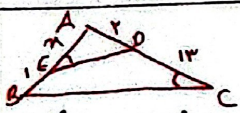
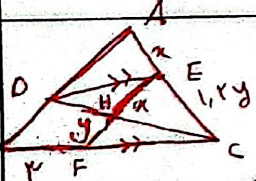
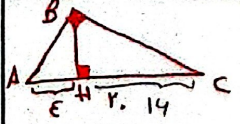
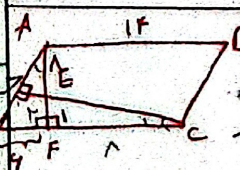

 $ED, AE \quad EF = ?$
 $BC \parallel AE, CA \parallel \Rightarrow \hat{A}_1 = \hat{C}_1$
 $\hat{F}_1 = \hat{E}_1$ (متقابل-داخل)
 $\Rightarrow \triangle CFB \sim \triangle AFE \Rightarrow \frac{CF}{AF} = \frac{CB}{AE}, \frac{FB}{FE} \quad (1)$
 $AD, AE + ED \Rightarrow AD, AE = CD = BA = BC \xrightarrow{\text{فرض کنیم}} AC = \sqrt{2} AE \quad (2)$
 $ED, AE \xrightarrow{\text{فرض کنیم}} BE = \sqrt{2} AE \quad (3)$
 $(1) \Rightarrow \frac{CA}{AF} = \frac{BE}{FE} \Rightarrow \frac{FE}{AF} = \frac{BE}{CA} \xrightarrow{(2)(3)} \frac{FE}{AF} = \frac{\sqrt{2} AE}{\sqrt{2} AE} = 1 \Rightarrow \frac{FE}{AF} = 1 \Rightarrow FE = AF$


 $\hat{ACB}, \hat{AED}$
 $\hat{A} = \hat{A}$
 $\Rightarrow \triangle AED \sim \triangle ACB \rightarrow \frac{AE}{AC} = \frac{AD}{AB} \xrightarrow{\text{فرض کنیم}} \frac{n}{10} = \frac{r}{n+1}$
 $n^2 + n + 1 = 10 \Rightarrow n^2 + n - 9 = 0 \Rightarrow (n-5)(n+4) = 0 \Rightarrow n = 5$


 $DE \parallel BC \Rightarrow \frac{DE}{BC} = \frac{AD}{AB} = \frac{AE}{AC}$
 $\frac{4}{10} FC = r + FC \Rightarrow FC = \frac{10}{2} \Rightarrow BC = BF + FC = r + \frac{10}{2} = \frac{r+10}{2}$


 $AB^2, AH \times AC \Rightarrow AB^2 = 8 \times 14 \Rightarrow AB = \sqrt{112}$
 $BC^2, CH \times AC \Rightarrow BC^2 = 14 \times 20 \Rightarrow BC = \sqrt{280}$
 $\frac{AB}{BC} = \frac{\sqrt{112}}{\sqrt{280}} = \frac{1}{2}$


 $\hat{A}_1 = \hat{C}_1, \hat{B}_1 = \hat{D}_1$
 $\Rightarrow \triangle CFE \sim \triangle AFB$
 $\rightarrow \frac{CF}{AF} = \frac{FE}{BF} \xrightarrow{EF = m} \frac{1}{1+n} = \frac{m}{9} \rightarrow 1n + n^2 = 9 \Rightarrow n^2 + n - 9 = 0$
 $AF, AE + EF = 1 + r = 14$



$$\frac{BD}{FD} = \frac{BG}{GD} = 2 \rightarrow \frac{BD}{GD} = \frac{2}{1} \rightarrow \frac{BD}{GD} = 2$$

$$\frac{FD}{DG} = \frac{1}{2} \rightarrow \frac{FD}{\frac{1}{2}BD} = \frac{1}{2} \rightarrow \frac{FD}{BD} = \frac{1}{4}$$

$$\frac{FD}{BD} = \frac{1}{4} \rightarrow \frac{BD}{FD} = 4$$