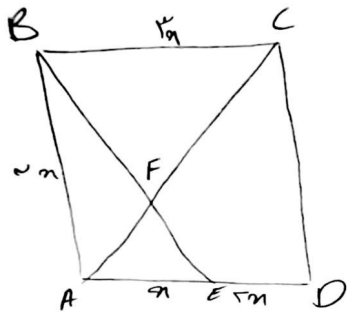




1- اندازه ED برابر AE است $\rightarrow AF \perp EF$ و $EF \perp BD$ است $\rightarrow$ دو مثلث AEF و BCF دو مثلث $\sim$ است $\rightarrow$ نسبت اضلاع متناظر برابر است $\rightarrow$

$$BE^2 = 2n^2 + 9n^2 = 10n^2 \rightarrow BE = \sqrt{10}n$$

$$BF = \frac{\sqrt{10}}{2}$$

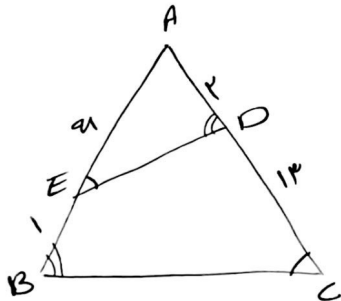
$$FE = \frac{\sqrt{10}}{2}$$

$$AC^2 = 7n^2 + 9n^2 = 16n^2 \rightarrow AC = \sqrt{16}n$$

$$AF = \frac{\sqrt{16}}{2}$$

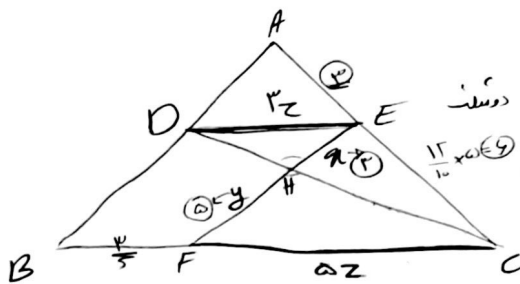
$$\frac{EF}{AF} = \frac{\frac{\sqrt{10}}{2}}{\frac{\sqrt{16}}{2}} = \frac{\sqrt{10}}{\sqrt{16}} = \frac{\sqrt{10}}{4}$$

مسئله 1
از هم شبیه



$\triangle ADE \sim \triangle ABC \rightarrow \frac{DE}{BC} = \frac{AD}{AB} \rightarrow \frac{5}{16} = \frac{AD}{10} \rightarrow AD = \frac{5 \times 10}{16} = \frac{50}{16} = \frac{25}{8}$

2- مقدار AD ؟

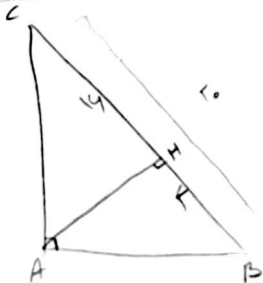


$DE \parallel BC$, $DE = 5$, $BF = 3$, $BC = ?$

$\triangle DEH \sim \triangle CFH \rightarrow \frac{DE}{CF} = \frac{DH}{FH} \rightarrow \frac{5}{CF} = \frac{DH}{FH}$

$DE \parallel BC \rightarrow \frac{DE}{BC} = \frac{AD}{AB} \rightarrow \frac{5}{BC} = \frac{AD}{10} \rightarrow AD = \frac{5 \times 10}{BC} = \frac{50}{BC}$

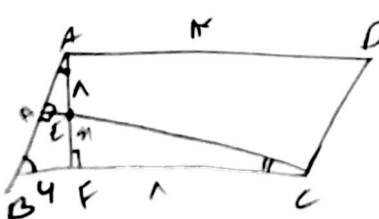
$BC = 1 + 2\left(\frac{50}{BC}\right) = 1 + \frac{100}{BC} = \frac{BC + 100}{BC}$



$AC^2 = CH \times CB \rightarrow AC^2 = 14 \times 16 \rightarrow AC = \sqrt{224} = 14\sqrt{2}$

$AB^2 = BH \times CB \rightarrow AB^2 = 4 \times 16 \rightarrow AB = \sqrt{64} = 8$

$CB = 16$



$\triangle AFB \sim \triangle CFE \rightarrow \frac{AF}{CF} = \frac{BF}{FE} \rightarrow \frac{AF}{CF} = \frac{BF}{5}$

$AF + BF = AC = 14 \rightarrow AF + 5 = 14 \rightarrow AF = 9$

$AF = 9$

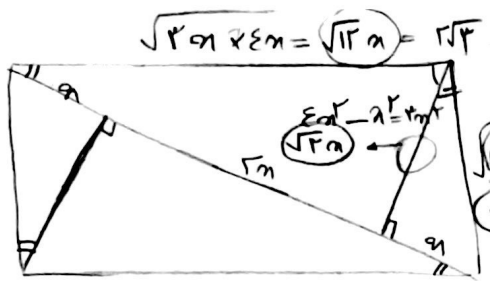


$DH \parallel BC \rightarrow \hat{A} = \hat{B}_1 \rightarrow \hat{B}_1 = \hat{B}_1 \rightarrow \hat{P}_1 = \hat{B}_1 = 90^\circ \rightarrow \triangle ABC \sim \triangle P_1 B_1 C$

$\triangle DH \rightarrow BH = EH = 5, DH = 5$

$\frac{AH}{AB} = \frac{DH}{BC} \rightarrow \frac{AH}{10} = \frac{5}{16} \rightarrow AH = \frac{5 \times 10}{16} = \frac{50}{16} = \frac{25}{8}$

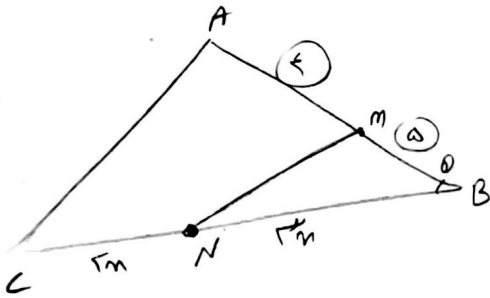
$m = \frac{25}{8}$



$$\sqrt{a} \times \sqrt{b} = \sqrt{ab} = \sqrt{c} \times \sqrt{h}$$

$$(\sqrt{a})(\sqrt{b}) = \sqrt{ab} = \sqrt{c} \times \sqrt{h}$$

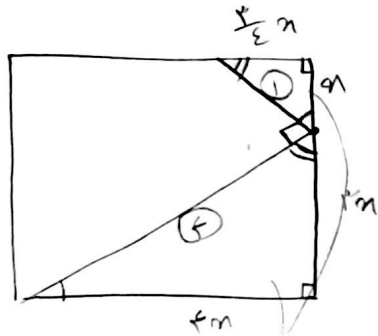
$$\frac{\text{مساحت مثلث}}{\text{مساحت مثلث}} = \frac{a \times \sqrt{ab}}{a \times \sqrt{ab} \times \frac{1}{h}} = 1$$



$$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \times \sin \theta \times \frac{1}{2}}{BM \times \sin \theta \times \frac{1}{2}} = \frac{1}{1}$$

$$\frac{AB}{BM} = \frac{1}{a}$$

$$\rightarrow \frac{BM}{AM} = \frac{a}{b}$$



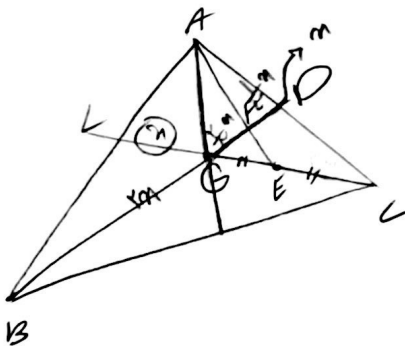
$$9a^2 + 14a^2 = 14 \rightarrow 23a^2 = 14$$

$$2a = c \rightarrow a = \frac{c}{2}$$

$$c = \left(\frac{c}{2} \times \frac{c}{2} \right)^{\frac{1}{2}} = \left(\frac{14}{2} \right)^{\frac{1}{2}} = \frac{\sqrt{14}}{2}$$

9- مع = 9

مساحت مثلث (مساحت مربع)



$$\frac{BD}{FD} = ?$$

$$G \rightarrow BD, CL \rightarrow \text{مساحة}$$

$$\frac{BD}{FD} = \frac{1}{a} = 1$$