

$AE = n$ و $ED = 2n$ و $AD = 3n$

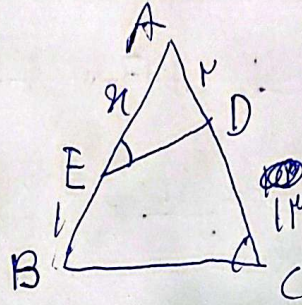
$AFE \sim BFC \rightarrow \frac{نسبت}{شکل} = 3$ $BE = n^2 + n^2 = 2n^2 \rightarrow \sqrt{2}n$

$EF = \frac{1}{3} \sqrt{2}n$ $AC = 3\sqrt{2}n \rightarrow AF = \frac{1}{3} \times 3\sqrt{2}n$

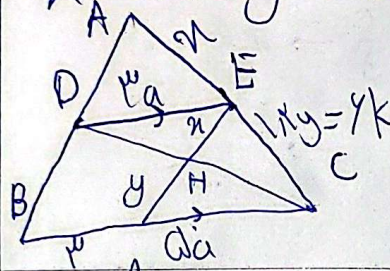
$\frac{EF}{AF} = \frac{\sqrt{2}}{3}$ ✓

$\begin{cases} \hat{AED} = \hat{ACB} \\ \hat{BAC} = \hat{EAD} \end{cases} \rightarrow \triangle ADE \sim \triangle ABC$

$\frac{3}{n+1} = \frac{n}{1n} \rightarrow n = 2$ ✓

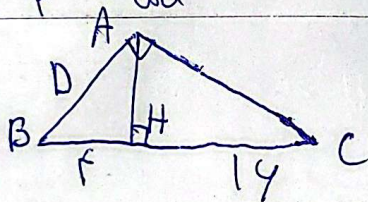


$n = 3k$ و $y = 4k$

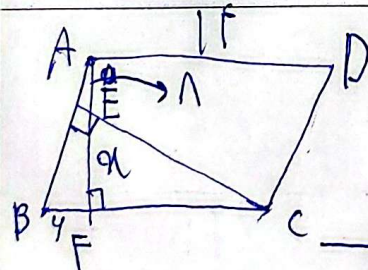


$\frac{3a}{3+4a} = \frac{3k}{4k} = \frac{1}{4} \rightarrow a = \frac{3}{4} = \frac{3}{4} \sqrt{2}$

$BC = \frac{3}{4} \sqrt{2}$ ✓

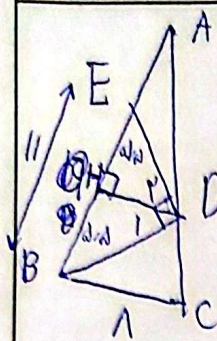


$\begin{cases} AC^2 = 14 \times 10 \\ AB^2 = 7 \times 10 \end{cases} \rightarrow \frac{AC^2}{AB^2} = 2 \rightarrow \frac{AC}{AB} = \sqrt{2}$ ✓

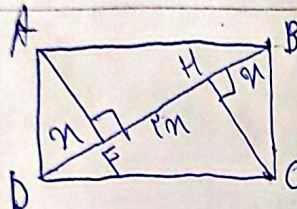


$\triangle BAF \sim \triangle ECF$
 $\rightarrow \frac{BF}{EF} = \frac{AF}{CF} \rightarrow \frac{2}{n} = \frac{n+1}{1}$

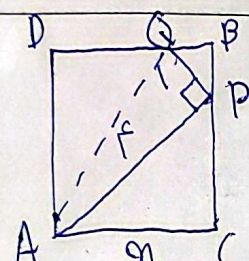
$n(n+1) = 2 \Rightarrow n = 1 \rightarrow AF = 1 + n = 2$ ✓



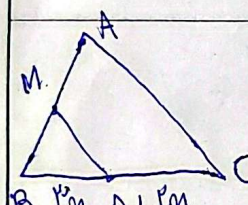
$BH = HE = d \rightarrow BH = BE = f \cdot d \xrightarrow{H = g \cdot d} BH = BE = f \cdot d \rightarrow E_1 = f \cdot d$
 $BH = HE = d$
 $DH = BH \times HE \rightarrow DH = d \cdot d \times d, d \rightarrow DH = d \cdot d, AE = g$
 $HD \parallel BC \rightarrow \frac{g + d \cdot d}{g + 1} = \frac{d \cdot d}{1} \rightarrow g + f \cdot f = d \cdot d \cdot g + g \cdot d$
 $\rightarrow f \cdot d \cdot g = g \cdot d \rightarrow g = \frac{f \cdot d}{1} \checkmark$



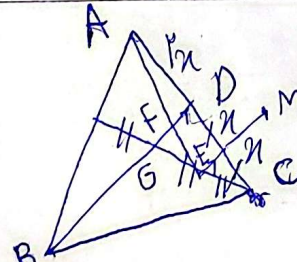
$BH = DF = \frac{1}{2} FH$
 $DF = g, FH = f \cdot g, BH = g$
 $\frac{S_{HBC}}{S_{BCD}} = \frac{BH}{BD} = \frac{1}{f}$
 $\frac{S_{HBC}}{S_{BCD}} \times \frac{S_{BCD}}{S_{ABCD}} = \frac{S_{HBC}}{S_{ABCD}} = \frac{1}{f} \times \frac{1}{f} = \frac{1}{f^2} \rightarrow \frac{S_{ABCD}}{S_{HBC}} = f^2 \checkmark$



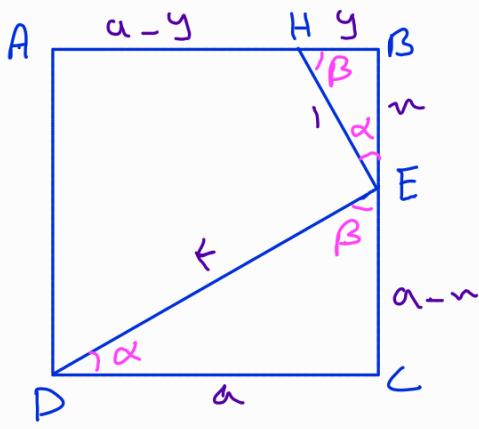
$AQ = \sqrt{f \cdot v}$
 $\cancel{ACP} \rightarrow \frac{g}{\sqrt{f \cdot v}} = \frac{f}{g} \rightarrow g = \frac{f \cdot \sqrt{f \cdot v}}{g}$
 $\rightarrow S = \frac{f \cdot v \cdot f}{g}$



$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \times BN}{BA \times BC} = \frac{BM}{AB} \times \frac{BN}{AC} = \frac{1}{f}$
 $\rightarrow \frac{BM}{AB} = \frac{g}{f} \rightarrow \frac{BM}{AM} = \frac{g}{f} = \frac{1}{f} \checkmark$



$\frac{FD}{EM} = \frac{f \cdot g}{f \cdot g} = \frac{f}{g}$
 $\frac{EM}{GD} = \frac{1}{f} \rightarrow \frac{EM}{BD} = \frac{1}{f}$
 $\frac{FD}{BD} = \frac{1}{g} \rightarrow \frac{BD}{FD} = g \checkmark$



$$\triangle EBH \sim \triangle DCE \rightarrow \frac{y}{a-n} = \frac{n}{a} = \frac{1}{r} \begin{cases} a = rn \\ a-n = ry \\ n = \frac{r}{a}y \end{cases}$$

$$\triangle DCE \xrightarrow{\text{فیتاغورس}} (r)^2 = (a-n)^2 + (a)^2 \begin{cases} n = \frac{r}{a} \\ a = \frac{14}{a} \end{cases}$$

$$S_{\square} = a^2 = \boxed{\frac{204}{25}}$$