نام و نام خانوادگی ...آیدا کریمی... پاسخنامه تشریحی تکلیف شماره ...۲۱ کلاس ...یازدهم دختر B...

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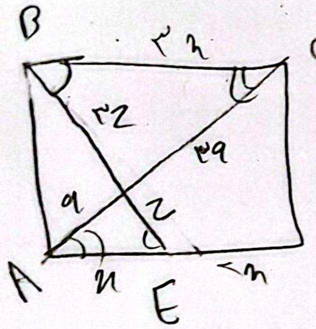

$\left.\begin{matrix}\hat{C}=\hat{A}\\ \hat{F_1}=\hat{F_2}\end{matrix}\right\} BFC \sim AFE$

$AC=\sqrt{9x^2+9x^2}=3x\sqrt{2}=4y \Rightarrow y=\frac{3\sqrt{2}x}{4}$ ۱

$BE=\sqrt{9x^2+x^2}=x\sqrt{10}=4z \Rightarrow z=\frac{\sqrt{10}x}{4}$

$\frac{z}{y}=\frac{\frac{\sqrt{10}x}{4}}{\frac{3\sqrt{2}x}{4}}=\frac{\sqrt{10}}{3\sqrt{2}}=\frac{\sqrt{5}}{3}$

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$\left.\begin{matrix}A\hat{E}D \sim A\hat{E}B\\ \hat{A}\ \text{مشترک}\end{matrix}\right\} \xrightarrow{\text{زز}} A\hat{D}E \sim A\hat{B}C$

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$\frac{AD}{AB}=\frac{AE}{AC} \rightarrow \frac{2}{x+1}=\frac{x}{15} \Rightarrow 30=x^2+x$

$=x^2+x-30=0 \Rightarrow (x-5)(x+6)=0$

$\begin{cases}x=5 ✓\\ x=-6 \rightarrow \text{غ ق ق}\end{cases}$

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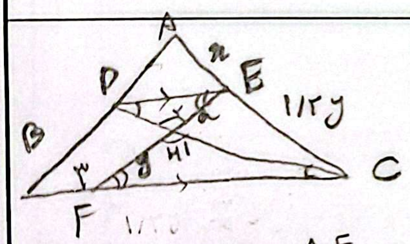

$5x=3y \Rightarrow \frac{x}{y}=\frac{3}{5}$

$\left.\begin{matrix}\hat{D}=\hat{C}\\ \hat{E}=\hat{F}\\ H_1=H_2\end{matrix}\right\} \Rightarrow D\hat{E}H \sim HF\hat{C} \rightarrow \frac{HE}{HF}=\frac{HD}{CH}=\frac{ED}{CF}$

$=\frac{x}{y}=\frac{3}{5}=\frac{DE}{FC} \Rightarrow DE=\frac{3FC}{5}$ ۳

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$DE \parallel BC \xrightarrow{\text{تالس}} \frac{AE}{AC}=\frac{DE}{BC}=\frac{\cancel{x}\ \frac{3y}{5}}{\frac{3y}{5}+\frac{6y}{5}}=\frac{1}{3}$

$\frac{DE}{3+FC}=\frac{\frac{3FC}{5}}{3+FC}=\frac{1}{3}$

$\frac{1}{3}=\frac{x}{1.2y+x} \rightarrow 3x=x+1.2y$

$2x=1.2y \rightarrow x=\frac{3y}{5}$

$9FC=15+5FC$

$4FC=15 \rightarrow FC=\frac{15}{4}$

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$AC^2=CH\times BC \rightarrow HC=\frac{AC^2}{20}=20-4 \rightarrow b^2=320 \rightarrow b=8\sqrt{5}$

$AB^2=BH\times BC \rightarrow BM=\frac{AB^2}{20}=4 \rightarrow AB^2=80 \rightarrow a=4\sqrt{5}$ ۴

$\frac{AC}{AB}=\frac{8\sqrt{5}}{4\sqrt{5}}=2 \Rightarrow \frac{1}{2} \rightarrow \frac{AB}{AC}$

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$\left.\begin{matrix}\hat{E_1}+\hat{C_1}=90\\ E_2+\hat{A_1}=90\\ \hat{E_1}=E_2\end{matrix}\right\} \hat{C_1}=\hat{A_1} \rightarrow \left.\begin{matrix}\hat{C_1}=\hat{A_1}\\ F=90\end{matrix}\right\} \xrightarrow{\text{زز}} \overset{\triangle}{AFB} \sim \overset{\triangle}{EFC}$

$14-6=8$

$\frac{EF}{BF}=\frac{FC}{AF}=\frac{EC}{AB} \Rightarrow \frac{x}{6}=\frac{8}{8+x}$ ۵

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$AF=AE+EF=8+4=12$

$x^2+8x=48$

$x^2+8x-48=0$

$(x+12)(x-4)$

$\begin{cases}x=4 ✓\\ x=-12 ✗\end{cases}$

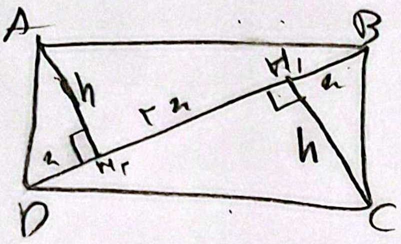
$OH \parallel BC \to \hat{B} = \hat{H} = 90 \qquad B_1 = B_2 = \alpha = \frac{90}{2} = 45$

$ED = BD = x \to \hat{E} = \hat{B}_1 \qquad \left.\begin{array}{l} EH = HD \\ HD = BH \end{array}\right\} \to EH = BM = \frac{11}{2} = 5/5$

$OH \parallel BC \xrightarrow{\text{تالس}} \frac{AH}{AB} = \frac{AD}{AC} = \frac{HD}{BC}$ ; $AH = x + 5/5$ ، $AB = x + 11$ ، $HD = 5/5$ ، $BC = 8$ $\to 8x + 44 = 5/5x + 60/5$ 6

$2/5x = 16/5$

$\Rightarrow x = 6/6$




$S_{ABCD} = 2\times\left(\frac{3xh}{2}\right) + 2\times\left(\frac{xh}{2}\right)$

$= 3xh + xh = 4xh$ 7

کوچکترین مثلث $S = S_{\triangle BCH_1} = S_{\triangle ADH_2} = \frac{xh}{2}$

$\frac{S_{\square}}{S_{\triangle ADH_2}} = \frac{4xh}{\frac{xh}{2}} = 8$

$2BN = 3NC \qquad BN = \frac{3NC}{2} \supset x$

$BC = BN + NC = \frac{3x}{2} + x = \frac{5x}{2}$

$\frac{S_{ABC}}{S_{MBN}} = \frac{\sin B \times AB \times BC}{\sin B \times BM \times BN} = 3 \Rightarrow \frac{AB}{BM} = \frac{3\times 3}{5} = \frac{9}{5}$ 8

$\frac{BC}{BN} = \frac{\frac{5x}{2}}{\frac{3x}{2}} = \frac{5}{3}$

$\xrightarrow{\text{تفضیل نسبت}} \frac{BM}{AB - BM} = \frac{5}{9-5} = \frac{5}{4} = \frac{BM}{AM}$

$\hat{B} = \hat{C} = 90$

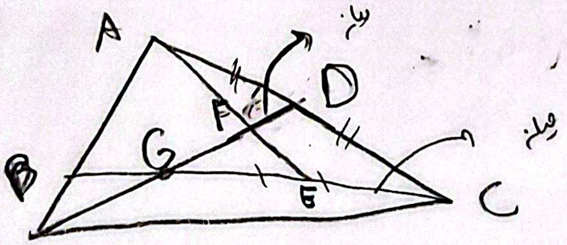
$\left.\begin{array}{l} \hat{a} + \hat{\beta} = 90 \\ \hat{B} + \hat{E}_2 = 90 \end{array}\right\} \hat{E}_2 = a$

$\left.\begin{array}{l} \hat{E}_2 + \hat{D}_1 = 90 \\ \hat{a} + \hat{\beta} = 90 \end{array}\right\} \hat{D}_2 = \beta \qquad \Longrightarrow \triangle ECD \sim \triangle FBE \to$

$\frac{a\,DE}{BE} = \frac{EC}{FB} = 4 \qquad \sqrt{16-a^2}$ 9

$a - \sqrt{16-a}$

$\to a = 4a - 4\sqrt{16-a^2} \Rightarrow a^2 = \frac{256}{25} = 10/24$




$\Rightarrow \frac{FD}{GF} = \frac{1K}{2K} \qquad GD = 3K$

$\hookrightarrow BG = 6K$

$\frac{BD}{FD} = \frac{6K + 3K}{K} = 9$ 10

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$$\frac{AE}{AC}=\frac{AD}{AB}=\frac{DE}{BC} \rightarrow \frac{x}{۳x}=\frac{DE}{BC} \rightarrow BC=۳DE \quad (۱)$$

$$\overset{\triangle}{DHE} \sim C\hat{H}F \rightarrow \frac{EH}{FH}=\frac{DH}{CH}=\frac{DE}{CF} \rightarrow \frac{x}{\frac{۵}{۳}x}=\frac{DE}{CF} \rightarrow CF=\frac{۵}{۳}DE \quad (۲)$$

$$(۱),(۲) \rightarrow BC=BF+CF \rightarrow DE=\frac{۹}{۴} \qquad BC=۳\times\frac{۹}{۴}=۶٫۷۵$$