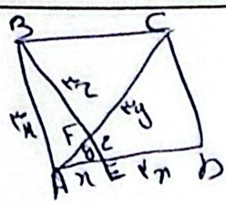
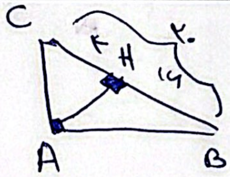
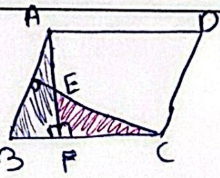
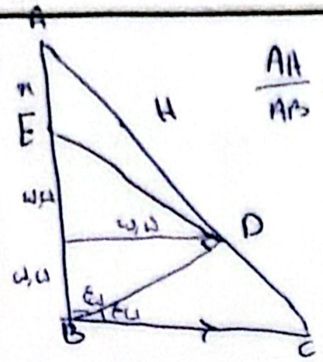
نام و نام خانوادگی .... [illegible] .... پاسخنامه تشریحی تکلیف شماره ۱ .... کلاس ۱۰۲ .... [illegible] ....

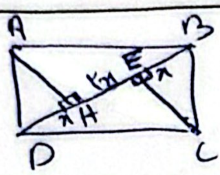
۲۰

پاسخ	ردیف
 مثلث ABE: $BA^2+AE^2=BE^2 \to 9x^2+x^2=10x^2$ ، $BE=\sqrt{10}x \to 4z=\sqrt{10}x$ ACD: $AC=3\sqrt{2}x \to 4y=3\sqrt{2}x$ $\frac{z}{y}=\frac{BE}{AC} \Rightarrow \frac{4z}{4y}=\frac{\sqrt{10}x}{3\sqrt{2}x}=\frac{\sqrt{10}}{3\sqrt{2}}$ (۴)	۱
$\frac{AE}{AC}=\frac{AD}{AB}=\frac{ED}{BC} \to \frac{x}{13+2}=\frac{2}{x+1} \to x^2+x=30 \to x^2+x-30=0$ ، $x=-6$ ✗ ، $x=5$ ✓ (۴)	۲
$DE \parallel BC \to \frac{AE}{AC}=\frac{AD}{AB}=\frac{DE}{BC} \to \frac{x}{x+1{,}4y}=\frac{x}{y+3} \Rightarrow E=\frac{15}{4}$ $3x=5y$ ، $x=\frac{5}{3}y$ ، $\frac{HF}{HE}=\frac{FC}{DE}=\frac{y}{x}=\frac{3}{5}$ ، $BC=3+\frac{15}{4}=\frac{27}{4}$ (۴)	۳
 $AC^2=CH\times CB \to AC^2=4\times 20 \to AC^2=80$ ، $AC=\sqrt{80}$ $AB^2=BH\times BC \to AB^2=16\times 20 \to AB^2=320$ ، $AB=\sqrt{320}$ $\frac{AB}{AC}=\frac{\sqrt{320}}{\sqrt{80}}=E=2$ (۴)	۴
 $\frac{CE}{AB}=\frac{EF}{BF}=\frac{CF}{AF} \to \frac{EF}{6}=\frac{8}{8+EF}$ $8EF+EF^2=48 \to EF^2+8EF-48=0$ ، $x=4$ ✓ ، $x=-12$ ✗ $AF=AE+EF=8+4=12$ (۴)	۵



$\frac{AH}{AB} = \frac{DH}{BC} \to \frac{۴,۵+x}{۱۱+x} = \frac{۵,۵}{۸} \to x = \frac{۲۴,۵}{۲,۵} = ۹,۸ = AE$

(۱) ۶



$AD^2 = x(4x) \to AD^2 = 4x^2 \quad AD = 2x$

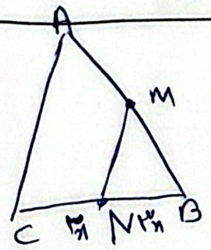
$AB^2 = 3x(4x) \to AB^2 = 12x^2 \quad AB = 2\sqrt{3}x$

$\overset{\triangle}{ADH} \cong \overset{\triangle}{BEC}$

فیثاغورس : $AH^2 + DH^2 = AD^2 \to AH^2 + x^2 = 4x^2 \to AH = \sqrt{3}x$

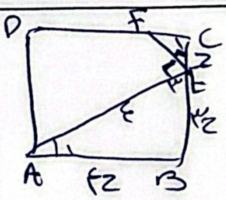
(۱) ۷

$\frac{S_{ABCD}}{S_{AHD}} = \frac{AB \times BC}{\frac{AH \times HD}{2}} = \frac{2\sqrt{3}x \times 2x}{\frac{\sqrt{3}x \times x}{2}} = \frac{8\sqrt{3}x^2}{\sqrt{3}x^2} = 8$



$\frac{S_{ABC}}{S_{BNB}} = \frac{\frac{1}{2} \times \sin B \times AB \times BC}{\frac{1}{2} \times \sin B \times BM \times BN} = 3 \to \frac{AB}{BM} = \frac{9}{5} \qquad \frac{BM}{AM} = \frac{5}{4}$

(۱) ۸



$E_1 + E_3 = 90$

$E_3 + A_1 = 90$

$\to \hat{E}_1 = \hat{A}_1$

$\frac{FC}{EB} = \frac{FE}{AE} = \frac{CE}{AB} \to \frac{1}{4} = \frac{CE}{AB} \quad 4CE = AB$

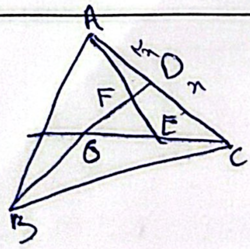
$CE = z \to AB = 4z$

۹

$AE^2 = (4z)^2 + (3z)^2 \qquad \overset{16}{AE^2} = 25z^2 \qquad z = \frac{4}{5}$

(۱)

$S = 4z \times 4z = \frac{16}{5} \times \frac{16}{5} = \frac{256}{25}$



$E \parallel BD \qquad EM \parallel GD \to \frac{EC}{EG} = \frac{CM}{DM} \to CM = DM = x \qquad AD = 2x$

$FD \parallel EM \to \frac{AD}{AM} = \frac{FD}{EM} \to \frac{2x}{3x} = \frac{FD}{EM} \to EM = \frac{3}{2}FD$

(۱) ۱۰

$EM \parallel DG \to \frac{CM}{CD} = \frac{EM}{GD} \to \frac{x}{2x} = \frac{EM}{GD} \to GD = 2EM$

$GD = 2(\frac{3}{2}FD) \qquad \frac{GD}{BD} = \frac{1}{3} \cdot \frac{3FD}{BD} = \frac{1}{3} \qquad \frac{BD}{FD} = 9$