۱۴٫۵

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲ کلاس .....

۱

$ED = 2AE$ $\quad \frac{EF}{AF} = ?$

$\frac{AE}{BC} = \frac{EF}{FB} = \frac{AF}{FC} = \frac{1}{2}$

$\Rightarrow \frac{EF}{FB+EF} = \frac{AF}{FC+AF} = \frac{1}{3}$

$\frac{EF}{\sqrt{10}} = \frac{AF}{3\sqrt{2}}$ $\quad 3\sqrt{2} = a\sqrt{2}$

$\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{3}}{\sqrt{2}} = \frac{\sqrt{10}}{3\sqrt{2}}$

$\Rightarrow \frac{EF}{\sqrt{10}} = \frac{AF}{3\sqrt{2}} = \frac{1}{3}$

۵

۲

$\frac{x}{2+3} = \frac{2}{x+1} \Rightarrow 2x^2+x=30 \Rightarrow 2x(x+1)=30 \Rightarrow 2x=5$

۵

۳

$DE \parallel BC \quad 3y=5x \quad BF=3 \quad BC=? \quad \Rightarrow 2y=\frac{5}{3}x$

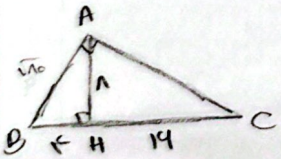
$ADE \sim ABC \Rightarrow \frac{AE}{AC} = \frac{DE}{BC} \Rightarrow \frac{x}{3x} = \frac{DE}{BC} = \frac{1}{3} \Rightarrow BC = 3DE \Rightarrow BC = 9$

$AC = x+1.2y = x+1.2(\frac{5}{3}x) = 3x$

$\frac{DE}{BC} = \frac{3}{BC} \Rightarrow 2DE = 3$

۶

۴



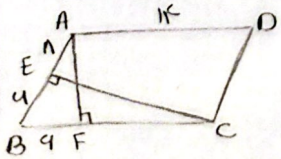
$AH^2 = BH \times HC = 9 \times 4 = 2AH = 8$

$A\hat{B}H \sim A\hat{B}C \Rightarrow \frac{AB}{AC} = \frac{BH}{AH} = \frac{4}{8} = \frac{1}{2}$

۵

۵

$AD = 12 \quad BF = 9 \quad AE = 8 \quad AF = ?$



$A\hat{B}F \sim B\hat{E}C$

$\frac{AB}{BC} = \frac{BF}{EB} = \frac{AF}{EC} \Rightarrow \frac{8+EB}{12} = \frac{9}{EB} \Rightarrow 2EB^2+8EB=96$

$EB^2+8EB-96=0$

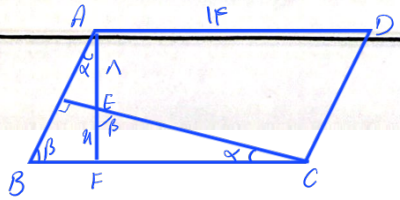
$(EB-6)(EB+16)=0$

$EB=6$

$AB^2 = AF^2+BF^2 \Rightarrow 12^2 = AF^2+3^2$

$\Rightarrow 144-9 = AF^2 \Rightarrow AF = \sqrt{135} = 3\sqrt{15}$

۰٫۵

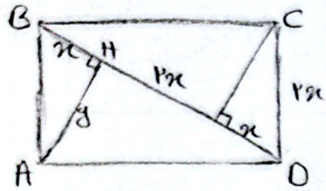


$\frac{4}{6} = \frac{5}{4+8} \rightarrow x = 8$

$AE = 4+8 = 12$

$EH = BH = \frac{۱۱}{۲} = y$

$\frac{x + ۵,۵}{۱۱ + x} = \frac{۵,۵}{۸} \rightarrow x = \frac{۳۳}{۵}$ ۶



$\frac{S_{ABCD}}{S_{BHA}} = \frac{۲x \times ۲\sqrt{۳}x}{\frac{x \times \sqrt{۳}x}{۲}} = ۸$

$y^۲ = ۳x \times x \Rightarrow y = \sqrt{۳}x$

$BA^۲ = x^۲ + ۳x^۲ = ۴x^۲ \Rightarrow BA = ۲x$

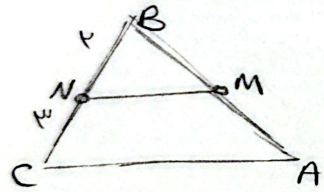
$AD^۲ = ۳x^۲ + ۹x^۲ = ۱۲x^۲ \Rightarrow AD = \sqrt{۱۲}x = ۲\sqrt{۳}x$ ۷

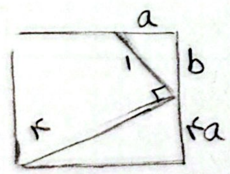
$۲BN = ۳NC$

$\frac{S_{ABC}}{S_{BNM}} = \frac{\frac{۱}{۲} AB \times BC \times \sin B}{\frac{۱}{۲} BM \times BN \times \sin B} = ۳$

$\frac{BM}{BA} \times \frac{BN}{BC}\left(\frac{۳}{۵}\right) = \frac{۱}{۳} \Rightarrow \frac{BM}{BA} = \frac{۵}{۹}$

$\Rightarrow \frac{BM}{AM} = \frac{۵}{۴}$ ۸





$۴b = \frac{۱۶}{۵}$

$۴a + b = ۴b \Rightarrow a = \frac{۳}{۴}b$

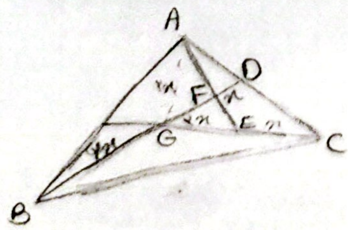
$\left(\frac{۳}{۴}b\right)^۲ + b^۲ = ۱ \Rightarrow b^۲ = \frac{۱}{\frac{۲۵}{۱۶}} = \frac{۱۶}{۲۵} \Rightarrow b = \frac{۴}{۵}$ ۹

$\frac{۹}{۱۶}b^۲$

$S_{مربع} = \left(\frac{۱۶}{۵}\right)^۲ = \frac{۲۵۶}{۲۵} = ۱۰,۲۴$

$GE = EC$ $\quad \frac{BD}{FD} = ? \quad \frac{۹x}{x} = ۹$

میانه به نسبت ۱ به ۲ همدیگر را قطع می‌کنند.



۱۰

$$\frac{AE}{AC} = \frac{AD}{AB} = \frac{DE}{BC} \rightarrow \frac{2}{3} = \frac{DE}{BC} \rightarrow BC = 3DE \quad (1) \qquad (3)$$

$$\triangle DHE \sim \triangle CHF \rightarrow \frac{EH}{FH} = \frac{DH}{CH} = \frac{DE}{CF} \rightarrow \frac{4}{\frac{9}{2}4} = \frac{DE}{CF} \rightarrow CF = \frac{9}{2} DE \quad (2)$$

$$(1),(2) \rightarrow BC = BF + CF \rightarrow DE = \frac{9}{5} \qquad BC = 3 \times \frac{9}{5} = 5/4$$