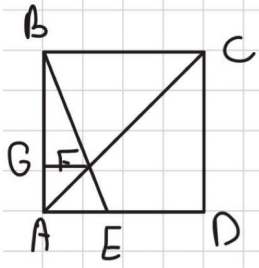


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$$ED = 2AE$$

$$AE = a \Rightarrow AD = 3a = \text{طول ضلع}$$

از F خطی به سوازیات AD رسم تا AB را در G قطع کند $\Rightarrow n = AG = GF$ قائم الزامه مستطی السامین

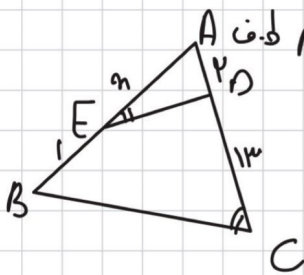
$$BG = 3a - n$$

$$BG \sim BAE \Rightarrow \frac{BG}{BA} = \frac{GF}{AE} \Rightarrow \frac{3a-n}{3a} = \frac{n}{a} \Rightarrow n = \frac{3a}{4}$$

$$AF = AG \sqrt{2} = \frac{3a}{4} \sqrt{2}$$

$$AE - GF = a - \frac{3a}{4} = \frac{a}{4}$$

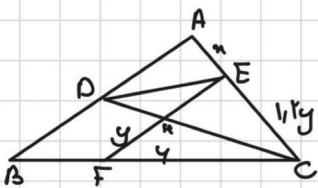
$$EF = \sqrt{\left(\frac{a}{4}\right)^2 + \left(\frac{3a}{4}\sqrt{2}\right)^2} = \frac{a}{4} \sqrt{1+9} = \frac{a\sqrt{10}}{4} \Rightarrow \frac{EF}{AF} = \frac{\frac{a\sqrt{10}}{4}}{\frac{3a\sqrt{2}}{4}} = \frac{\sqrt{5}}{3}$$



$$\hat{AED} = \hat{ACB}$$

$$\hat{A} = \hat{A}$$

$$\left. \begin{array}{l} \hat{AED} = \hat{ACB} \\ \hat{A} = \hat{A} \end{array} \right\} \Rightarrow \triangle AED \sim \triangle ABC \Rightarrow \frac{AE}{AC} = \frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{n}{13} = \frac{2}{1+n} \Rightarrow n^2 + n = 26 \Rightarrow n = 5$$



$$BF = 3, y = n \Rightarrow 0.4y = n$$

$$DE \parallel BC \Rightarrow \triangle ADE \sim \triangle ABC \Rightarrow \frac{AD}{AB} = \frac{AE}{AC} = \frac{DE}{BC} = \frac{1}{4} \Rightarrow$$

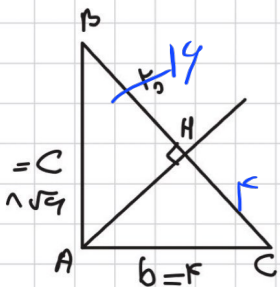
$$DE = BC$$

$$\triangle ADE \sim \triangle AFC \Rightarrow \frac{DE}{FC} = \frac{AE}{AC} = \frac{1}{4} \Rightarrow DE = 0.4 FC$$

$$DE = 0.4 FC$$

$$DE = BC \Rightarrow DE = FC + 3 \Rightarrow 0.4 FC - FC = 3$$

$$\frac{1}{10} FC = 3 \Rightarrow FC = \frac{30}{1} \Rightarrow FC = 30, \Delta \Rightarrow BC = 4, \Delta$$

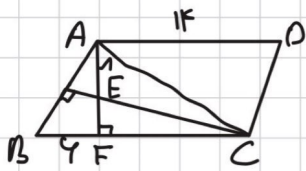


$$c^2 + b^2 = 10 \Rightarrow c = \sqrt{5} \rightarrow \frac{1\sqrt{5}}{4} = \sqrt{5}$$

$$AB^2 = 14 \times 10$$

$$AC^2 = 10 \times 10$$

$$\frac{AB}{AC} = \sqrt{\frac{14}{10}} = 1$$



$$S = 1 \times 4 = 4$$

$$S_{\triangle ABC} = \frac{1}{2} \times AC \times h = 4 \times AC = S_{ABCD} = 4 \times AC$$

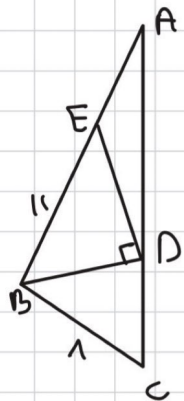
$$\left. \begin{array}{l} \hat{B} = \hat{B} \\ \hat{F} = \hat{A} \end{array} \right\} \triangle BFC \sim \triangle ABC \Rightarrow \frac{AC}{BC} = \frac{AE}{BF} = \frac{1}{4} = \frac{F}{4}$$

$$BC = AD = 1 \Rightarrow AC = \frac{F}{4} \times 1 = \frac{F}{4}$$

$$S = 1 \times AC = \frac{F \times 1}{4} \Rightarrow \frac{F \times 1}{4} = 1 \times AF \Rightarrow AF = \frac{4}{F}$$

$$\frac{2}{4} = \frac{1}{2+1} \Rightarrow 2 = F$$

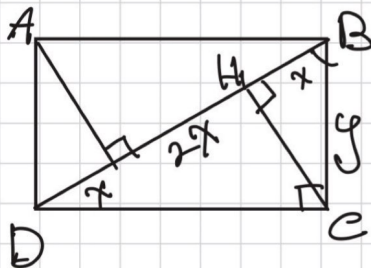
$$AF = F + 1 = 2$$



$$-2 \text{ چون ارتفاع موازی است } \triangle ABC \sim \triangle AED \Rightarrow BE \perp BC \Rightarrow$$

$$\frac{2+2}{1+2} = \frac{2}{1} \Rightarrow \frac{AD}{DC} = \frac{AB}{BC} = \frac{1}{1} \Rightarrow \frac{AD}{AC} = \frac{1}{1+1} = \frac{1}{2}$$

$$DE \parallel BC \Rightarrow \triangle ABC \sim \triangle AED \Rightarrow \frac{AE}{AB} = \frac{AD}{AC} = \frac{1}{2} \Rightarrow AE = \frac{1}{2} AB$$

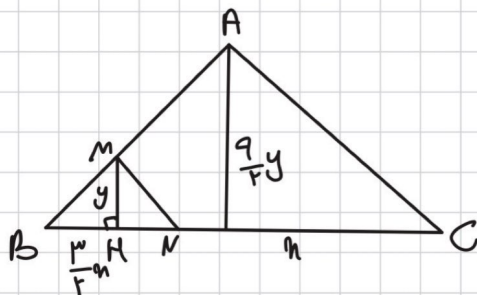


$$\left. \begin{array}{l} \hat{D} \hat{B} C = \hat{D} \hat{B} C \\ \hat{D} \hat{C} B = \hat{C} \hat{H} B \end{array} \right\} \triangle DBC \sim \triangle CHB \Rightarrow \frac{BD}{BC} = \frac{BC}{BH} \Rightarrow \frac{F}{y} = \frac{y}{x} \Rightarrow$$

$$F \times x = y^2 \Rightarrow Fx = y^2 \quad \text{فیتاغورث: } Fx^2 - x^2 = CH^2 \Rightarrow x\sqrt{F} = CH = S_{HBC} = \frac{x^2 \sqrt{F}}{y}$$

$$\therefore \text{لذا: } DC = y \Rightarrow AC = x\sqrt{F} \Rightarrow S_{ABCD} = BC \times DC = Fx \times x\sqrt{F} =$$

$$F\sqrt{F}x^2 \Rightarrow \frac{S_{ABCD}}{S_{\triangle ABC}} = \frac{F\sqrt{F}x^2}{\frac{F \times x^2}{y}} = 1$$



$$S_{\triangle MN} = S_{\triangle ABC}$$

$$\frac{S_{\triangle MN}}{S_{\triangle ABC}} = \frac{BM}{BA} \times \frac{BN}{BC} \Rightarrow \frac{1}{F} = \frac{BM}{BA} \times \frac{BN}{BC}$$

$$BM = \frac{1}{F} BA + \frac{1}{F} BC \Rightarrow \frac{BM}{BA} = \frac{1}{F} \Rightarrow \frac{BM}{MA} = \frac{1}{F}$$

