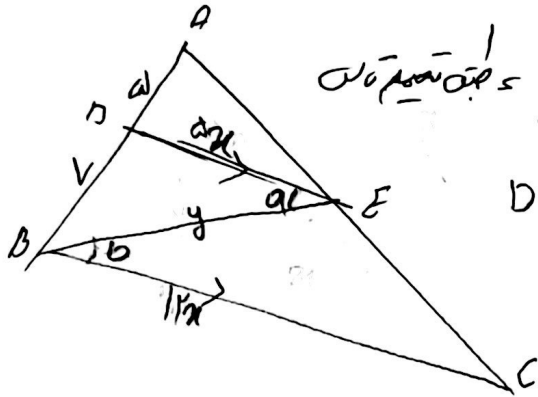


مسئله ۲۲ : مساحت مثلث



$$\frac{AD}{AB} = \frac{DE}{BC} \Rightarrow \frac{2}{14} = \frac{12}{BC}$$

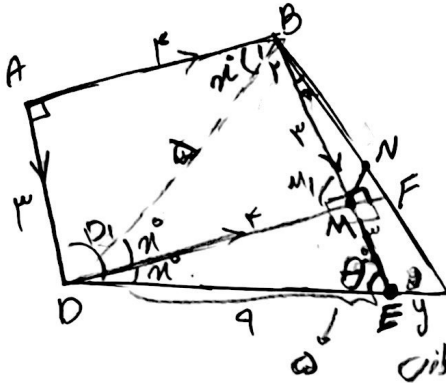
سوال ۱۱۰

$$DE \parallel BC \Rightarrow \hat{A} = \hat{B}$$

$$\frac{SBCE}{SBDE} = \frac{\frac{1}{2} \times \sin B \times 12 \times xy}{\frac{1}{2} \times \sin A \times 2 \times xy} = \frac{12}{2}$$

سوال ۲۰

ابتدا شکل را طبق داده های سوال رسم می کنیم



$$AD \parallel BM \text{ و } AB \parallel DM, \hat{A} = 90^\circ \Rightarrow \triangle BMD = \square$$

$$\hat{A} = \hat{B} = \hat{M}, \hat{A} = 90^\circ$$

$$AB = 4, AD = 3 \Rightarrow DB = 5$$

$$\angle BDC = \angle BDM \Rightarrow \angle BDM = \angle MDC = x^\circ$$

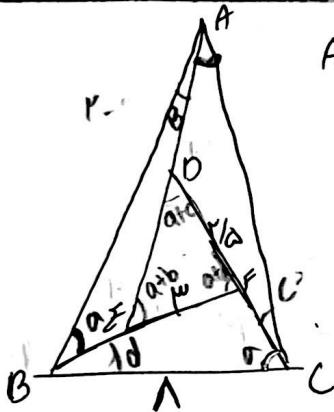
$$\angle B_1 = x^\circ, \angle B_2 = \hat{A} \Rightarrow \angle BDE = \text{مساوی الساقین}$$

$$DE = 5 \Leftarrow DB = DE$$

$$BM = ME = 1, BN = NC = \frac{1}{2} BC \Rightarrow MN \parallel EC \Rightarrow \frac{BM}{BE} = \frac{MN}{EC}$$

$$MN = 1 \Leftarrow 9 - 8 = 1$$

سوال ۳

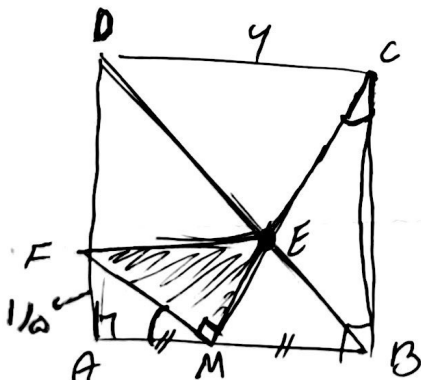


AB?

$$\triangle DFE \sim \triangle ABC \xrightarrow{\text{نسبت}} \frac{AB}{12} = \frac{1}{1/4}$$

$$12 \times \frac{4}{1} = 48$$

سوال ۴



$$\triangle CBM \sim \triangle AMF \Rightarrow \frac{3}{4} = \frac{?}{4} \rightarrow 1/4$$

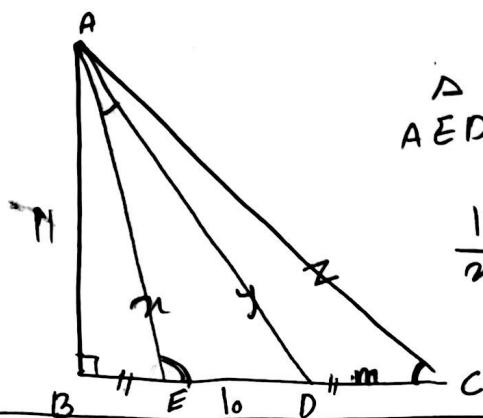
$$\triangle DCE \sim \triangle MEB \Rightarrow \frac{4}{4} = \frac{?}{4}$$

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

$$\frac{EM + CE}{4} = \frac{3\sqrt{2}}{4}$$

$$x1 = \frac{3\sqrt{2}}{4} = EM$$

$$\frac{3\sqrt{2}}{4} \times \frac{3\sqrt{2}}{4} \times \frac{1}{4} = \frac{9}{16}$$



$$\triangle AED \sim \triangle AEC$$

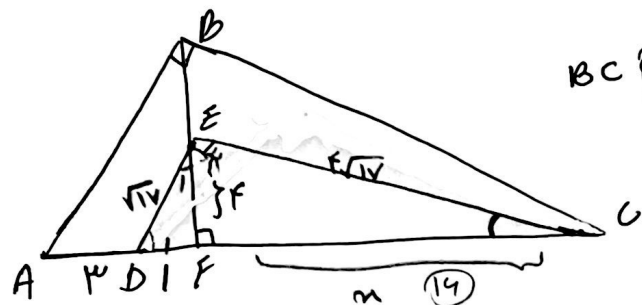
$$\frac{10}{x} = \frac{y}{z} = \frac{x}{10+m}$$

$$x^2 - 121 = m^2$$

$$m^2 + 121 = 100 + 10 \cdot m$$

$$m^2 - 10m + 21 = 0 \Rightarrow m \rightarrow \textcircled{3} \text{ و } \textcircled{7}$$

سوال ۹: $E + D = 90^\circ \Rightarrow \angle E = 90^\circ = \angle E + \angle F$



BC?

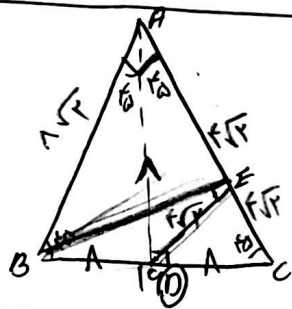
$$\triangle EDF \sim \triangle ECF \Rightarrow \frac{F}{1} = \frac{?}{\sqrt{14}}$$

$$\triangle ECF \sim \triangle EDF \Rightarrow \frac{F}{\sqrt{14}} = \frac{\sqrt{14}}{x+1}$$

$$m = 14 \leftarrow$$

$$BF^2 = F \times 14 \Rightarrow BF = \textcircled{7}$$

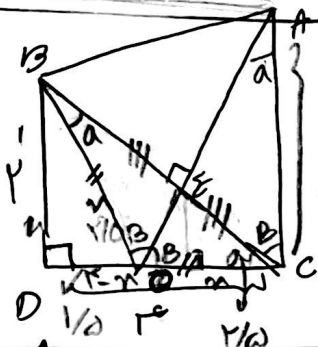
$$B^2 = 1^2 + 14^2 \Rightarrow B^2 = 1^2 + 196 \Rightarrow B = \textcircled{1\sqrt{15}}$$



$$4F - 32 \leq 12 \Rightarrow F \leq 10$$

۱- میانه دارد به قاعدهی متساوی الساقین و ارتفاع نیز میانی است $\Rightarrow D_1 = D_2 = 90^\circ$, $DC = 1$
۲- چون انداز میانه نیز ۱ است $\Rightarrow \triangle ABC$ و $\triangle ABD$ قائم الزامی متساوی الساقین

$$AC = 1\sqrt{2} \quad \text{و} \quad BE = \textcircled{F\sqrt{2}}$$



$$x^2 \leq F + 14 - 14 \Rightarrow x \leq 2 \quad \text{و} \quad 14 \leq 2 \Rightarrow x \leq 2 \quad \text{و} \quad \frac{1}{3}$$

$$\triangle ACO \sim \triangle ABO \Rightarrow AC \leq \frac{10}{3}$$

$$AE \times \frac{20}{9} = \frac{10}{9} \Rightarrow AE \leq \frac{5}{3}$$

$$BE^2 \leq \frac{9}{4} \times \frac{1}{F} \Rightarrow BE \leq \textcircled{F}$$

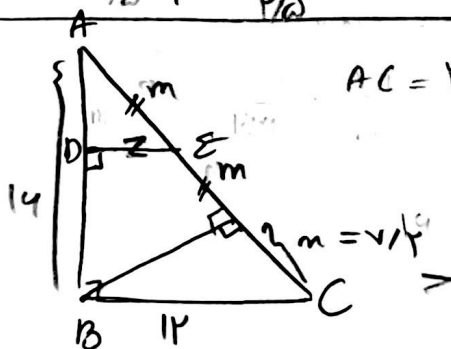
$$\triangle ABE = \frac{1}{F} \times 2 \times \frac{1}{2} \leq \frac{1}{F}$$

سوال ۱۰

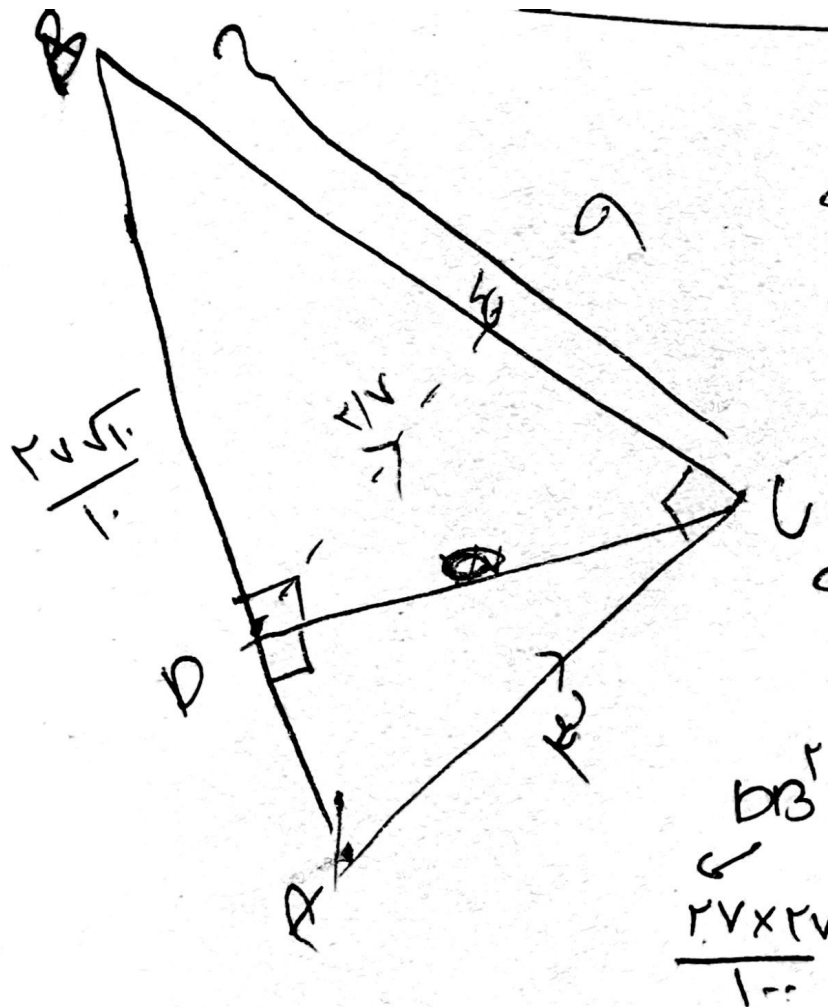
$$AC = 2 \Rightarrow 12 \times 12 \leq x \times 20 \leq \Rightarrow x \leq \sqrt{12}$$

$$\Rightarrow 2m = 12/A \Rightarrow m = 4/F$$

$$\frac{4/F}{10} = \frac{z}{12} \Rightarrow z = \frac{3 \times 4/F \times 2}{10} = \textcircled{3/18F}$$



سوال ۹



$$q = AD \times AB \rightarrow \frac{2}{\sqrt{5}}$$

(9 د)

$$\frac{2}{\sqrt{5}} \Rightarrow DB = \frac{2\sqrt{5}}{5}$$

$$\frac{2\sqrt{5}}{5} \leq \frac{DE}{2} \Rightarrow DE = \frac{2}{5}$$

$$DB^2 = (2/5)^2 + (DE)^2 \rightarrow \frac{2 \times 2}{5} \Rightarrow \text{A/A}$$