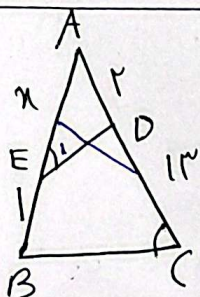


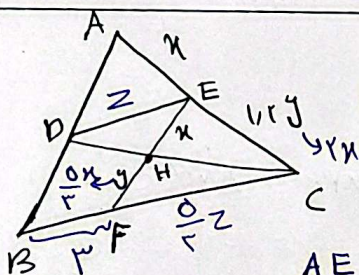
$$\begin{aligned} 13^2 + 4^2 &= 14^2 \Rightarrow 169 + 16 = 196 \\ 13^2 + 4^2 &= 14^2 \Rightarrow 169 + 16 = 196 \\ \Rightarrow \frac{EF}{AF} &= \frac{4}{x} = \frac{5}{9} \Rightarrow \frac{4}{x} = \frac{5}{9} \Rightarrow x = \frac{36}{5} = 7.2 \end{aligned}$$

۱



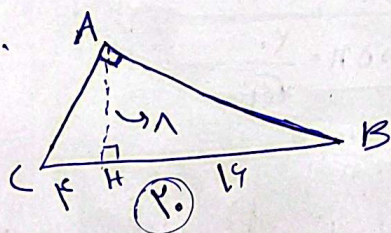
$$\begin{aligned} \Rightarrow \frac{AE}{EB} &= \frac{AD}{DC} \Rightarrow \frac{1}{4} = \frac{2}{3} \Rightarrow 3 = 8 \text{ (impossible)} \\ \Rightarrow \frac{AE}{AB} &= \frac{AD}{AC} \Rightarrow \frac{1}{5} = \frac{2}{5} \Rightarrow 1 = 2 \text{ (impossible)} \\ \Rightarrow \frac{AE}{AB} &= \frac{AD}{AC} \Rightarrow \frac{1}{5} = \frac{2}{5} \Rightarrow 1 = 2 \text{ (impossible)} \end{aligned}$$

۲



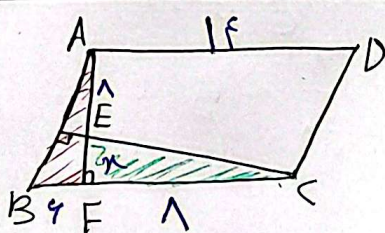
$$\begin{aligned} \frac{AE}{AC} &= \frac{DE}{BC} \Rightarrow \frac{5}{x+5} = \frac{5}{14} \Rightarrow x+5 = 14 \Rightarrow x = 9 \\ \Rightarrow \frac{AE}{AC} &= \frac{DE}{BC} \Rightarrow \frac{5}{x+5} = \frac{5}{14} \Rightarrow x+5 = 14 \Rightarrow x = 9 \end{aligned}$$

۳



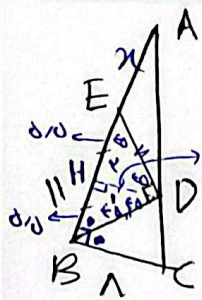
$$\begin{aligned} \frac{AB^2}{AC^2} &= \frac{AH^2}{AC^2} \Rightarrow \frac{14^2}{10^2} = \frac{x^2}{10^2} \Rightarrow x^2 = 196 \Rightarrow x = 14 \end{aligned}$$

۴



$$\begin{aligned} \hat{B} &= \hat{B} \Rightarrow \triangle BEF \sim \triangle CEF \\ \Rightarrow \frac{BE}{EF} &= \frac{CF}{EF} \Rightarrow \frac{4}{5} = \frac{CF}{5} \Rightarrow CF = 4 \end{aligned}$$

۵



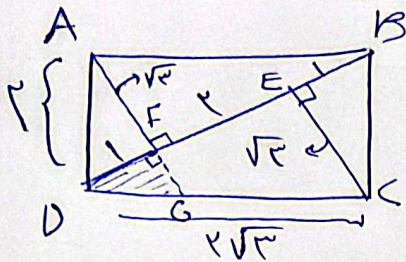
$$H_1 = 9. \Rightarrow B = 9$$

کلا از رابا بودن و افق
برابر شد.

$$\frac{AH}{AB} = \frac{HD}{BC} \Rightarrow \frac{8.5+x}{11+x} = \frac{8.5}{11}$$

$$\frac{8.5}{11} = \frac{8.5+x}{11+x} \Rightarrow \frac{11}{8} = \frac{11+x}{11} \Rightarrow 121 = 88 + 11x$$

$$\Rightarrow 11x = 49 \Rightarrow x = 4.4$$



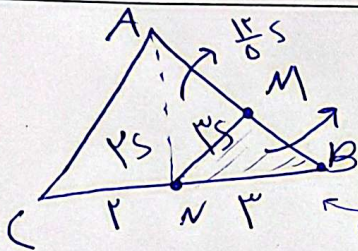
$$CE = \sqrt{3} = AF$$

$$CD = \sqrt{3+9} = 2\sqrt{3}$$

$$AD = \sqrt{3+1} = 2$$

$$\frac{S_{ABCD}}{S_{ADF}} = \frac{2 \times 2\sqrt{3}}{\frac{\sqrt{3} \times 1}{2}} = 1$$

$$ADF \sim DFG \Rightarrow \frac{S_{ADF}}{S_{DFG}} = \frac{S_{ADE}}{S_{DEF}} = 24$$



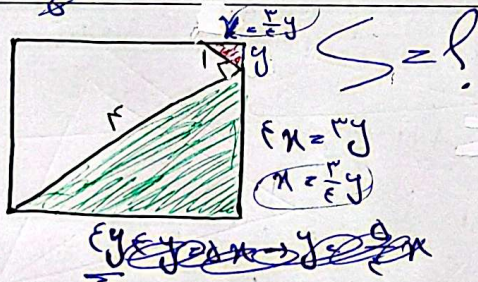
$$\frac{ABC}{BMN} = 3 \Rightarrow \frac{9}{5} = 3 \Rightarrow BMN = \frac{9}{5}$$

$$3 - \frac{9}{5} = \frac{12}{5}$$

منطقه ABC و AMN هم ارتفاع
پس نسبت مساحت ایشان با نسبت قاعده
برابر است

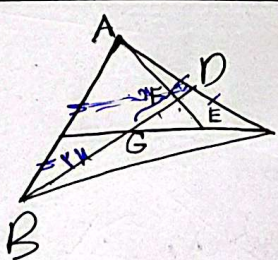
منطقه AMN و NMB هم ارتفاع
پس نسبت مساحت برابرست قاعده است

$$\frac{\frac{12}{5}}{\frac{9}{5}} = \frac{AM}{MB} \Rightarrow \frac{AM}{MB} = \frac{4}{5} \Rightarrow \frac{MB}{AM} = \frac{5}{4}$$



$$\left(\frac{y}{4} + \frac{3}{4}y\right)^2 = 1 \Rightarrow y^2 + \frac{9}{16}y^2 = 1 \Rightarrow \frac{25}{16}y^2 = 1 \Rightarrow y^2 = \frac{16}{25} \Rightarrow y = \frac{4}{5}$$

$$S = 4y \times (4y + y) = 12y^2 = \frac{12 \times 16}{25} = \frac{192}{25} = 7.68$$



مرکز ثقل ضلع را به نسبت ۲ به ۱ تقسیم می کند. و چنانه ضلع روبه دور از سقف می آید.

$$\frac{BG}{FD} = \frac{2}{1} \Rightarrow \frac{BD}{FD} = \frac{3}{1} \Rightarrow \frac{BD}{FD} = \frac{3}{1} = 3$$

$$\frac{GF}{FD} = \frac{2}{1} \Rightarrow FD = \frac{GF}{2}$$