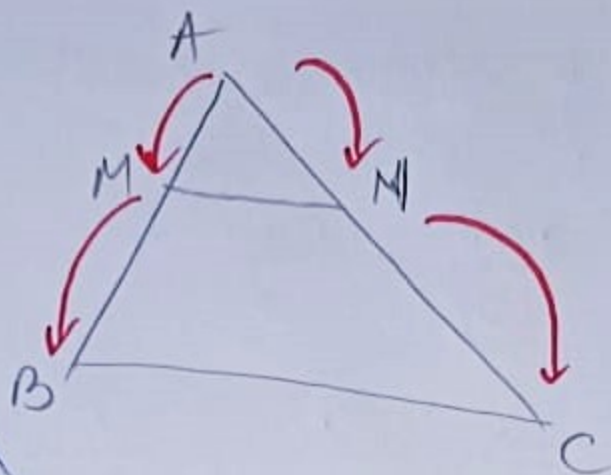


Teorema lui Thales -

$$\boxed{MN \parallel BC \xRightarrow{T.Th} \frac{AM}{MB} = \frac{AN}{NC}}$$



Atentie! $MB = AB - AM$.

$NC = AC - AN$.

Înlocuim pe MB și NC în relația

$$\frac{AM}{AB - AM} = \frac{AN}{AC - AN}$$

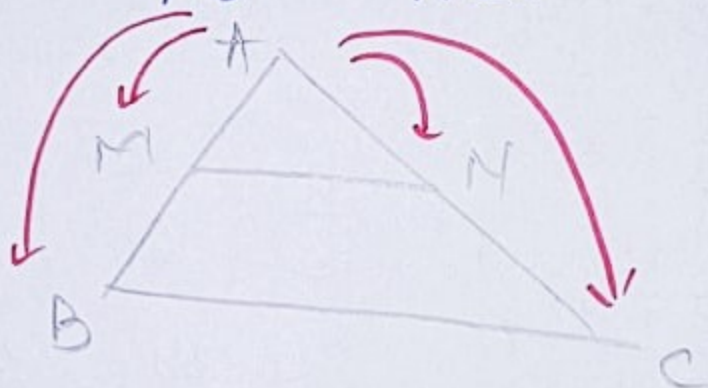
$$\Rightarrow AM(AC - AN) = AN(AB - AM)$$

$$AM \cdot AC - \cancel{AM \cdot AN} = AN \cdot AB - \cancel{AM \cdot AN}$$

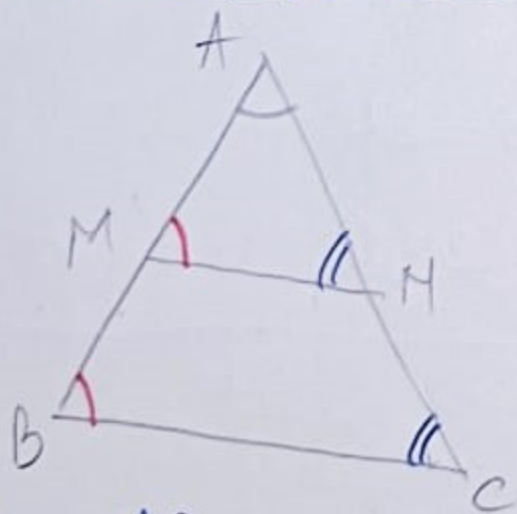
$$AM \cdot AC = AN \cdot AB$$

$$\frac{AM}{AB} = \frac{AN}{AC}$$

$$\boxed{MN \parallel BC \Rightarrow \frac{AM}{AB} = \frac{AN}{AC}}$$



Teorema fundamentală a asemănării



$$\boxed{MN \parallel BC \Rightarrow \triangle AMN \sim \triangle ABC}$$

$$\frac{AM}{AB} = \frac{AN}{AC} = \frac{MN}{BC} \quad \text{și } \neq \text{corespunzător} \equiv$$

Proportii derivate

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{a}{b} = \frac{a+c}{b+d} \quad \text{sau} \quad \frac{a}{b} = \frac{a-c}{b-d} \quad (b \neq d)$$

↓

$$\frac{a}{b} = \frac{c}{d} \quad \uparrow \quad \text{Partiden numitorii}$$

$$\hookrightarrow \frac{a+b}{b} = \frac{c+d}{d}$$

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{a}{b+a} = \frac{c}{d+c}$$

$$\frac{a}{b} = \frac{c}{d} \Rightarrow \frac{a-b}{b} = \frac{c-d}{d} \quad \text{sau} \quad \frac{a}{b-a} = \frac{c}{d-c}$$

Exp:

$$\begin{array}{l} \textcircled{1} \quad \frac{a}{b} = \frac{2}{5} \\ a+b=98 \\ \hline a, b=? \end{array}$$

$$\frac{a}{b} = \frac{2}{5} \downarrow \Rightarrow \frac{a}{a+b} = \frac{2}{2+5} \Rightarrow$$

$$\Rightarrow \frac{a}{98} = \frac{2}{7} \Rightarrow a = \frac{2 \cdot 98}{7} = 28$$

$$28+b=98 \Rightarrow b=70.$$

$$\begin{array}{l} \textcircled{2} \quad \frac{a}{b} = \frac{5}{6} \\ 7a-2b=92 \\ \hline a, b=? \end{array}$$

$$\frac{a}{b} = \frac{5}{6} \quad | \cdot \frac{7}{2} \Rightarrow \frac{7a}{2b} = \frac{35}{12} \downarrow -$$

$$\frac{7a-2b}{2b} = \frac{35-12}{12}$$

$$\frac{92}{2b} = \frac{23}{12} \Rightarrow 2b = \frac{92 \cdot 12}{23} \Rightarrow$$

$$\Rightarrow 2b=48 \Rightarrow b=24.$$

$$\frac{a}{24} = \frac{5}{6} \Rightarrow a = \frac{24 \cdot 5}{6} \Rightarrow a=20.$$

$$\begin{array}{l} \textcircled{3} \quad \frac{x}{2} = \frac{y}{3} = \frac{z}{4} \\ x+y+z=27 \\ \hline x, y, z=? \end{array}$$

$$\frac{x}{2} = \frac{y}{3} = \frac{z}{4} = \frac{x+y+z}{2+3+4} = \frac{27}{9} = 3$$

$$x=6, y=9, z=12$$