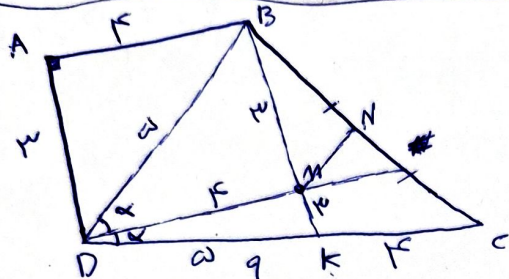


$$\frac{AD}{AB} = \frac{DE}{BC} = \frac{a}{12a}$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{1}{2} \times h \times 12a}{\frac{1}{2} \times h \times a} = \frac{12a}{a} = 12$$

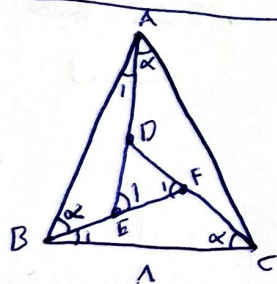


$$\hat{D}_1 = \hat{D}_2 = \alpha \quad \text{اضلاع وترتبه وترتبه برابر}$$

$$\triangle BKC \sim \triangle BNM$$

$$\frac{BN}{BC} = \frac{1}{12} \quad \frac{MN}{K} = \frac{1}{12}$$

$$MN = 1 \quad \checkmark$$



$$F_1 = \alpha + B_1 = \hat{B}$$

$$E_1 = A_1 + \alpha = \hat{A}$$

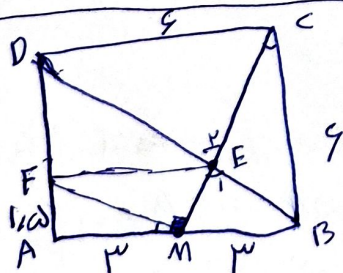
$$\left. \begin{array}{l} \hat{F}_1 = \hat{B} \\ \hat{E}_1 = \hat{A} \end{array} \right\} \Rightarrow \triangle ABC \sim \triangle DEF$$

$$\frac{BC}{DF} = \frac{AB}{EF}$$

$$\frac{1}{12a} = \frac{AB}{12a}$$

$$12a = 12 \times AB$$

$$AB = 9,9 \quad \checkmark$$



$$\left. \begin{array}{l} \hat{C} = \hat{M} \\ \hat{B} = \hat{A} \end{array} \right\} \Rightarrow \triangle AME \sim \triangle MBC$$

$$\frac{E}{F} = \frac{1}{12} \quad AF = 1,2$$

$$\left. \begin{array}{l} \hat{E}_1 = \hat{E}_2 \\ \hat{B} = \hat{D} \end{array} \right\} \Rightarrow \triangle MBE \sim \triangle CDE$$

$$\frac{E}{F} = \frac{CE}{ME} \quad E^2 + F^2 = CM^2$$

$$12a \div 12 = a \quad EM = a$$

$$(FM)^2 = 12^2 + a^2 \Rightarrow FM = \frac{12a}{12}$$

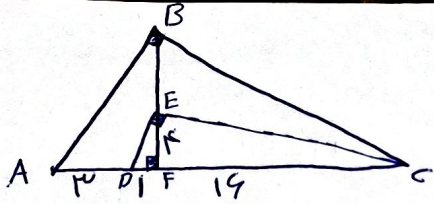
$$S_{FME} = \frac{\sqrt{a} \times \frac{12a}{12}}{12} = \frac{12a}{12} = a \quad \checkmark$$

$$\left. \begin{array}{l} \hat{DAE} = \hat{ACD} \\ \hat{E}_1 = \hat{E}_1 \end{array} \right\} \Rightarrow \triangle ADE \sim \triangle AEC \Rightarrow \frac{AE}{CE} = \frac{ED}{AE}$$

$$AE^2 = ED \times CE = 10(10 + x) = 100 + 10x$$

$$AE^2 = AB^2 + BE^2 \Rightarrow AE^2 = 11^2 + x^2 \Rightarrow 121 + x^2 = 100 + 10x$$

$$x^2 - 10x + 21 = 0 \quad (x-3)(x-7) = 0 \quad x = 3 \quad \checkmark$$



$$(EF)^2 = DF \times CF$$

$$19 = 1 \times CF$$

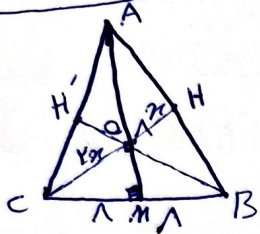
$$CF = 19$$

$$(BC)^2 = CF \times CA$$

$$(BC)^2 = 19 \times 20 = 380$$

$$BC = \sqrt{380} = 1\sqrt{20} \checkmark$$

(2)



$$\frac{A}{\mu} \div 3 = \frac{A}{\mu}$$

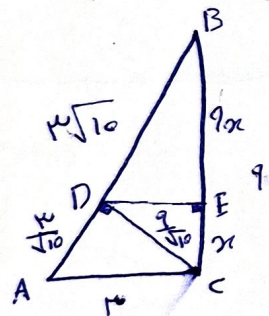
$$\left(\frac{A}{\mu}\right)^2 + (A)^2 = (CO)^2$$

$$CO = \frac{A\sqrt{10}}{\mu} = 2x$$

$$x = \frac{A\sqrt{10}}{\mu}$$

$$CH = 3x = 3 \times \frac{A\sqrt{10}}{\mu} = 3\sqrt{10}$$

(2)



$$\left. \begin{matrix} \hat{D} = \hat{C} \\ \hat{A} = \hat{A} \end{matrix} \right\} \Rightarrow \triangle ADC \sim \triangle ABC$$

$$\frac{3\sqrt{10}}{\mu} = \sqrt{10}$$

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$$\frac{\mu}{\sqrt{10}} = \frac{3\sqrt{10}}{10}$$

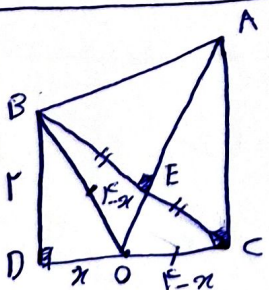
$$\frac{30\sqrt{10}}{10} - \frac{3\sqrt{10}}{10} = \frac{27\sqrt{10}}{10}$$

$$\frac{27\sqrt{10}}{10} = 9$$

$$10x = 9$$

$$x = \frac{9}{10}$$

$$9x = BE = 9 \times \frac{9}{10} = \frac{81}{10} \checkmark$$



$$F + x^2 = 19 + x^2 - 12x \quad 12x = 12 \quad x = \frac{\mu}{2}$$

$$BC^2 = \mu^2 + \mu^2 = \mu^2 \quad BC = \mu\sqrt{2}$$

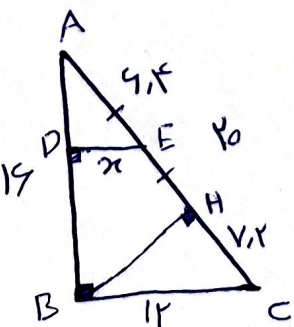
$$BO = \frac{\mu}{2}$$

$$OE^2 = OB^2 - BE^2 = \left(\frac{\mu}{2}\right)^2 - (\sqrt{2})^2 = \frac{\mu^2}{4} - 2 = \frac{\mu^2}{4} - \frac{8}{4} \rightarrow OE = \frac{\sqrt{\mu^2 - 8}}{2}$$

$$CO^2 = OE^2 \times OA \rightarrow \left(\frac{\mu}{2}\right)^2 = \frac{\sqrt{\mu^2 - 8}}{2} \times OA \rightarrow OA = \frac{\mu\sqrt{\mu^2 - 8}}{2}$$

$$S_{ABE} = \frac{\frac{\mu\sqrt{\mu^2 - 8}}{2} \times \sqrt{2}}{2} = \mu \checkmark$$

(2)



$$\left. \begin{matrix} \hat{C} = \hat{C} \\ \hat{B} = \hat{H} \end{matrix} \right\} \Rightarrow \triangle BCH \sim \triangle ABC$$

$$\frac{12}{20} = \frac{\mu}{\omega}$$

$$\frac{\mu}{\omega} \times 12 = \frac{\mu 9}{\omega} = 12$$

$$20 - 12 = 8$$

$$\frac{12}{20} = \frac{9}{\omega}$$

$$\frac{9}{20} = \frac{x}{12}$$

$$\frac{1}{20} = \frac{x}{12}$$

$$20x = 99$$

$$x = \frac{99}{20}$$

$$DE = \frac{99}{20} \checkmark$$

(2)