}{DF} \Rightarrow \frac{AB}{3}=\frac{8}{2.5} \Rightarrow \boxed{AB=9.6}$



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$MC^2=BC^2+MB^2 \Rightarrow MC=3\sqrt{5}$

$\left.\begin{array}{l}C=M \\ A=B=90^\circ\end{array}\right\} \Rightarrow \triangle MAF \sim \triangle MBC$

$\frac{3}{2}=AF \quad MF^2=AM^2+AF^2 \Rightarrow MF=\frac{3\sqrt{5}}{2}$

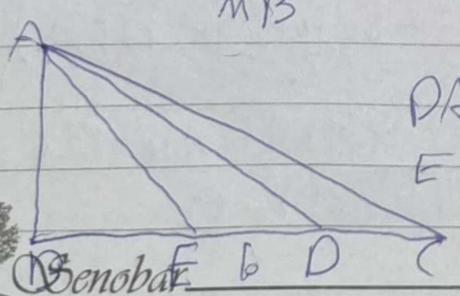
$E_1=E_2$ (متقابل به راس)

$D=B$ (دو خط موازی یک مورب) $\Rightarrow \triangle DEG \sim \triangle EMB$

$2ME=EC \quad \frac{DC}{MB}=2$

$3ME=3\sqrt{5} \Rightarrow ME=\sqrt{5}$

مساحت $AFE = \frac{\sqrt{5}\times\frac{3\sqrt{5}}{2}}{2} = \boxed{3.75}$



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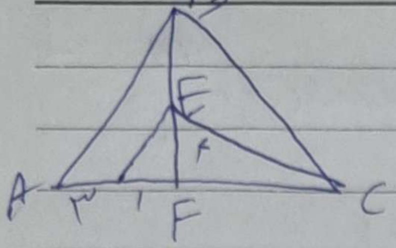
$\left.\begin{array}{l}DAE=ACD \\ E=E\end{array}\right\} \Rightarrow AEC \sim AED$

$x^2+121=(x+10)(10) \Rightarrow x^2-10x+21$

$\rightarrow \boxed{x=3 \text{ و } 7}$



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$EF^2 = DF \times FC \Rightarrow 16 \times 1 = FC \rightarrow FC = 16$

$BC^2 = CF \times AC \rightarrow BC^2 = 16 \times 20 \Rightarrow BC = 8\sqrt{5}$

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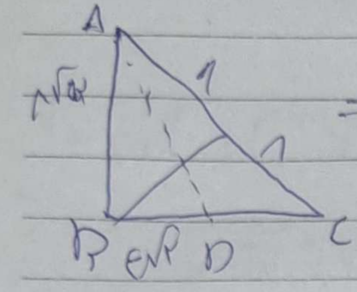

$\Rightarrow AB = 2x^2 = 256 \rightarrow x = 8\sqrt{2}$

$AD^2 = AB^2 + BD^2 \Rightarrow (8\sqrt{2})^2 + (4\sqrt{2})^2 = AD^2$

$AP = 4\sqrt{10}$

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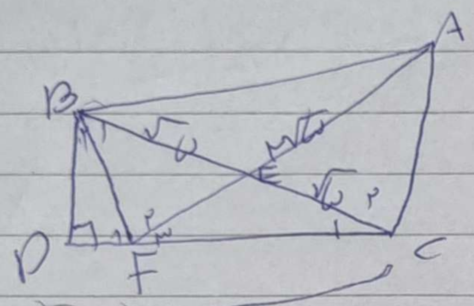

$B_1 = C_1$

$B_1 + B_2 + C_1 = 90$

$B_2 + 2B_1 = 90$

$F_1 = C_1 + B_1 = 2B_1 \rightarrow F_1 + F_2 + F_3 = 180 \Rightarrow 2B_1 + 2F_2 = 180$

$B_1 + F_2 = 90 \Rightarrow F_2 = B_1 + B_2$

$BC^2 = BD^2 + CD^2 \Rightarrow BC = 2\sqrt{5} \quad BE = EC = \sqrt{5}$

$C_2 = B = B_1 + B_2$, $E = D = 90$ $\} \Rightarrow \hat{ACE} \sim \hat{BCD}$

$\frac{DC}{AE} = \frac{BC}{EC} \Rightarrow AE = 2\sqrt{5} \Rightarrow S_{ABE} = \frac{2\sqrt{5} \times \sqrt{5}}{2} = 5$

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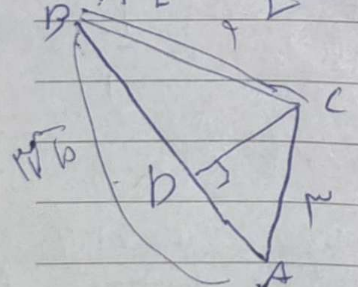

$AB^2 = AC^2 + CB^2 \Rightarrow AB = 3\sqrt{10} \quad \alpha + \beta = 90$

$AC^2 = AD \times AB \Rightarrow 9 = x \times 3\sqrt{10} \Rightarrow x = \frac{3\sqrt{10}}{10}$

$3\sqrt{10} - \frac{3\sqrt{10}}{10} = \frac{27\sqrt{10}}{10} \quad BC^2 = BE \times BC$

$\Rightarrow \left(\frac{27\sqrt{10}}{10}\right)^2 = BE \times 9 \rightarrow BE = 8.1$

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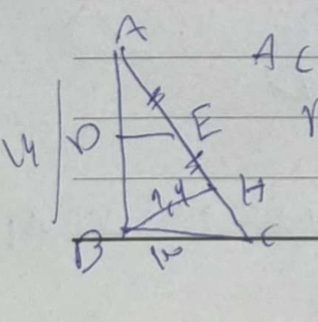

$AC^2 = BC^2 + AB^2 \Rightarrow AC = \sqrt{400} = 20 \quad BH \times AC = AB \times BC$

$BH = \frac{16 \times 12}{20} = \frac{48}{5} \quad AH = \sqrt{16^2 - \left(\frac{48}{5}\right)^2} = \frac{128}{10}$

$\frac{AH}{2} = AE = 6.4 \quad A = A$, $D = H = 90$ $\} \Rightarrow ADE \sim AHB \Rightarrow \frac{DE}{BH} = \frac{AE}{AB}$

$DE = 3.84$