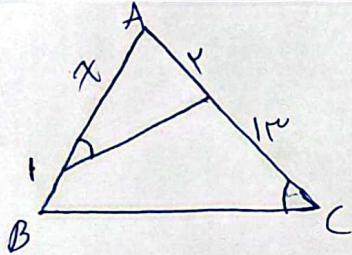


$ED = 2AE$

$BE \Rightarrow 9x^2 + x^2 = 10x^2 = \sqrt{10}x \div \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \times \sqrt{10}x = EF$

$AC \Rightarrow 9x^2 + 9x^2 = 18x^2 = 3\sqrt{2}x \div \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \times 3\sqrt{2}x = AF$

$\frac{EF}{AF} = \frac{\frac{1}{\sqrt{2}} \times \sqrt{10}x}{\frac{1}{\sqrt{2}} \times 3\sqrt{2}x} = \frac{\sqrt{5}}{3}$

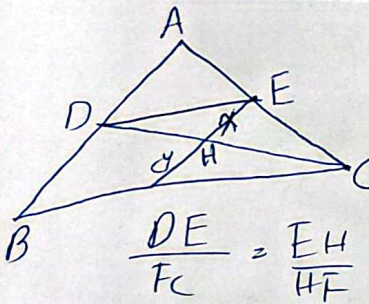


$\hat{AED} = \hat{ACB}$

$\frac{x}{1} = \frac{y}{x+1} \Rightarrow x^2 + x - y = 0$

$x = \frac{-1 \pm \sqrt{1+4y}}{2}$

$x = \frac{\sqrt{5}-1}{2}$



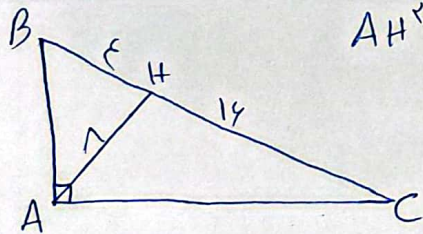
$\frac{AE}{AC} = \frac{DE}{AC} \Rightarrow \frac{x}{x+1+y} = \frac{DE}{2+FC}$

$\frac{x}{2+x} = \frac{DE}{2+FC} \Rightarrow 2+FC = 2DE$

$\frac{DE}{FC} = \frac{EH}{HF} = \frac{1}{2} \Rightarrow 2DE = FC$

$FC = \sqrt{5}$

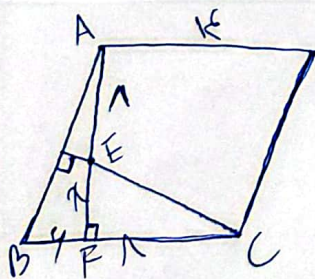
$BC = 1, \sqrt{5}$



$AH^2 = BH \times CH = 1 \times 1 \Rightarrow AH = 1$

$ABC \sim ABH$

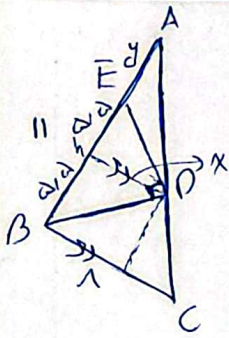
$\frac{AC}{AB} = \frac{AH}{BH} = \frac{1}{1} = 1$



$\frac{BF}{EF} = \frac{AF}{CF} \Rightarrow \frac{1}{x} = \frac{1+x}{1} \Rightarrow x^2 + 1x - 1 = 0$

$AF = 1 + x = \sqrt{5}$

$x = \frac{-1 \pm \sqrt{5}}{2}$

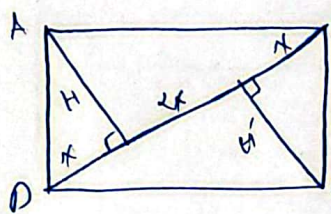


$$x^2 = \frac{1}{11} \times 11 \times 11 \Rightarrow x = \frac{11}{\sqrt{11}}$$

$$AE = y = \frac{11}{\sqrt{11}} = \boxed{11}$$

$$\frac{Ah}{AB} = \frac{Dh}{BC} \Rightarrow \frac{y+11}{y+11} = \frac{11}{11} \Rightarrow 11y+11=11y+11 \Rightarrow \uparrow$$

★ در مثل قائم الزامیه ارتفاع وارد بر وتر میانه است.

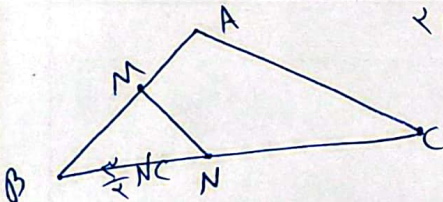


$$H^2 = x^2 + x^2 \Rightarrow H = \sqrt{2} x$$

$$H'^2 = x^2 + x^2 \Rightarrow H' = \sqrt{2} x$$

$$S_{\text{مستطیل}} = \sqrt{2} x \times \sqrt{2} x = \frac{1}{2} \sqrt{2} x^2 = \sqrt{2} x^2$$

$$= \frac{\sqrt{2} x \times x}{2} = \frac{\sqrt{2} x^2}{2} \Rightarrow \frac{\sqrt{2} x^2}{\frac{\sqrt{2} x^2}{2}} = \boxed{2}$$



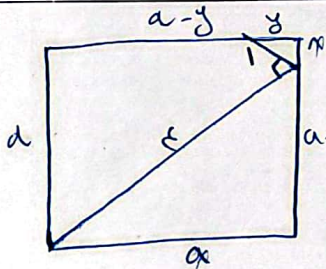
$$\angle BNM = \angle CNC \Rightarrow BN = \frac{1}{3} NC$$

$$S_{ABC} = 9 S_{BMN}$$

$$\frac{S_{BMN}}{S_{ABC}} = \frac{1}{9} =$$

$$\frac{BM \times BN}{AB \times BC} \Rightarrow \frac{1}{9} = \frac{1}{9} \times \frac{BM}{AB}$$

$$\frac{BM}{AB} = \frac{1}{9} \Rightarrow \frac{BM}{AM} = \frac{1}{8} = \boxed{1, 8}$$

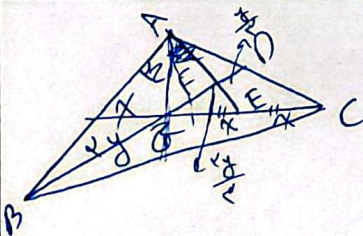


$$\frac{y}{a-x} = \frac{x}{a} = \frac{1}{2} \Rightarrow \begin{cases} a = 2x \\ a-x = y \end{cases}$$

$$2x - x = y \Rightarrow \frac{x}{y} = \frac{2}{1}$$

$$14 = a^2 + (a-x)^2 \Rightarrow x = \frac{a}{2} \Rightarrow a = \frac{14}{2}$$

$$\text{مربع} = \text{مساحت} = a^2 = \frac{14 \times 14}{4 \times 4} = \frac{256}{16} = \frac{1024}{100} = \boxed{10, 24}$$



$$\frac{BD}{FD} = \frac{2y+y}{\frac{y}{2}} = \frac{3y}{\frac{y}{2}} = \boxed{6}$$