

$$AD = AE + ED \quad ED = 2AE \quad AD = 3AE \quad \frac{AE}{AD} = \frac{1}{3}$$

$AD \parallel BC$
 ضلع‌ها
موازی

$$\triangle AFE \sim \triangle$$

$$\frac{AF}{AC} = \frac{AE}{AB}$$

$$\rightarrow AB = AD \rightarrow$$

$$\frac{AF}{AC} = \frac{AE}{AD} = \frac{1}{3}$$

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$$AF = \frac{1}{3} AC$$

$$\hat{AED} = \hat{ACB} \Rightarrow \triangle AED \sim \triangle ACB$$

$$\frac{AB}{AD} = \frac{AC}{AE}$$

$$\rightarrow \frac{x+1}{x} = \frac{10}{x}$$

$$x^2 + x = 10$$

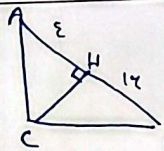
$$x = 9$$

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$$AC = 3x \quad \text{مسئله} \rightarrow \frac{x}{3x} = \frac{DE}{BC} \quad \frac{DE \parallel BC}{DE \parallel BF} \quad \triangle DEBF \rightarrow BF = DE$$

$$\frac{BF}{BC} = \frac{x}{3x} = \frac{1}{3} \quad \text{مسئله} \rightarrow \frac{x}{BC} = \frac{1}{3} \rightarrow BC = 9$$

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$$CH^2 = 2 \times 1 \Rightarrow CH = 1$$

$$AC \times BC = AB \times CH \Rightarrow AC \times BC = 2 \times 2 = 4$$

$$AC^2 = AH \times AB \Rightarrow 2 \times 2 = 4 \quad AC = 2\sqrt{2}$$

$$BC = \frac{4}{2\sqrt{2}} = \sqrt{2}$$

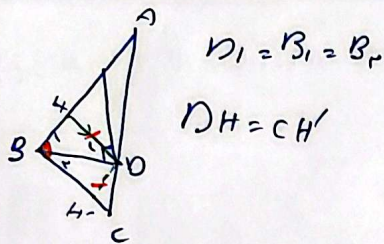
$$\frac{AC}{BC} = \frac{2\sqrt{2}}{\sqrt{2}} = \frac{2}{1}$$

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$$\triangle AFB \sim \triangle CBH$$

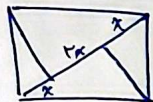
$$F=H$$

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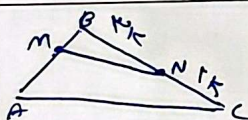
$$DH = CH'$$

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$$\frac{S_{\text{مستطیل}}}{S_{\text{مربع}}} = \frac{2x + 2y + x + x + y + y}{4} = \frac{4x + 4y}{4} = \frac{4(x+y)}{4} = 1$$

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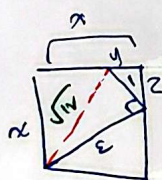


$$\frac{S_{BMN}}{S_{ABC}} = \frac{BM \cdot BN \cdot \sin B}{BA \cdot BC \cdot \sin B} = \frac{1}{4} \rightarrow \frac{BM}{BA} \times \frac{BN}{BC} = \frac{1}{4} \Rightarrow \frac{BM}{BA} = \frac{1}{4}$$

$$BA = BM + AM$$

$$AM = BA - BM = \frac{3}{4} BA \quad \frac{BM}{AM} = \frac{\frac{1}{4} BA}{\frac{3}{4} BA} = \frac{1}{3}$$

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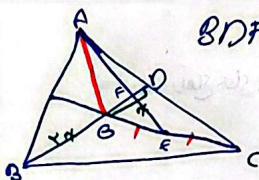
$$x^2 + (x-y)^2 = 17 \quad \sqrt{y^2 + 2^2} = 1 \quad (x-2)^2 + x^2 = 17$$

$$x^2 + 2^2 + y^2 - 2xy = 17 \rightarrow x^2 + y^2 - 2xy = 13$$

$$2x(2x - (2+y)) = 17 \rightarrow 2x(2x-1) = 17$$

$$2x^2 - 2x = 17$$

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$$BD = 3x$$

میانگین هندسی را به نسبت ۲ به ۱ تقسیم می کنند (مرکز ثقل مثلث تلاقی میانه ها است)
> مثلث ABC، AE میانه است، BD هم میانه و بلندترین ارتفاع هر دو است پس

$$\frac{BD}{FD} = \frac{3x}{x} = 3$$

به نسبت ۲ به ۱ تقسیم می شوند پس $BF = 2x$, $FD = x$

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