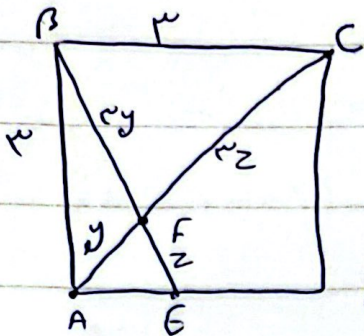


سوال ۳

مسئله ۱۰



$$ED = \frac{1}{2} AC$$

$$\frac{BF}{FE} = \frac{CF}{AF} = 2 \rightarrow BF = 2y, EF = y$$

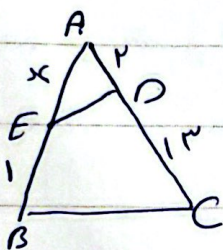
$$CF = 2z, AF = z$$

$$AE: (2y)^2 = 2 \cdot 1 \rightarrow 4y^2 = 1 \rightarrow y = \frac{\sqrt{1}}{2}$$

$$AC = 3\sqrt{2}, z = 2y \rightarrow z = \frac{3\sqrt{2}}{2}$$

$$\frac{y}{z} = \frac{\sqrt{2}}{3}$$

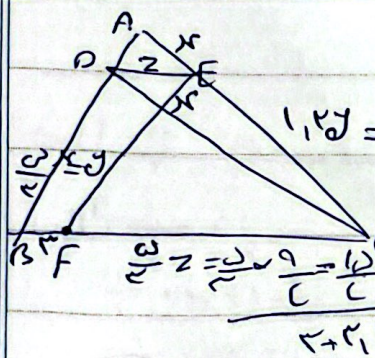
سوال ۳



$$\frac{AD}{AB} = \frac{AE}{AC} = \frac{x}{x+1} = \frac{y}{10}$$

$$\rightarrow x^2 + x - 10 = 0 \rightarrow x = 2$$

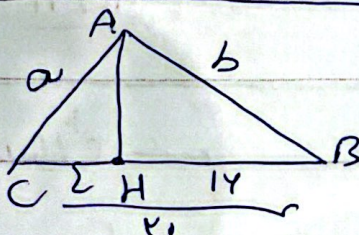
سوال ۳



$$10y = \frac{y}{2} \times \frac{10}{2} \rightarrow x = 2x$$

$$\frac{x}{10} = \frac{z}{z+10} \rightarrow z = \frac{10}{9} \rightarrow z = \frac{10}{9}$$

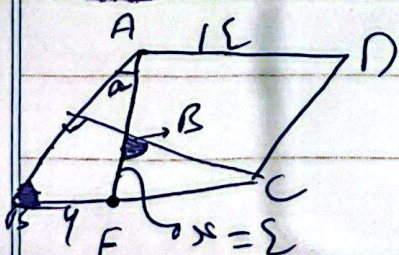
سوال ۳



$$b^2 = 14 \times 20$$

$$a^2 = 14 \times 20 \rightarrow \frac{14 \times 20}{14 \times 20} = \frac{b^2}{a^2} \rightarrow \frac{b}{a} = 2$$

سوال ۳

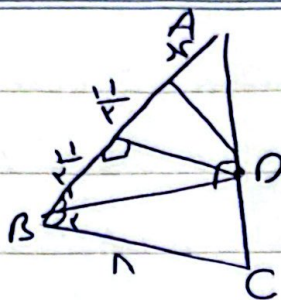
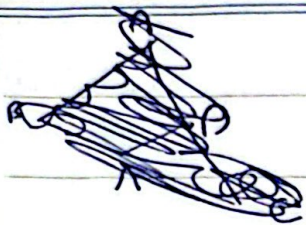


$$\frac{x}{y} = \frac{1}{x+1} \rightarrow x = 1$$

$$AE + EF = AF = 1 + 1 = 2$$

سوال ۳

Scanned with



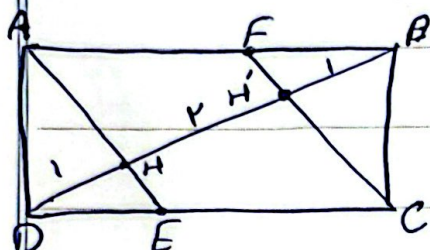
$$BI = BY = \frac{1}{2} \omega$$

← 3/2

$$DH = BH \Rightarrow H = \frac{11}{x}$$

$$\frac{AH}{AB} = \frac{DH}{BC} = \frac{x+11}{x+11} = \frac{11}{x}$$

$$\rightarrow \boxed{x = 4,4}$$



$$AH^2 = 1 + x^2 \rightarrow AH = \sqrt{1+x^2}$$

← 3/2

$$AD^2 = (\sqrt{1+x^2})^2 + 1^2 = 2 \rightarrow AD = \sqrt{2}$$

$$(C)^2 = x^2 + (AB)^2 \rightarrow AB = x\sqrt{2}$$

$$\frac{AH}{HE} = \frac{AB}{DE} = \frac{BH}{DH} = \frac{AE}{BE} = \frac{x\sqrt{2}}{1} = \frac{x}{1}$$

$$\rightarrow HE = \frac{1}{x} \rightarrow \frac{S_{\square}}{S_{\Delta}} = \frac{x\sqrt{2} \times \frac{1}{x}}{\frac{1}{x} \times x\sqrt{2}} = \boxed{1}$$

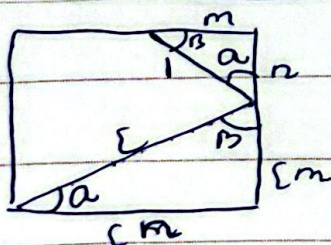
$$MNC = YBN \rightarrow \frac{BC}{BN} = \frac{x}{\omega}$$

← 3/2

$$\frac{S_{BMN}}{S_{ABE}} = \frac{BM \times BN}{BA \times BC} \rightarrow \frac{1}{x} = \frac{BM}{BA} \times \frac{x}{\omega} \rightarrow \frac{BM}{BA} = \frac{\omega}{9}$$

$$\frac{BM}{BA} = 1 - \frac{\omega}{9} = \frac{5}{9} \quad \frac{BM}{AM} = \frac{\frac{\omega}{9}}{\frac{5}{9}} = \frac{\omega}{5}$$

$$\boxed{\frac{\omega}{5} \leq \frac{BM}{AM}}$$



$$m+n = 14 \rightarrow m = 14-n$$

← 3/2

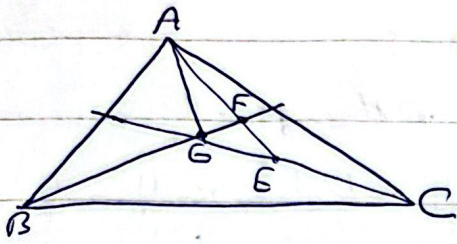
$$(Cn)^2 + (Cm)^2 = 14^2 \rightarrow m^2 + n^2 = 1 \quad m = \frac{x}{14} \cdot 12$$

$$\rightarrow \left(\frac{x}{14}\right)^2 + n^2 = 1 \rightarrow \frac{9}{14}n^2 + 1 = \frac{16}{14}n^2 = 1$$

$$\rightarrow \frac{9}{14}n^2 = 0 \rightarrow n = 0$$

$$S = (Cn)^2 + 14n^2 \rightarrow S = 14 \times \frac{14}{2} = \boxed{\frac{124}{2}}$$

Scbó



$$AG = 2GM = \frac{2}{3}AM$$

← سرائی

$$GM = \frac{1}{3}AG = \frac{1}{3}AM$$

$$GD = \frac{1}{3}BD \quad (1)$$

$$FD = \frac{1}{3}GD \quad (1) \rightarrow FD = \frac{1}{3} \times \frac{1}{3}BD$$

$$\rightarrow 9FD = BD \rightarrow \frac{BD}{FD} = 9$$