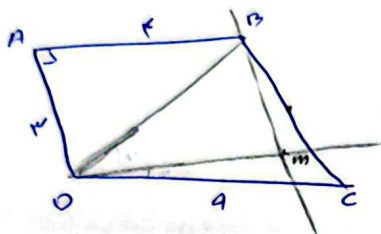


$$\frac{S_{ACE}}{S_{ADE}} = \frac{h_1 \times BC}{h_1 \times DE} = \frac{BC}{DE} = \frac{AC}{AE}$$

$$\triangle ADE \sim \triangle ABC \quad \leftarrow DE \parallel BC \text{ من}$$

$$\frac{DE}{BC} = \frac{AD}{AB} \rightarrow DE = \frac{AD}{AB} BC$$

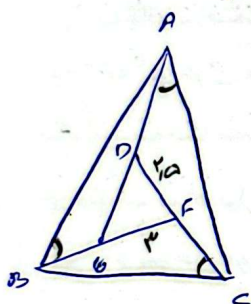


$$AD \parallel BC \text{ من } \angle B \text{ و } \angle D$$

$$AB \parallel DC \text{ من } \angle A \text{ و } \angle C$$

$$\angle BDC = \angle BDM$$

$$\angle AEF = \angle CAE = \angle BCD, EF = r, DF = a, AB = b$$



$$\angle BCE = \angle AMF$$

$$BC = r\sqrt{2}$$

$$\angle B = \angle A = 45^\circ$$

$$\angle BCE = \angle AMF$$

$$MC = r\sqrt{2} + r \Rightarrow MC = r\sqrt{2} + r$$

$$\triangle DCE \sim \triangle EMB$$

$$\frac{MB}{DE} = \frac{EM}{EC}$$

$$EM = \frac{\sqrt{2}r}{2} \rightarrow EM = \frac{r}{\sqrt{2}}$$

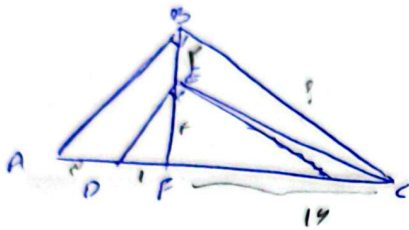
$$EM = \sqrt{\frac{4}{2} + 9} = \sqrt{\frac{20}{2}} = \frac{\sqrt{20}}{2}$$

$$\hat{A}BC = \hat{C}ED = 90^\circ$$

$$AD = 12, EC = 2, DE = 1$$

$$BC = ? \rightarrow BE = ?$$

حل المسألة



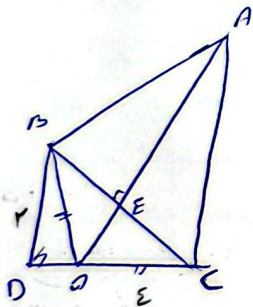
$$\hat{C}ED = \hat{B}EA \rightarrow DE \parallel AC \rightarrow EC = 2$$

$$BE^2 = AD \times EC \rightarrow BE^2 = 12 \times 2 = 24$$

$$BC^2 = BE^2 + EC^2 \rightarrow BC^2 = 24 + 2^2 = 28 \rightarrow BC = \sqrt{28} = 2\sqrt{7}$$

- 1

$$CD = 5, BD = 7, \hat{ACD} = 90^\circ, \hat{S}ABE = ?$$

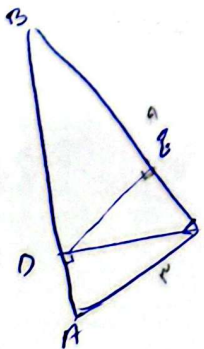


$$BC = 9, AC = 12, DE \perp BC, BE = ?$$

$$DE \perp BC, AC \perp BC \rightarrow DE \parallel AC$$

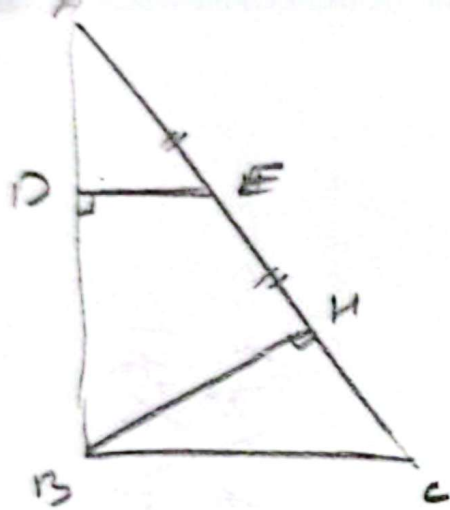
$$DE \parallel AC \rightarrow \triangle BED \sim \triangle ABC$$

$$\frac{BE}{BC} = \frac{BD}{BA} \rightarrow \frac{BE}{9} = \frac{7}{12} \rightarrow BE = \frac{7 \times 9}{12} = \frac{21}{4}$$



$$AB^2 = BE^2 + EC^2 \Rightarrow AB^2 = 12^2 + 2^2 = 148 \Rightarrow AB = \sqrt{148} = 2\sqrt{37}$$

$$BC^2 = BD \times BA \rightarrow 12 = BC \times \sqrt{148} \rightarrow BC = \frac{12 \times \sqrt{148}}{\sqrt{148}} = 12$$



$$BC = 12$$

$$AB = 14$$

$$BH \times AC = AB \times BC$$

$$BH \times 20 = 12 \times 14 \Rightarrow \frac{BH}{20} = \frac{14}{10} = 1.4$$

$$\text{مَقَامِطِیْن} = AC^2 = AB^2 + BC^2$$

$$AC^2 = (12)^2 + (14)^2 \rightarrow AC = 20$$

$$CH \times AC = BC^2 \rightarrow CH \times 20 = 12 \times 12 \rightarrow CH = \frac{144}{20} = 7.2$$

$$AH = AC - CH = 20 - 7.2 = 12.8 \rightarrow AE = 6.4$$

$$\hat{D} = \hat{H} = 90^\circ$$

$$\triangle ADE \sim \triangle ABH$$

$$\frac{AE}{AB} = \frac{DE}{BH}$$

هلیا صفدریان

$$DE = \frac{6.4 \times 7.2}{14} = 3.27$$