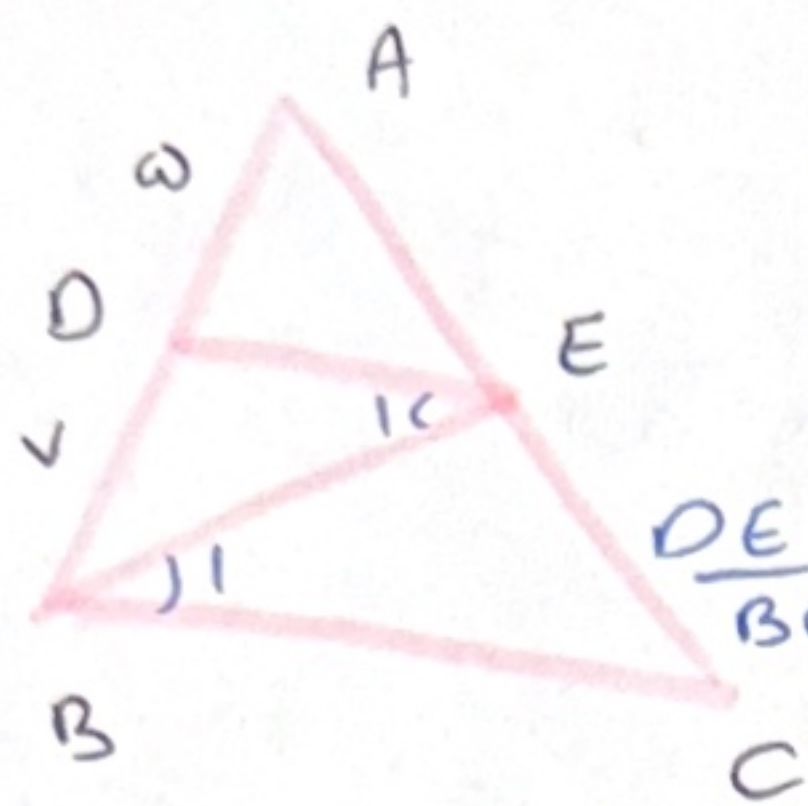




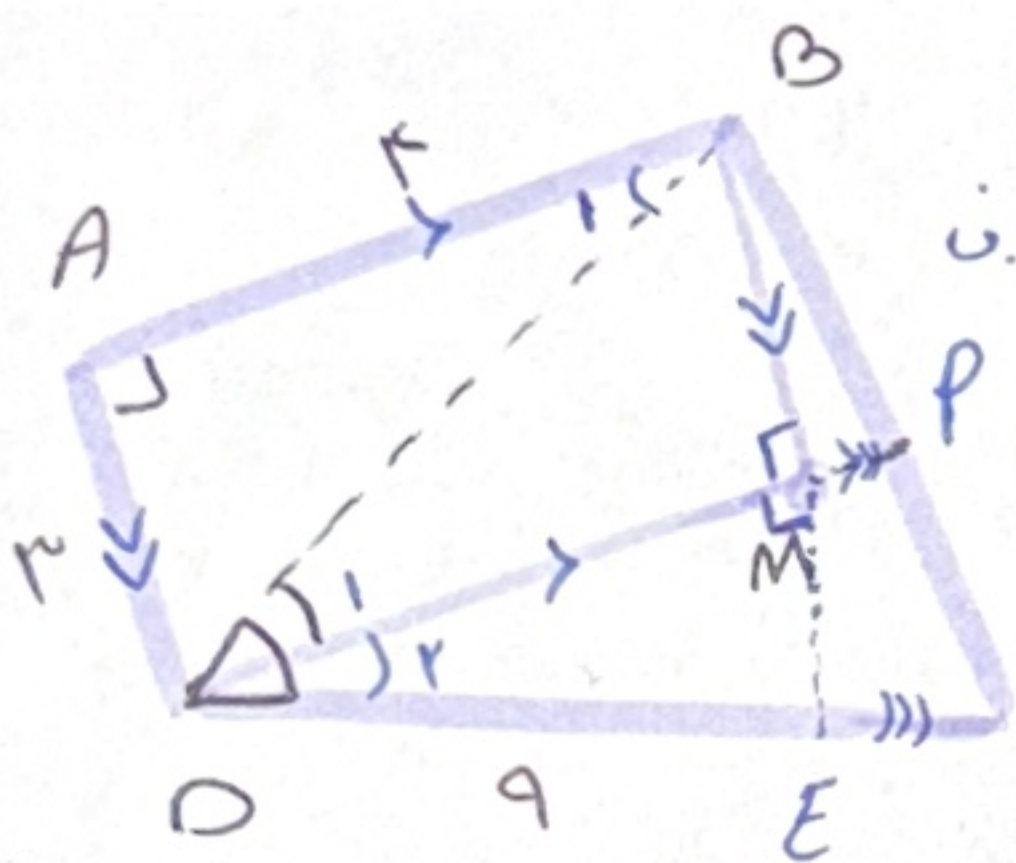
$$DE \parallel BC, BE \parallel \Rightarrow \hat{E}_1 = \hat{B}_1$$

$$OE \parallel BC \xrightarrow{\text{مساوی}} \frac{AE}{AC} = \frac{DE}{BC} = \frac{AO}{AB}$$

$$\frac{DE}{BC} = \frac{AE}{AC} = \frac{\omega}{12}$$

$$\frac{S_{BCE}}{S_{BDE}} = \frac{\frac{1}{2} \times DE \times BE \times \sin \hat{E}}{\frac{1}{2} \times BC \times BE \times \sin \hat{B}} \Rightarrow \frac{DE}{BC} = \frac{\omega}{12}$$

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$$AB \parallel DM \Rightarrow \hat{B}_1 = \hat{D}_1$$

$$\text{و ب } \hat{D}_1 = \hat{D}_1 \Rightarrow \hat{D} + \hat{D}_1 = \hat{D}_1$$

$$BD = BD$$

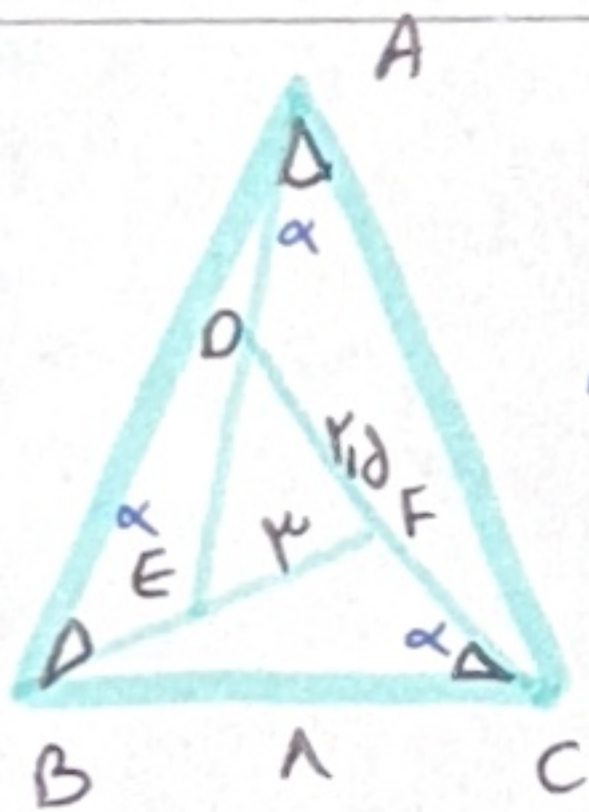
$$\hat{AOB} = \hat{DOE}$$

$$\hat{ABO} \cong \hat{BMD} \Rightarrow M = 90^\circ$$

$$\left. \begin{array}{l} DM \perp AC \\ \hat{D}_1 = \hat{D}_1 \\ \hat{M} = 90^\circ \end{array} \right\} \Rightarrow \left. \begin{array}{l} \hat{OMB} \cong \hat{OME} \\ \downarrow \\ DE = \omega, \\ CE = 4, \\ ME = BM = 4 \end{array} \right\}$$

$$EC \parallel MP \xrightarrow{\text{مساوی}} \frac{MP}{CE} = \frac{BP}{BC} = \frac{BM}{BE} = \frac{1}{2} \Rightarrow MP = \frac{1}{2} \times 4 = 2$$

۲

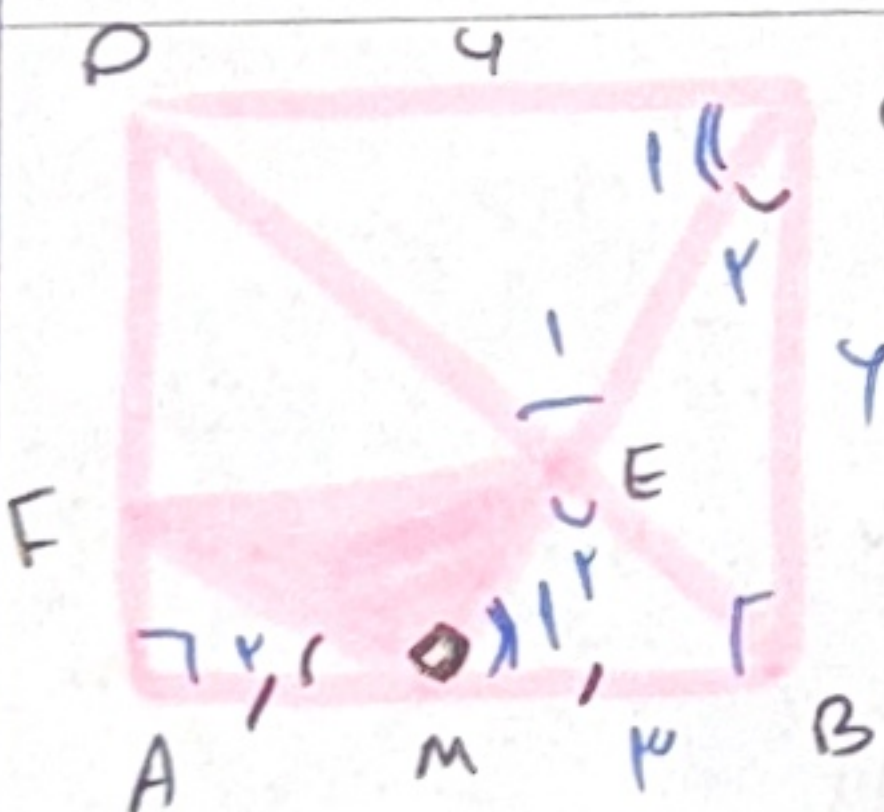


$$\hat{FBC} \text{ زاویه قائمه } \rightarrow \hat{EFD} \Rightarrow \hat{EFD} = \hat{\beta} - \hat{\alpha} + \hat{\alpha} = \hat{\beta}$$

$$\hat{ABE} \text{ زاویه قائمه } \rightarrow \hat{FOE} \Rightarrow \hat{FOE} = \hat{A} - \hat{\alpha} + \hat{\alpha} = \hat{A}$$

$$\hat{ABC} \sim \hat{DEF} \Rightarrow \frac{FD}{AB} = \frac{FE}{AC} \Rightarrow AB = 15 \times \frac{4}{\omega} = 9.4$$

۳



$$MC^2 = 4^2 + 4^2 \Rightarrow MC = \sqrt{40} = 2\sqrt{10}$$

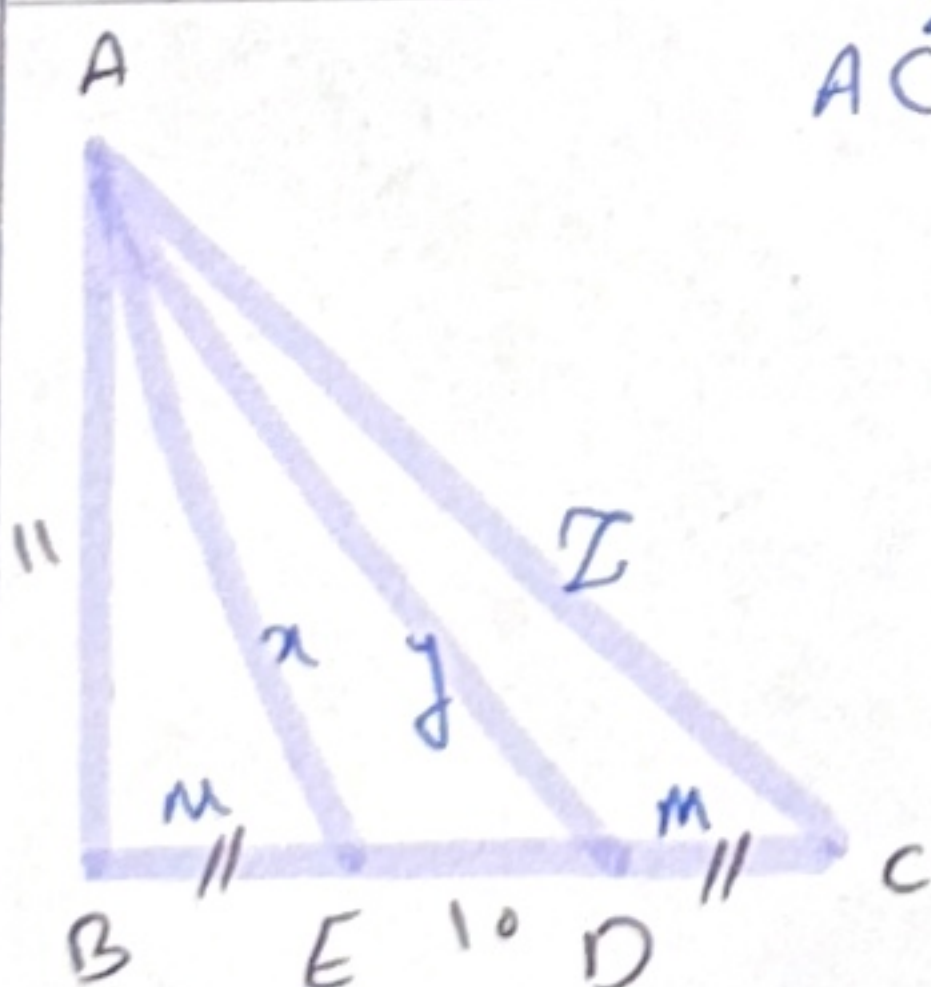
$$DC \parallel AB, CM \parallel \Rightarrow \hat{C}_1 = \hat{M}_1, \hat{E}_1 = \hat{E}_1 \Rightarrow \frac{DC}{MB} = \frac{CE}{ME} = \frac{4}{4} = 1$$

$$CE + ME = 2\sqrt{10} \Rightarrow ME = \sqrt{10}$$

$$\hat{C}_1 = \hat{M}_1 \Rightarrow \hat{CBM} \sim \hat{MAF} \Rightarrow \frac{MB}{AF} = \frac{BC}{AM} = \frac{MC}{MF} \Rightarrow \frac{2\sqrt{10}}{MF} = \frac{4}{4} \Rightarrow MF = \frac{4}{2} \sqrt{10}$$

$$S_{MFE} = \frac{1}{2} \times \frac{4}{2} \sqrt{10} \times \sqrt{10} = 10$$

۴



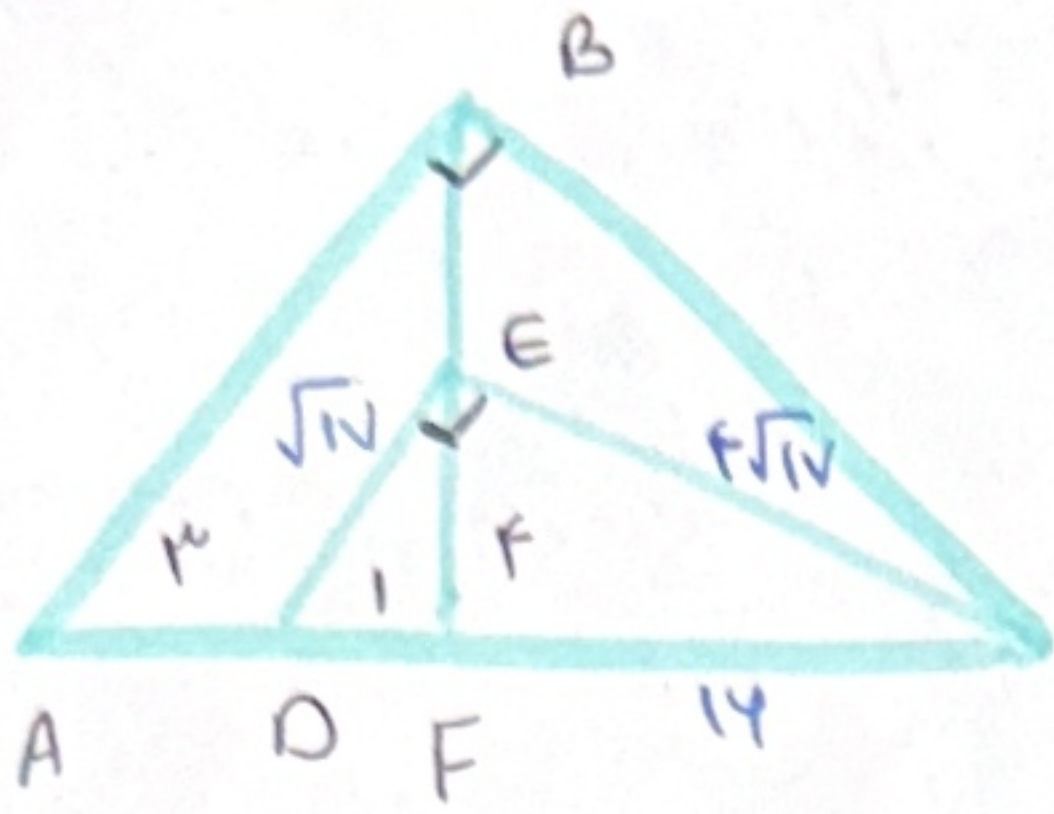
$$\hat{ACE} \sim \hat{AED}$$

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

$$(m-1)(m-1) = 0$$

$$m = 1 \text{ یا } m = 1$$

۵



$$EF^2 = DF \times FC \Rightarrow 7^2 = 14 \times FC \Rightarrow FC = 14$$

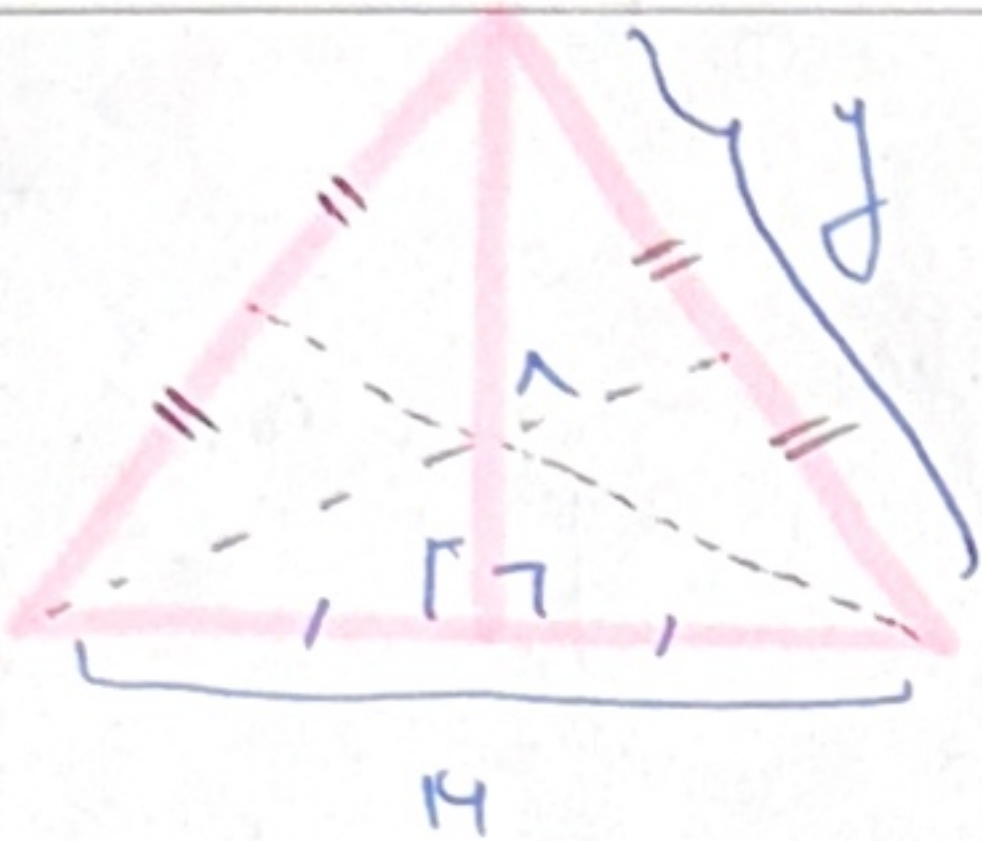
$$ED^2 = DF \times DC \Rightarrow ED^2 = 14 \times 14 \Rightarrow ED = 14$$

$$EC^2 = FC \times DC \Rightarrow 14 \times 14 \Rightarrow EC = 14$$

$$BF^2 = AF \times FC \Rightarrow BF^2 = 14 \times 14 \Rightarrow BF = 14$$

$$BC^2 = BF^2 + FC^2 \Rightarrow 14^2 + 14^2 \Rightarrow BC = 14\sqrt{2}$$

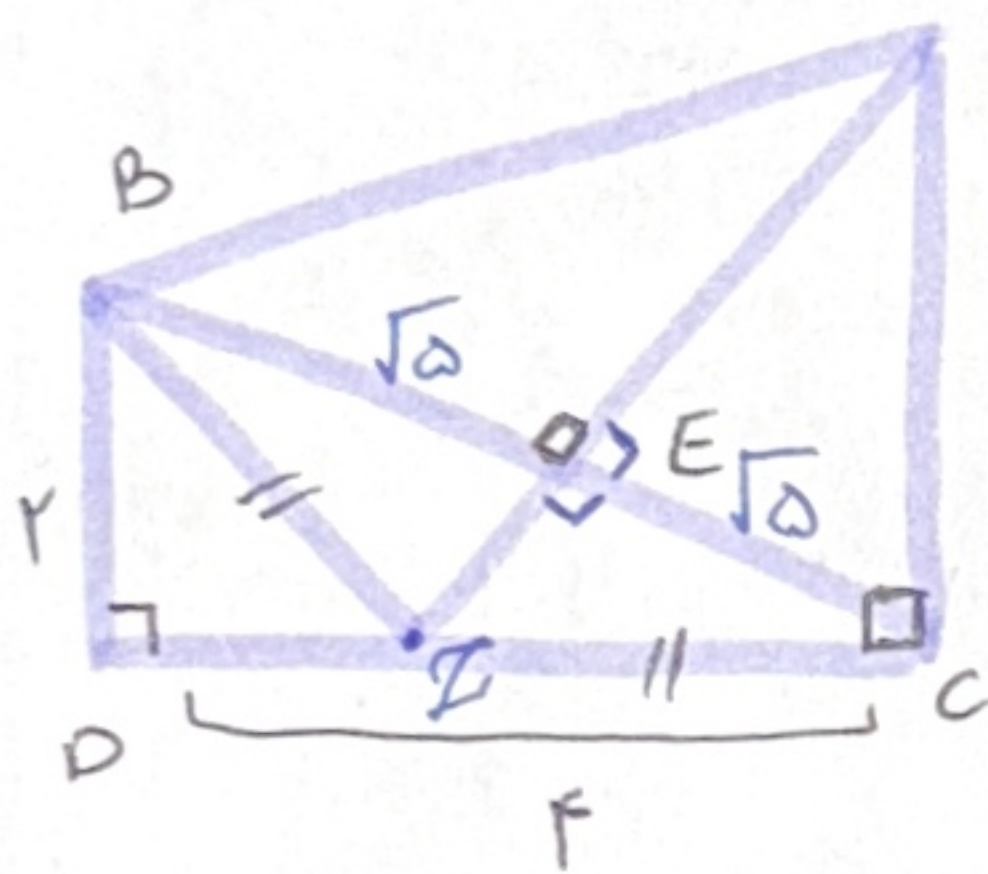
6



$$14^2 + 14^2 = y^2 \Rightarrow y = \sqrt{14^2 + 14^2} = \sqrt{14 \times 14} = 14\sqrt{2}$$

$$\frac{y}{14} = \sqrt{2}$$

7



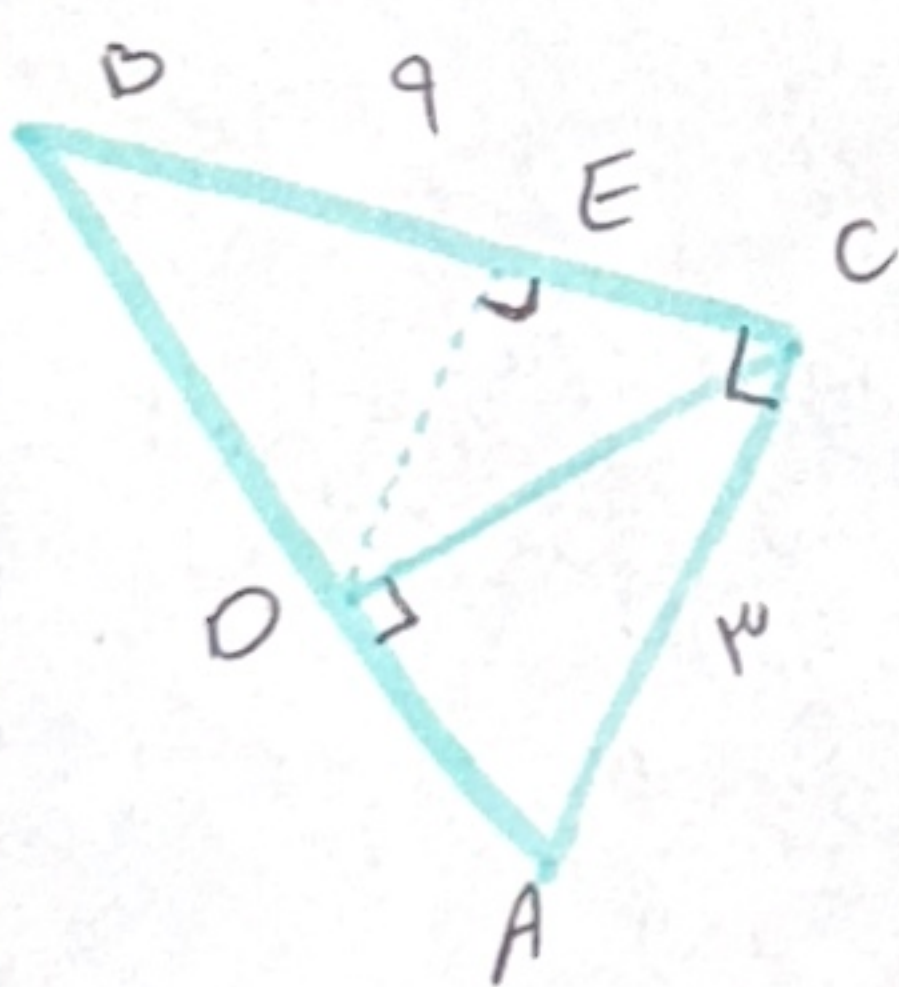
$$BC^2 = 14^2 + 14^2 \Rightarrow BC = \sqrt{14^2 + 14^2} = 14\sqrt{2}$$

$$DE \rightarrow \text{موازي} \rightarrow BE = EC \Rightarrow EC = \sqrt{2}$$

$$\frac{14}{\sqrt{2}} = \frac{14}{AE} \Rightarrow AE = \sqrt{2}$$

$$S_{ABE} \Rightarrow \frac{AE \times BE}{14} \Rightarrow \frac{\sqrt{2} \times \sqrt{2}}{14} = \frac{2}{14} = \frac{1}{7}$$

8



BE ?

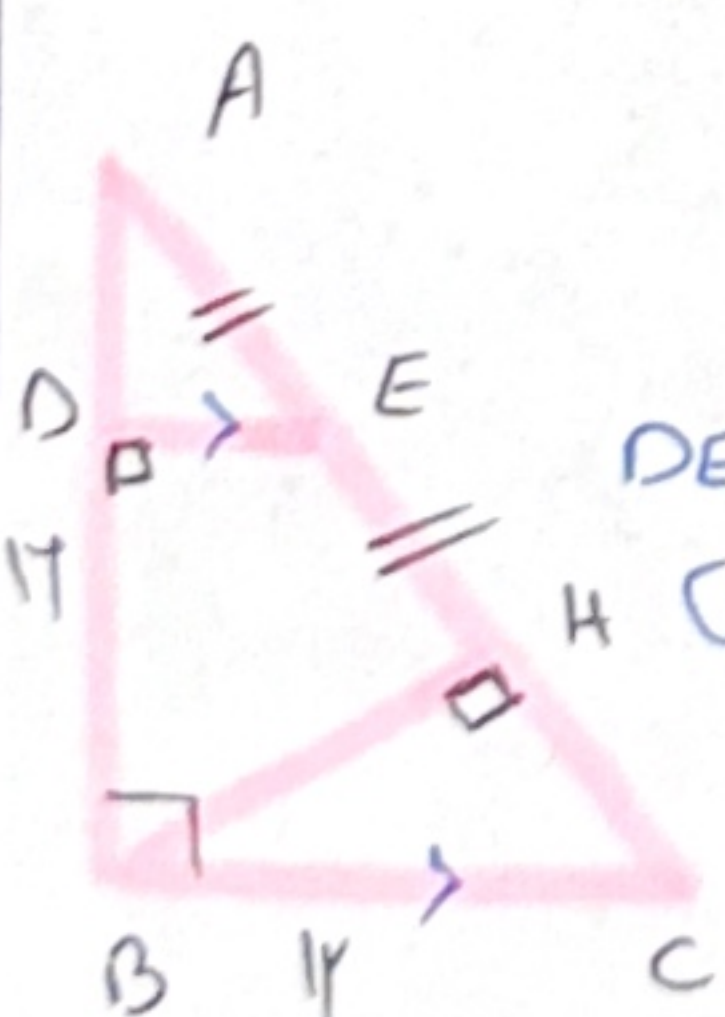
$$AB^2 = 14^2 + 14^2 = \sqrt{14^2 + 14^2} = 14\sqrt{2}$$

$$BC^2 = BD \times AB \Rightarrow 14 = BD \times 14\sqrt{2} \Rightarrow BD = \frac{14}{14\sqrt{2}} = \frac{1}{\sqrt{2}}$$

$$BD^2 = BE \times BC \Rightarrow \left(\frac{1}{\sqrt{2}}\right)^2 = BE \times 14 \Rightarrow \frac{1}{2} \times \frac{1}{14} = BE$$

$$BE = \frac{1}{28}$$

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$$AC = \sqrt{14^2 + 14^2} \Rightarrow AC = 14\sqrt{2}$$

$$AB^2 = AH \times AC \Rightarrow 14^2 = AH \times 14\sqrt{2} \Rightarrow AH = \frac{14^2}{14\sqrt{2}} = \frac{14}{\sqrt{2}} \Rightarrow AE = \frac{14}{\sqrt{2}} = 7\sqrt{2}$$

$$DE \parallel BC \Rightarrow \frac{DE}{BC} = \frac{AE}{AC} \Rightarrow \frac{DE}{14} = \frac{7\sqrt{2}}{14\sqrt{2}} \Rightarrow DE = \frac{7\sqrt{2}}{2}$$

$$DE = \frac{7\sqrt{2}}{2}$$

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