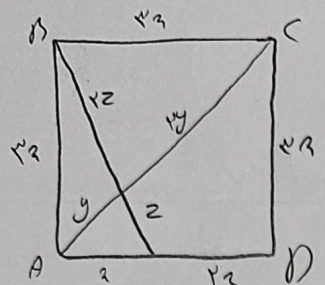
۱-

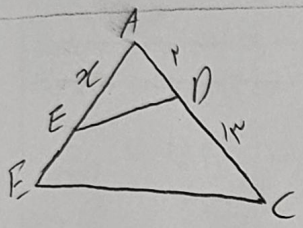


$$\frac{y}{z} = \frac{\frac{8\sqrt{3}\times 2}{3}}{\frac{10\sqrt{3}\times 2}{3}} = \frac{8}{5}$$

$$y = \frac{8\sqrt{3}\times 2}{3} \Rightarrow y = \frac{16\sqrt{3}}{3}$$

$$z = \frac{2\sqrt{10}}{3} \Rightarrow z^2 = \frac{40}{9}$$

۲-

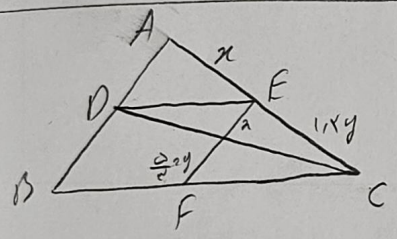


$$\frac{x}{12+x} = \frac{2}{10} \Rightarrow x^2 + 2x - 20 = 0 \Rightarrow (x+5)(x-4)$$

$$\Rightarrow x = -5 \text{ غ ق}$$

$$x = 4$$

۳-



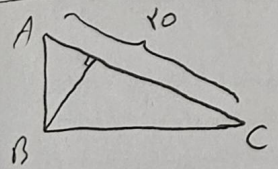
$$\frac{DE}{BC} = \frac{1}{2} \qquad \frac{DE}{FC} = \frac{2}{3}$$

$$2DE = BC \Rightarrow 2DE = 2 + FC$$

$$2DE = 2 + \frac{3}{2}DE \Rightarrow DE = \frac{4}{3}$$

$$\frac{2}{5}DE = FC \Rightarrow \frac{4}{3}\times 2 = \frac{44}{8} = 7.75$$

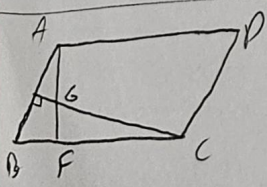
۴-



$$AB^2 = \qquad \Rightarrow AB = \sqrt{10}$$

$$BC^2 = 14\times 25 \Rightarrow BC = \sqrt{25\times 10}$$

۵-



$$AFB \sim CFE$$

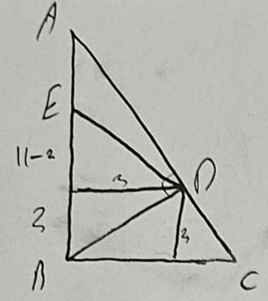
$$\frac{6}{FE} = \frac{14}{8} \Rightarrow FE = 4 \Rightarrow 4^2 + 14FE - 84 = 0$$

$$\Rightarrow (4+21)(4-6)$$

$$\Rightarrow 4 - FE = -21 \quad (4+)$$

$$AF = 14 + 8 = 22$$

۶-

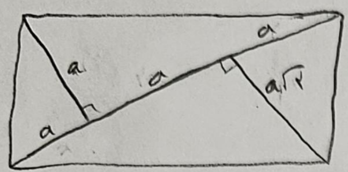


$x^۲ = x(۱۱ - x) \rightarrow x = ۰$ ✗

$\rightarrow x = \frac{۱۱}{۲}$ ✓

$\frac{\frac{۱۱}{۲}}{۸} = \frac{AE + \frac{۱۱}{۲}}{۱۱ + AE} \Rightarrow AE = ۶٫۶$

۷-



$AH^۲ = DH \times BH = a \times ۲a \Rightarrow AH = \sqrt{۲}a$

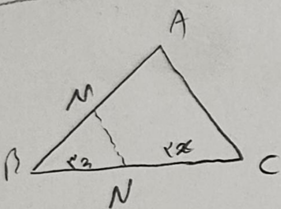
$CH'^۲ = BH' \times DH' = a \times ۲a \Rightarrow CH' = \sqrt{۲}a$

$CH'^۲ + BH'^۲ = BC^۲ \Rightarrow BC = \sqrt{۳}a$

$AH^۲ + BH^۲ = AB^۲ \Rightarrow AB = \sqrt{۶}a$

$S_{A\hat{H}D} = \frac{\sqrt{۲}a \times a}{۲} = \frac{\sqrt{۲}}{۲}a^۲$, $S_{\text{مستطیل}} = \sqrt{۳}a \times \sqrt{۶}a = ۳\sqrt{۲}a^۲$, $\frac{S_{\text{مستطیل}}}{S_{A\hat{H}D}} = \frac{۳\sqrt{۲}a^۲}{\frac{\sqrt{۲}}{۲}a^۲} = ۶$

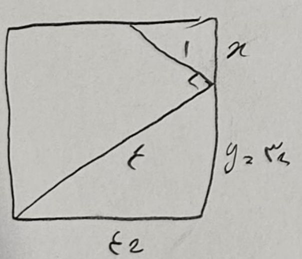
۸-



$$\frac{\frac{1}{۲} \times ۵x \times (AM + MB) \times \sin B}{\frac{1}{۲} \times ۳x \times BM \times \sin B} = ۳$$

$$\frac{BM}{AM} = ۱٫۲۵$$

۹-



$۱۶x^۲ + ۹x^۲ = ۱۶ \Rightarrow ۲۵x^۲ = ۱۶ \Rightarrow x = \frac{۴}{۵}$

$۴x = \frac{۱۶}{۵}$ $\quad \frac{۱۶}{۵} \times \frac{۱۶}{۵} = ۱۰٫۲۴$

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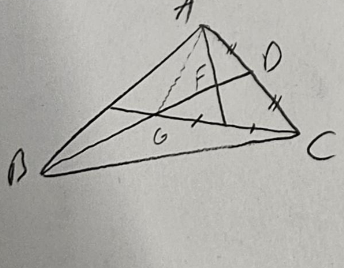
10 یک خط موازی GD از E رسم می‌کنیم.



$\frac{FD}{DG} = \frac{1}{۲} \Rightarrow DG = ۲FD$

$\frac{DG}{BD} = \frac{1}{۳} \Rightarrow \frac{۲FD}{BD} = \frac{1}{۳} \Rightarrow \frac{FD}{BD} = \frac{1}{۹} \Rightarrow \frac{BD}{FD} = ۹$