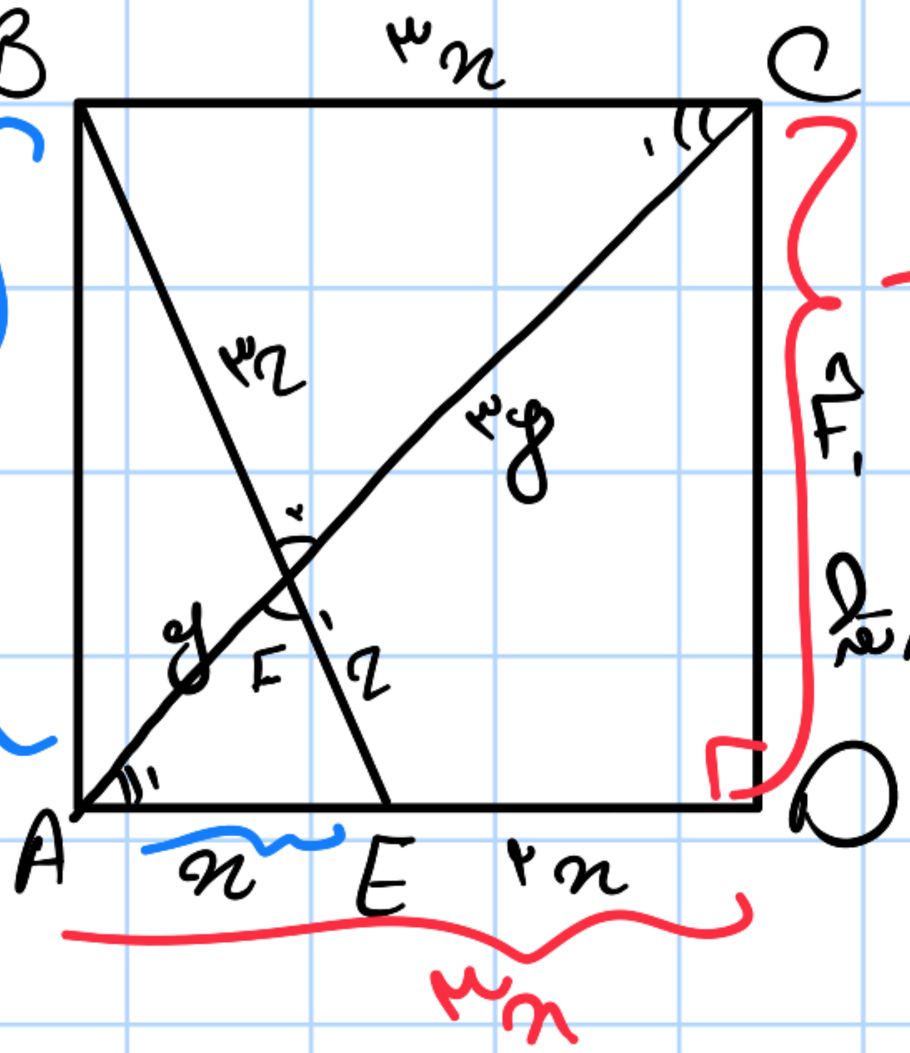


$\hat{F}_1 = \hat{F}_2 =$ متقابل بالرأس

نعم $\overline{AC} \Rightarrow \hat{A}_1 = \hat{C}_1$

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

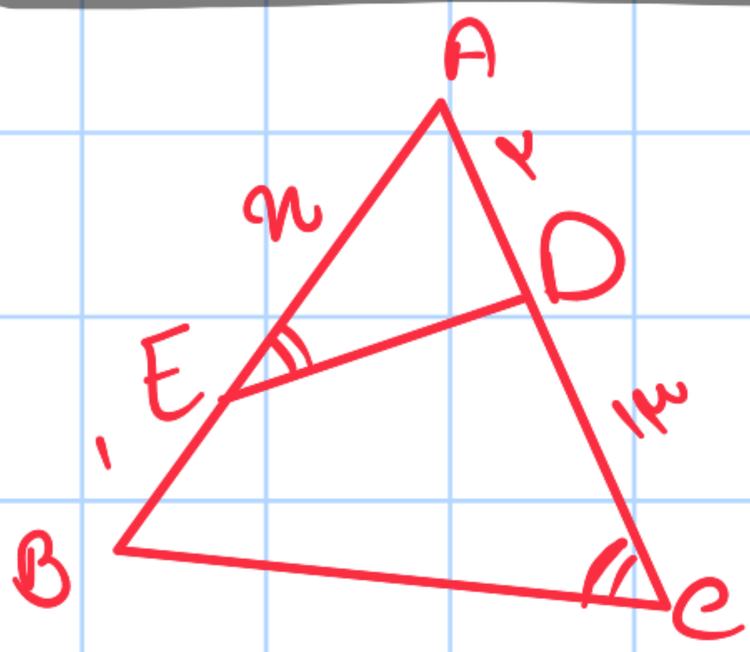
$\Rightarrow \frac{AE}{BC} = \frac{AF}{FC} = \frac{FE}{BF} \Rightarrow$ (2)

$\frac{1}{3} = \frac{AF}{FC} = \frac{FE}{BF} \Rightarrow 3AF = FC \ , \ 3FE = BF$

$\sqrt{9x^2+9x^2} = \sqrt{18x^2} = 9\sqrt{2}x = 4y \Rightarrow \frac{3\sqrt{2}}{4}x = y$

$\sqrt{x^2+9x^2} = \sqrt{10}\,x = 4\sqrt{2} \rightarrow \frac{\sqrt{10}}{4}x = 2$

$\Rightarrow \frac{2}{\frac{3\sqrt{2}}{4}} = \frac{4}{3\sqrt{2}} = \frac{2\sqrt{2}}{3}$

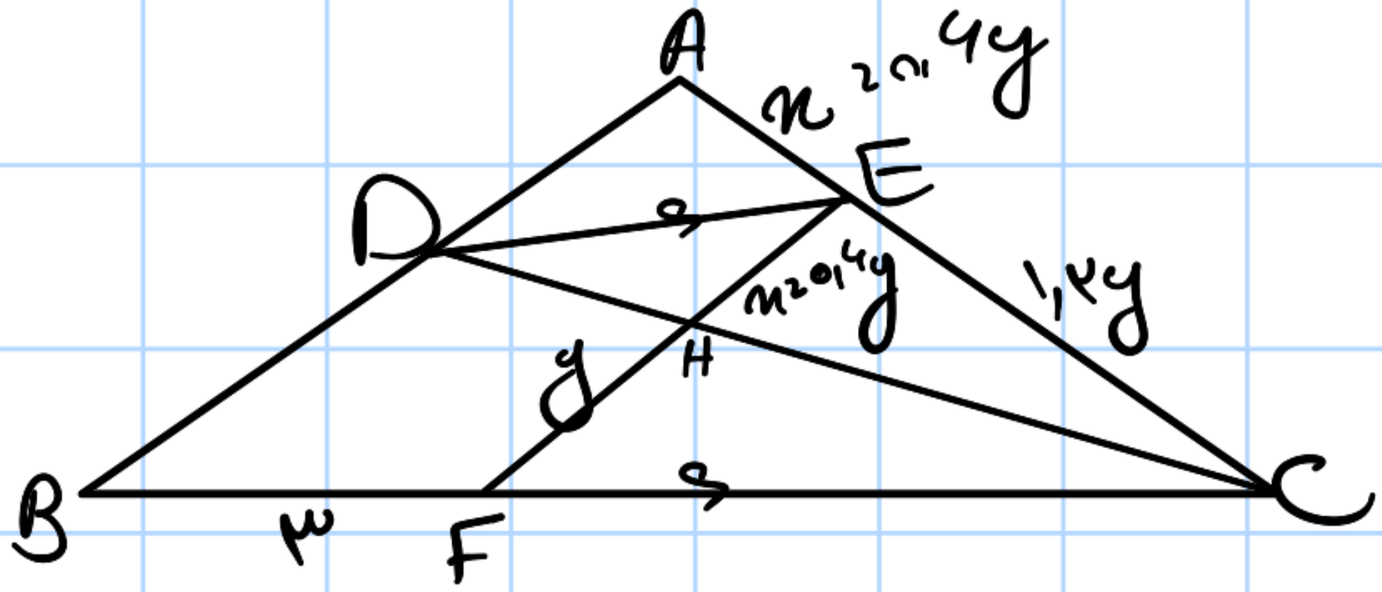


$A\hat{E}O = A\hat{C}B$

ي.ب $A\hat{E}O = A\hat{C}B$ $\Rightarrow$ $A\hat{E}O \sim A\hat{B}C$

$\rightarrow \frac{AE}{AC} = \frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{x}{10} = \frac{y}{1+x} \Rightarrow$

$x(x+1) = 30 \Rightarrow x = 5$



$BF=3$, $3y=6x \Rightarrow 0.4y=x$

BC_2?

$DE \parallel BC \rightarrow \hat{ADE} \sim \hat{ABC} \Rightarrow \frac{AD}{AB} = \frac{AE}{AC} = \frac{DE}{BC} = \frac{1}{3}$ ($AE = 0.4y$)

$\rightarrow 3DE = BC$ ($AC = 1.4y$)

$\rightarrow \hat{HDE} \sim \hat{HFC} \Rightarrow \frac{DE}{FC} = \frac{EH}{HF} = \frac{DH}{HC} \Rightarrow$ ($EH = 0.4y$)

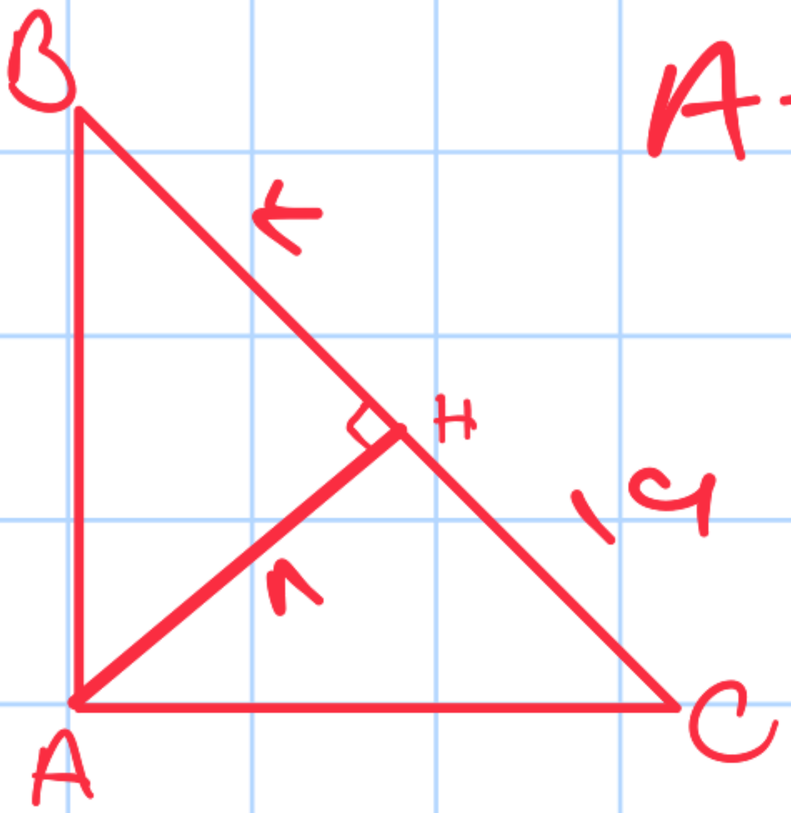
$\frac{DE}{FC} = \frac{y}{10} \Rightarrow DE = 0.4FC$ ($y = d$)

$DE = 0.4FC$

$3DE = BC \rightarrow 3DE = FC + 3 \Rightarrow 1.4FC - FC = 3 \Rightarrow$

$\frac{4}{10}FC = 3 \Rightarrow FC = 30/4 \Rightarrow FC = 7.5$

$BC = 3 + 7.5 = 10.5$

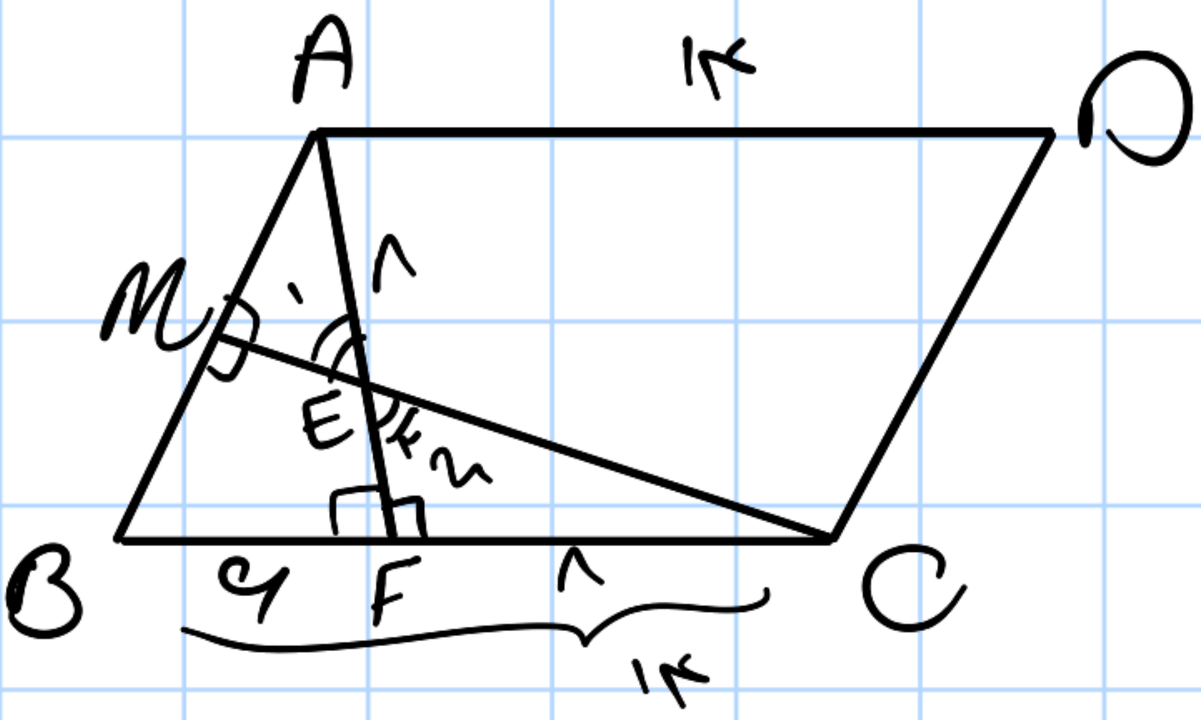


$AH^2 = BH \times CH$, $4 \Leftrightarrow AH$, Λ

$\leftarrow x$

$\Delta ABH \sim \Delta ABC \Rightarrow$ (1)

$$\frac{AC}{AB} = \frac{AH}{BH} = \frac{\Lambda}{\leftarrow 2 Y}$$



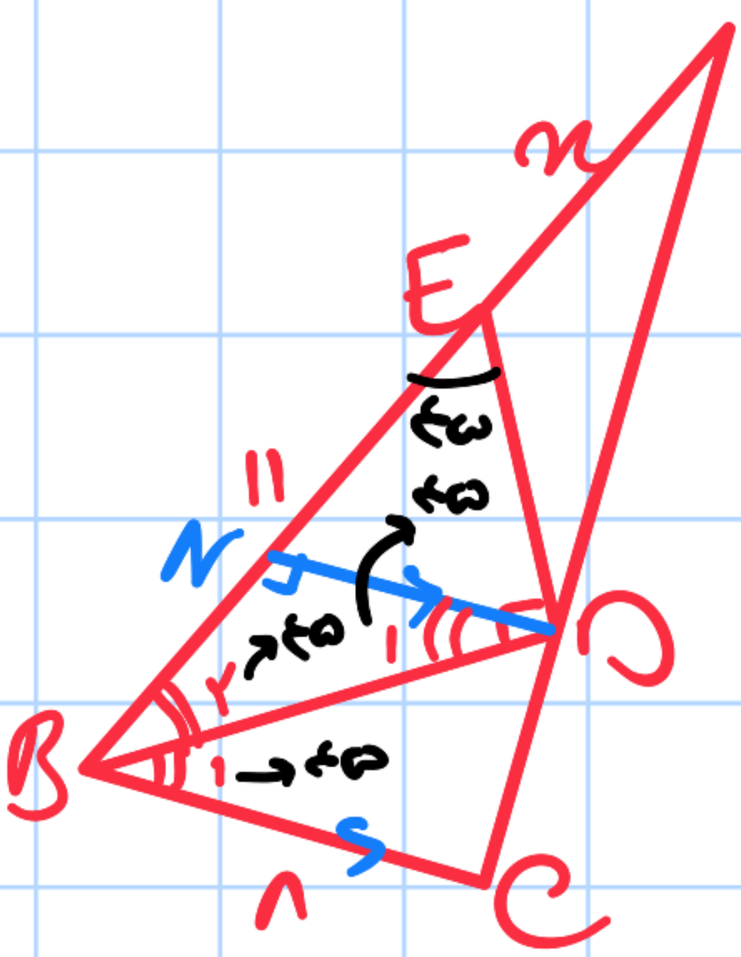
$\Delta BAF \sim E\Delta CF \Rightarrow$ (2)

$$\frac{BF}{EF} = \frac{AF}{CF} \Rightarrow$$

$$\frac{\varphi}{x} = \frac{x+\Lambda}{\Lambda} \Rightarrow$$ (3)

$$x(x+\Lambda) , \leftarrow \Lambda \Rightarrow x^2 , \leftarrow \Rightarrow AF , 2\Lambda + \leftarrow$$

$= \Lambda Y$



$DN = EN = NB = \omega,\omega$ ←۹

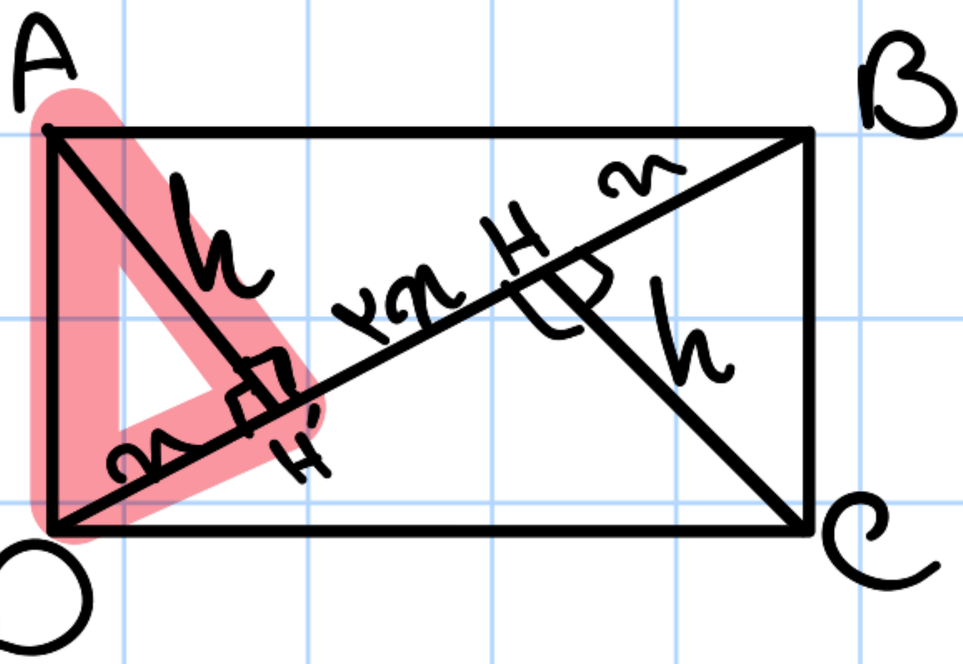
$AHD \sim ABC \Rightarrow \frac{AH}{AB} = \frac{HD}{BC}$ ←۶

$\frac{\omega,\omega}{\lambda} = \frac{\omega,\omega + AE}{\text{۱۱} + AE} \longrightarrow$ ۳

$\text{۴۴} + \lambda AE = \omega,\omega AE + \text{۶۰},\omega$

$\hookrightarrow \text{۲},\omega AE = \text{۱۶},\omega \hookrightarrow$

$AE = \text{۸},\text{۴}$



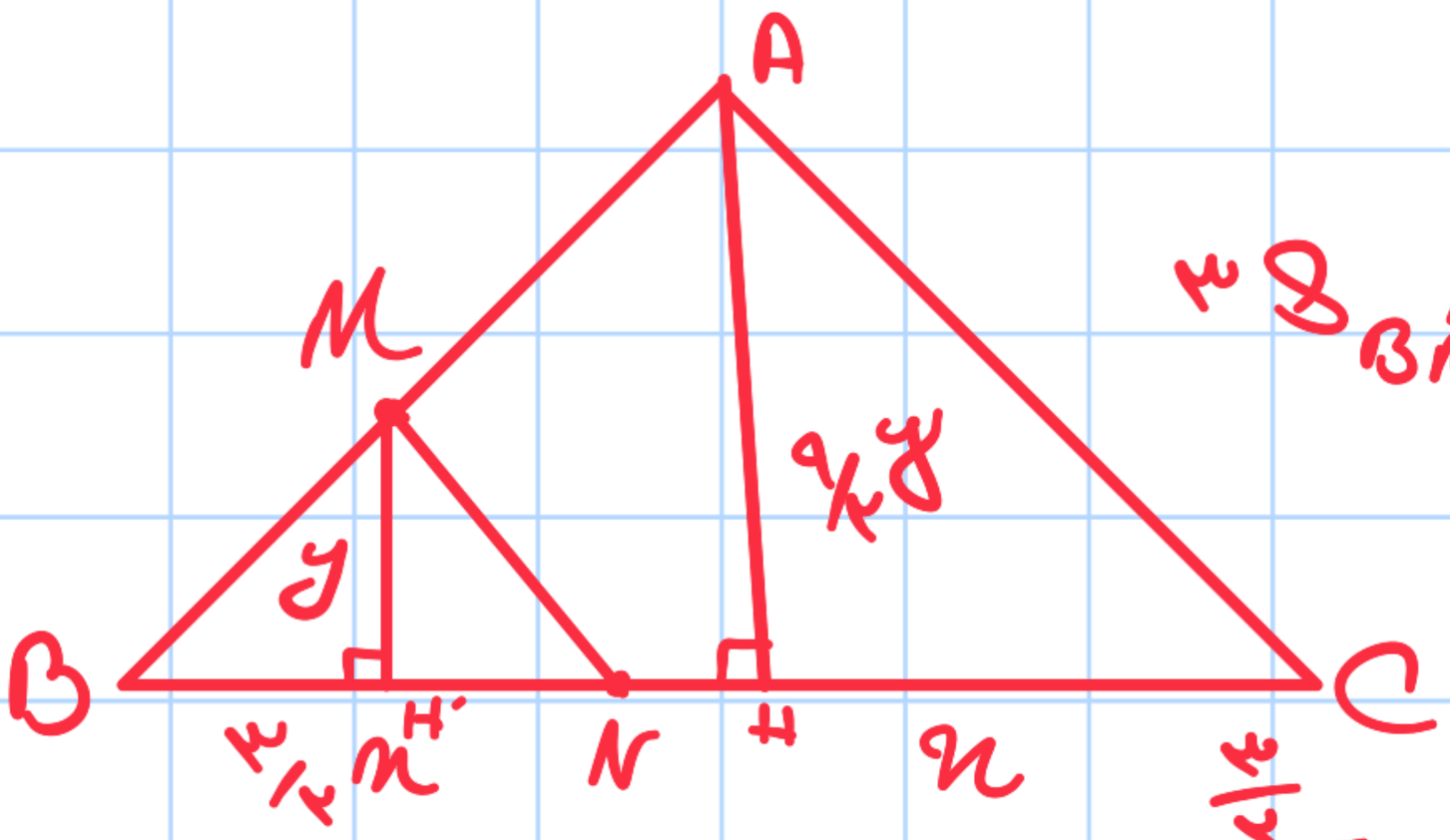
$h^{\text{۲}} = \text{۳}x \times x \Rightarrow h = x\sqrt{\text{۳}}$ ← ۷

مساحت $S = \text{۲} \times S_{ABD} = \text{۲} \times \frac{\sqrt{\text{۳}}\, x \times \text{۴}x}{\text{۲}} = \sqrt{\text{۳}}\, x \times \text{۴}x$

$= \text{۴}\sqrt{\text{۳}}x^{\text{۲}}$

محیط $= \frac{h \times x}{\text{۲}} = \frac{\sqrt{\text{۳}}\, x^{\text{۲}}}{\text{۲}}$ ۶

$$= \frac{\frac{\sqrt{3}}{4}a^2}{\frac{\sqrt{3}}{2}a^2} = 1$$



$$\frac{S_{BNM}}{S_{ABC}} = \frac{BM}{BA} \times \frac{BN}{BC} \Rightarrow$$

$$BM = \omega BM + \omega MA \Rightarrow$$

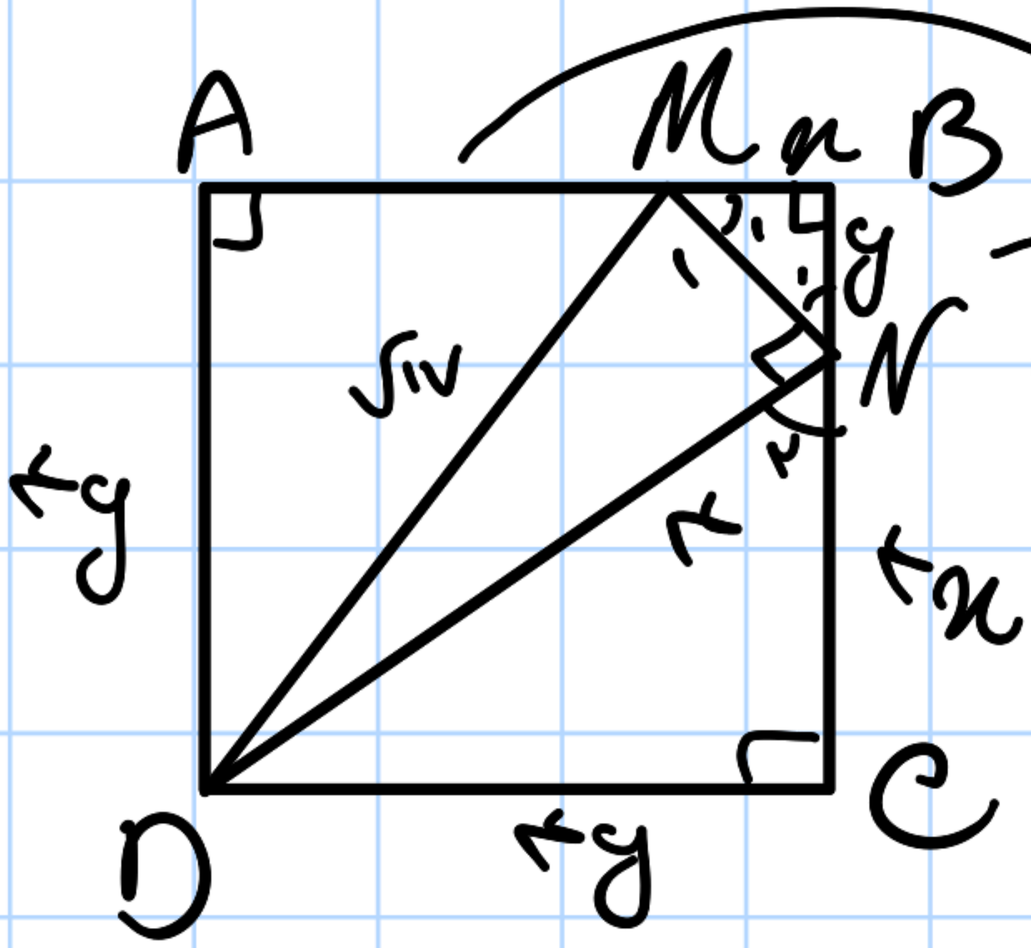
$$\frac{BM}{AM} = \omega$$

$$S_{BNM} = \frac{1}{4} S_{ABC}$$

$$\frac{1}{4} = \frac{BM}{BA} \times \frac{1}{2} \Rightarrow$$

$$BM + MA$$

$$BM = 2\omega MA \Rightarrow$$



$$\hat{y} - \hat{x} = 90^\circ \rightarrow (1)$$

$$\hat{x} + \hat{y} = 90^\circ \Rightarrow \hat{x} = \frac{3}{2}\hat{y}$$

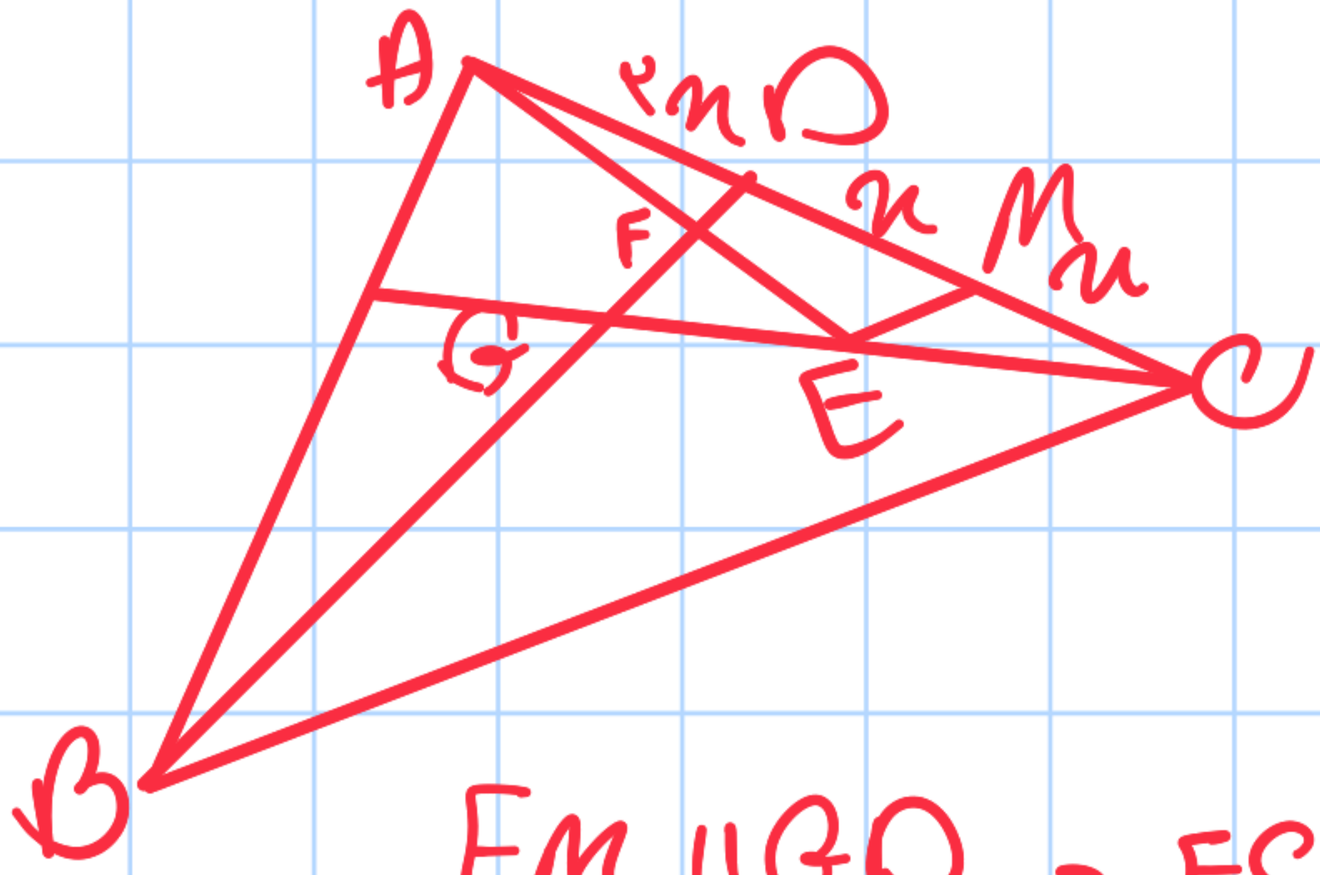
$$90^\circ + \hat{M}_1 = 90^\circ + \hat{N}_1 \Rightarrow \hat{M}_1 = \hat{N}_1 \Big\} \rightarrow \hat{B}, \hat{C}$$

$$\triangle MBN \sim \triangle OCN \Rightarrow \frac{MN}{ON} = \frac{MB}{NC} = \frac{BN}{DE} = 1 \quad (2)$$

$$\Rightarrow 12 = \left(\frac{12}{5}y\right)^2 + (4y)^2 \Rightarrow$$

$$12 = \frac{144}{16}y^2 + 16y^2 \Rightarrow y = 0.8$$

$$CD = 4 \times 0.8 = 3.2 \rightarrow S = 3.2 \times 3.2 = 10.24$$



۱۵ ←

نقاط D، M و E از

$EM \parallel BD \rightarrow \frac{EC}{EB} = \frac{CM}{PM} \xrightarrow{EC = EB} = 1$

$\Rightarrow \frac{CM}{DM} \rightarrow CM = DM$ (۲)

$AD = 2x$

$FD \parallel EM \rightarrow \frac{AD}{DM} = \frac{FD}{EM} = \frac{2x}{3x} = \frac{FD}{EM} \rightarrow EM = \frac{3}{2} FD$

$EM \parallel DB \rightarrow \frac{CM}{CD} = \frac{EM}{BD} = \frac{x}{2x} \Rightarrow BD = 2EM$

$\rightarrow BD = 2\left(\frac{3}{2} FD\right) \Rightarrow BD = 3FD$

$\frac{BD}{BD} = \frac{1}{3} \Rightarrow \frac{3FD}{BD} = \frac{1}{3} \rightarrow \frac{BD}{FD} = 9$