

Determinarea dreptei

7/
107.

A, B, C, D - necoplanare
oricare 3 fiind necoliniare

a) Det. câte dr. se pot obține
unindu-le 2 câte 2.

b) Dacă $A_{\Delta ABC} = 84 \text{ cm}^2$

$$d(A, BC) = 14 \text{ cm}$$

$$d(D, BC) = 15 \text{ cm}$$

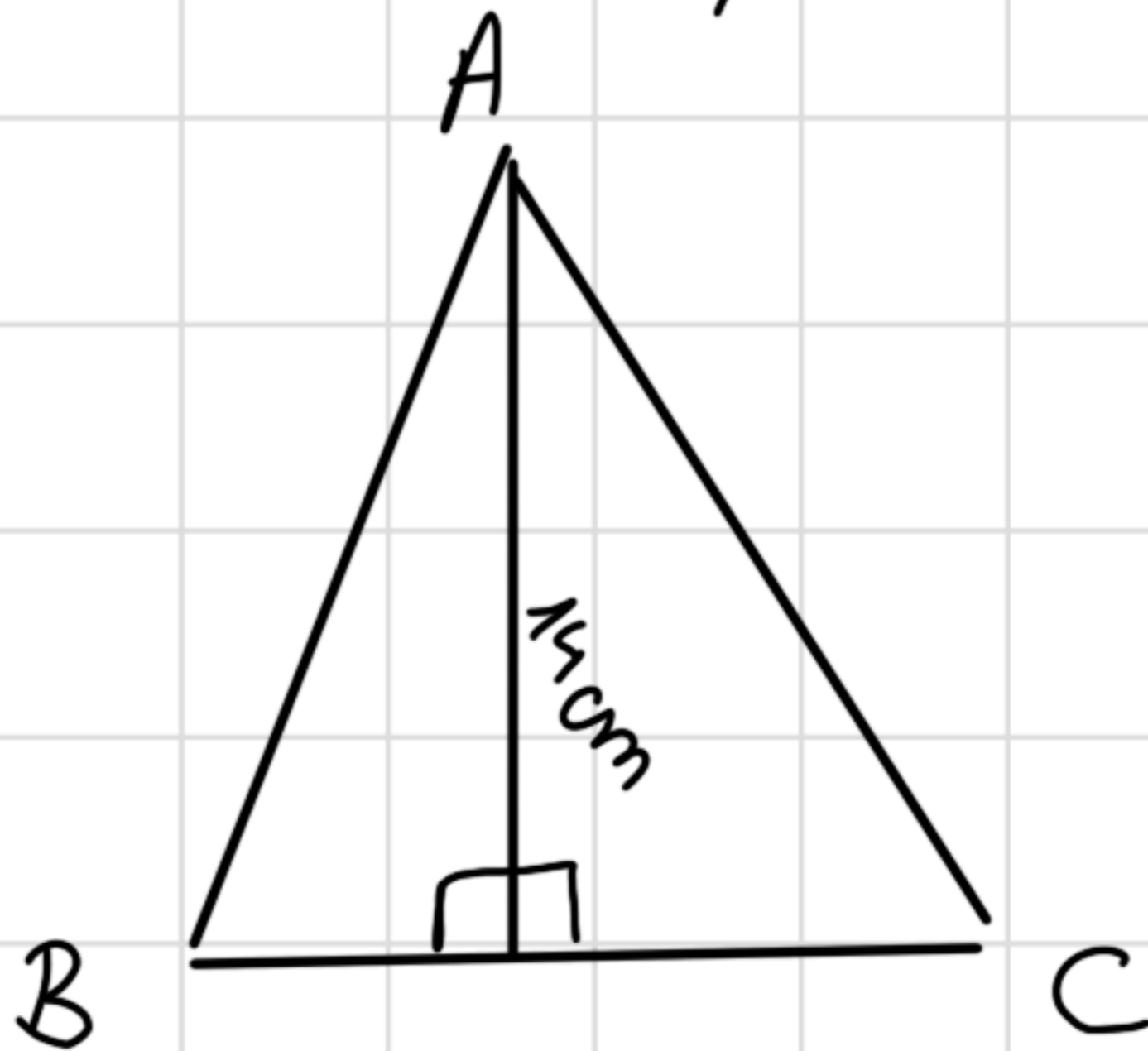
$$A_{\Delta BCD} = ?$$

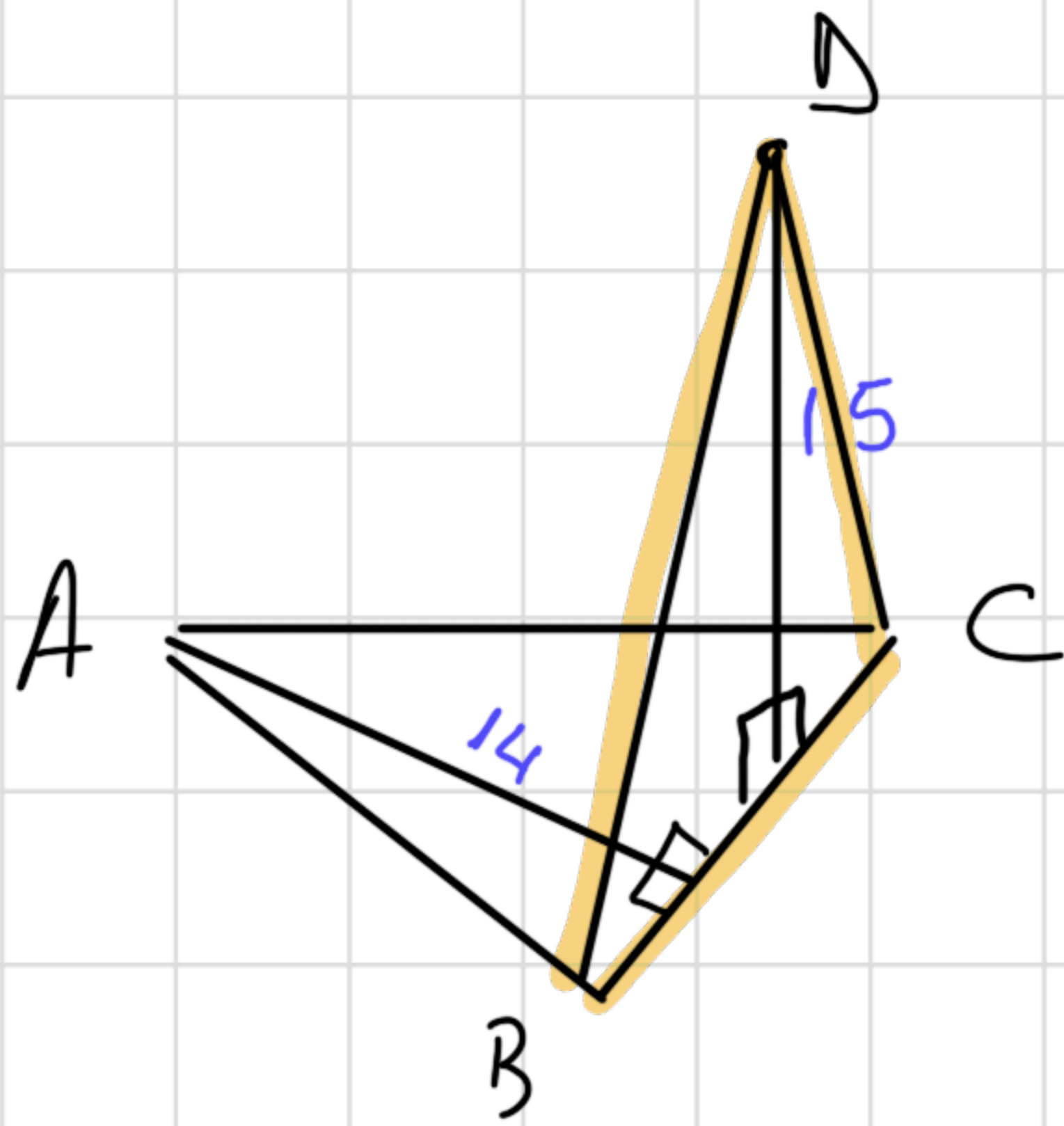
! 2 puncte determină o dreaptă

a) AB, AC, BC, CD, DA, BD

→ 6 drepte

b)





$$\begin{aligned}
 A_{\triangle BCD} &= \frac{b \cdot h}{2} = \\
 &= \frac{BC \cdot d(D, BC)}{2} \\
 &= \frac{BC \cdot 15}{2} \\
 &= \frac{12 \cdot 15}{2} = 90 \text{ cm}^2
 \end{aligned}$$

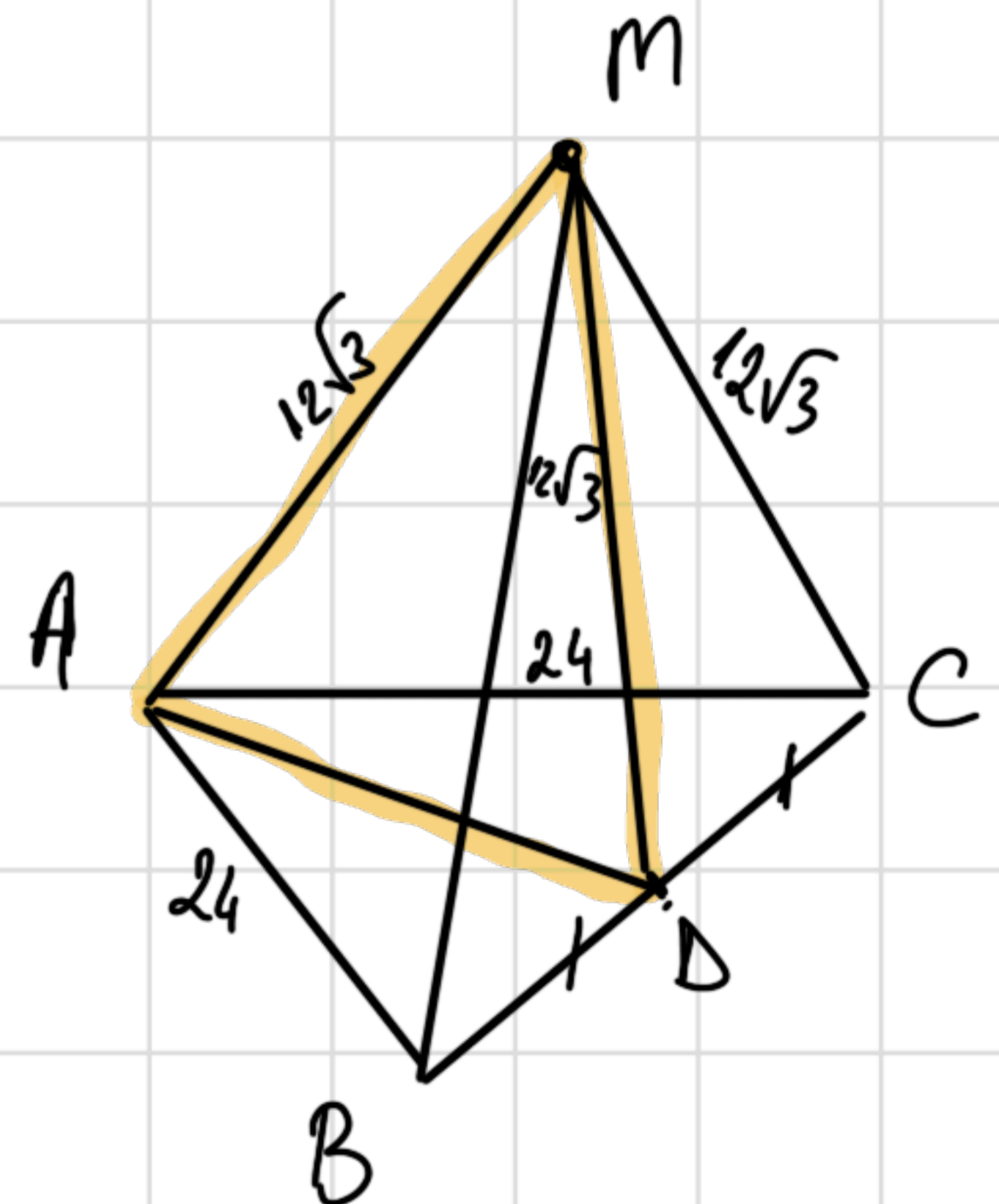
$$\begin{aligned}
 A_{\triangle ABC} &= 84 \text{ cm}^2 \\
 &= \frac{BC \cdot d(A, BC)}{2} = \frac{BC \cdot 14}{2} = 7BC = 84 \text{ cm}^2 \\
 BC &= 12 \text{ cm}
 \end{aligned}$$

8/107.

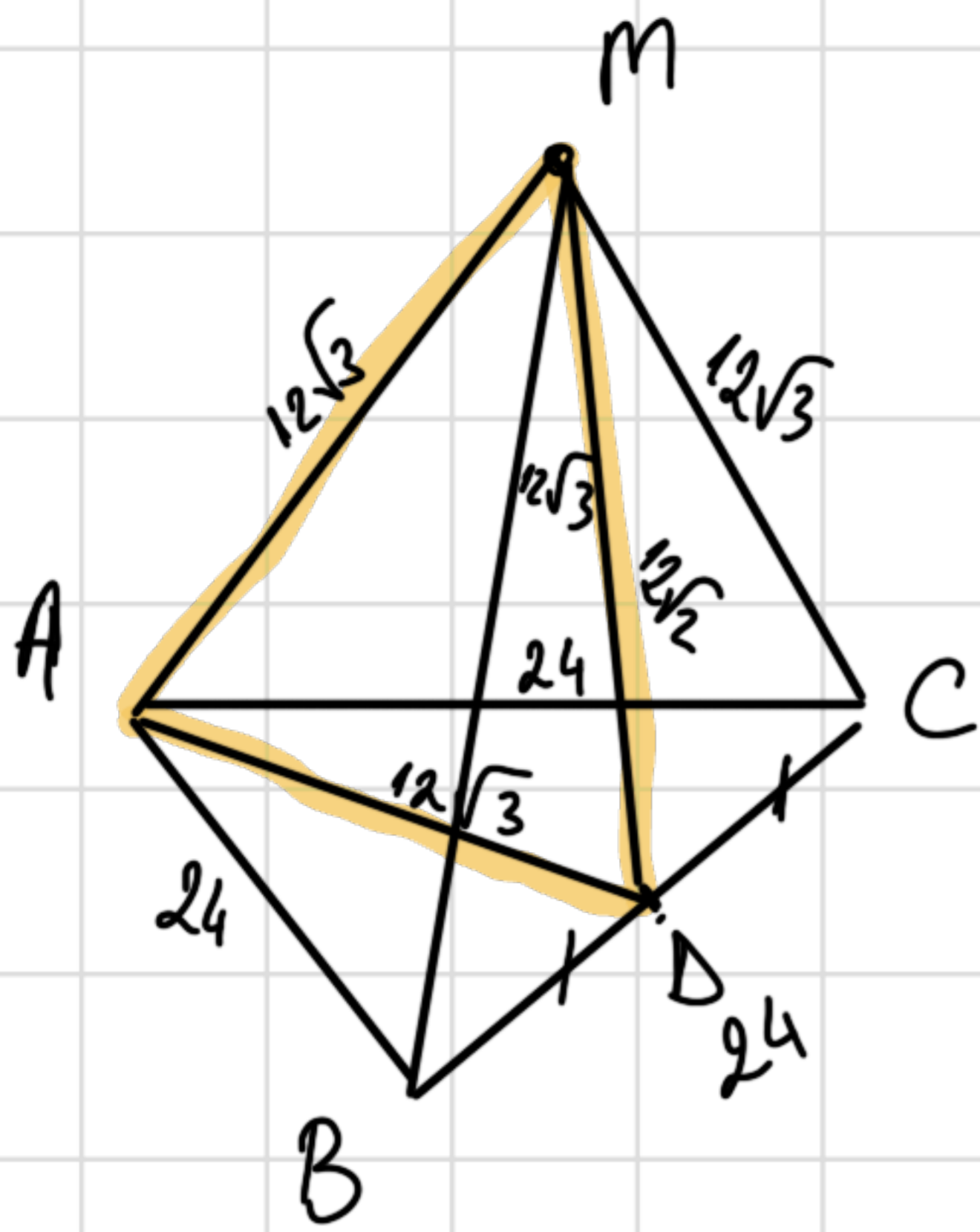
$\triangle ABC$ echi
 $l = 24 \text{ cm}$
 $M \notin (ABC)$
 $MA = MB = MC = 12\sqrt{3}$
 $D \in BC$ a. ? $BD = DC$

a) $A_{\triangle MAD} = ?$

b) Dacă $MN \perp AD$, $N \in AD$
 $MN = ?$



$$\begin{aligned}
 BD = DC &\Rightarrow \\
 &\Rightarrow D - \text{mij. } BC
 \end{aligned}$$



ΔABC echi
 AD - mediană } $AD \perp BC$
 C în 3 lime

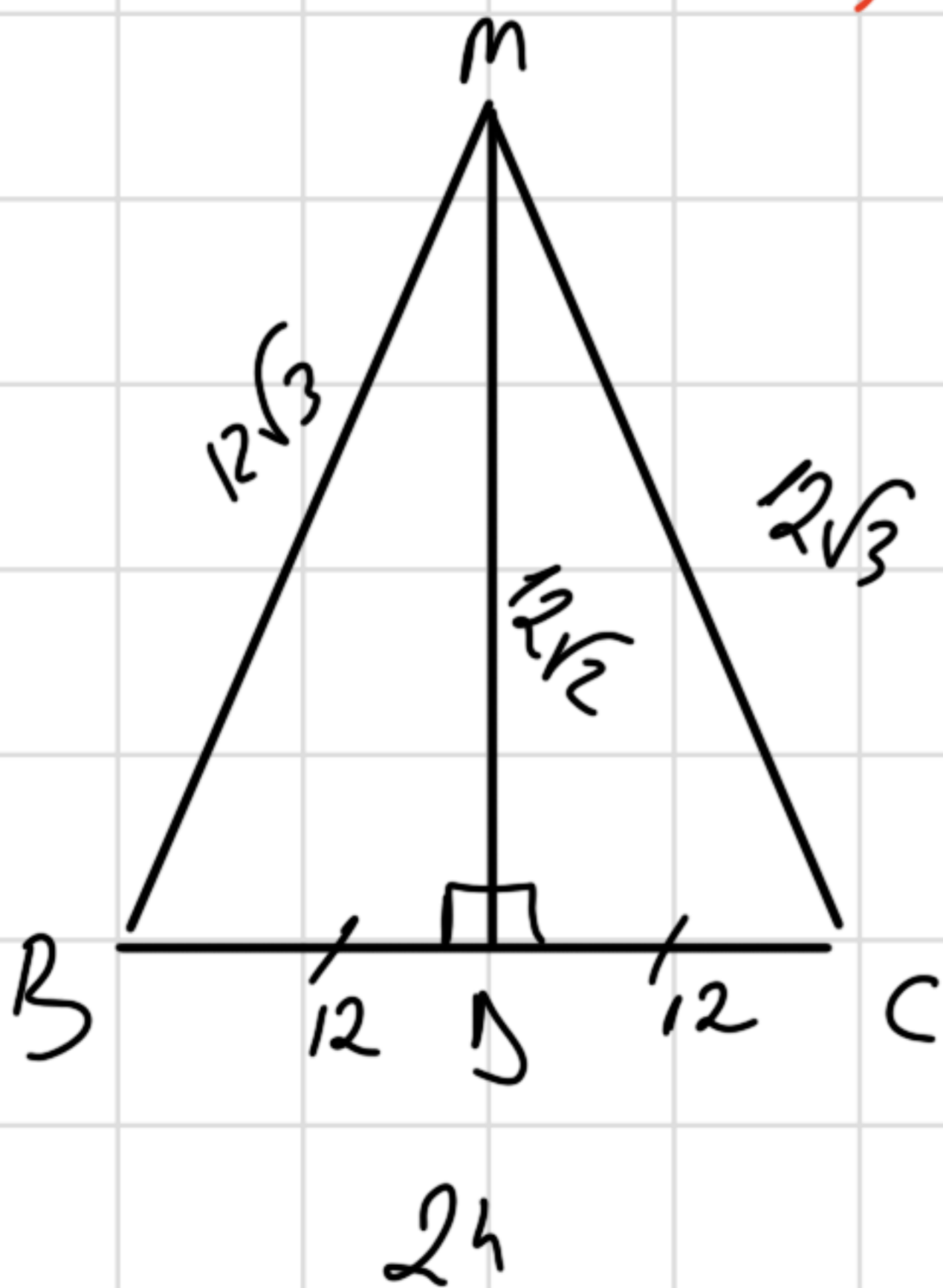
! În Δ echi, liniile importante coincid.

$$\begin{aligned}
 AD - h_{\Delta \text{ echi}} &= \frac{l\sqrt{3}}{2} = \\
 &= \frac{24\sqrt{3}}{2} = 12\sqrt{3}
 \end{aligned}$$

$$h_{\Delta \text{ echi}} = \frac{l\sqrt{3}}{2}$$

MD - mediană } $MD \perp BC$
 ΔMBC - isoscel.

! În Δ isoscel, liniile importante coincid

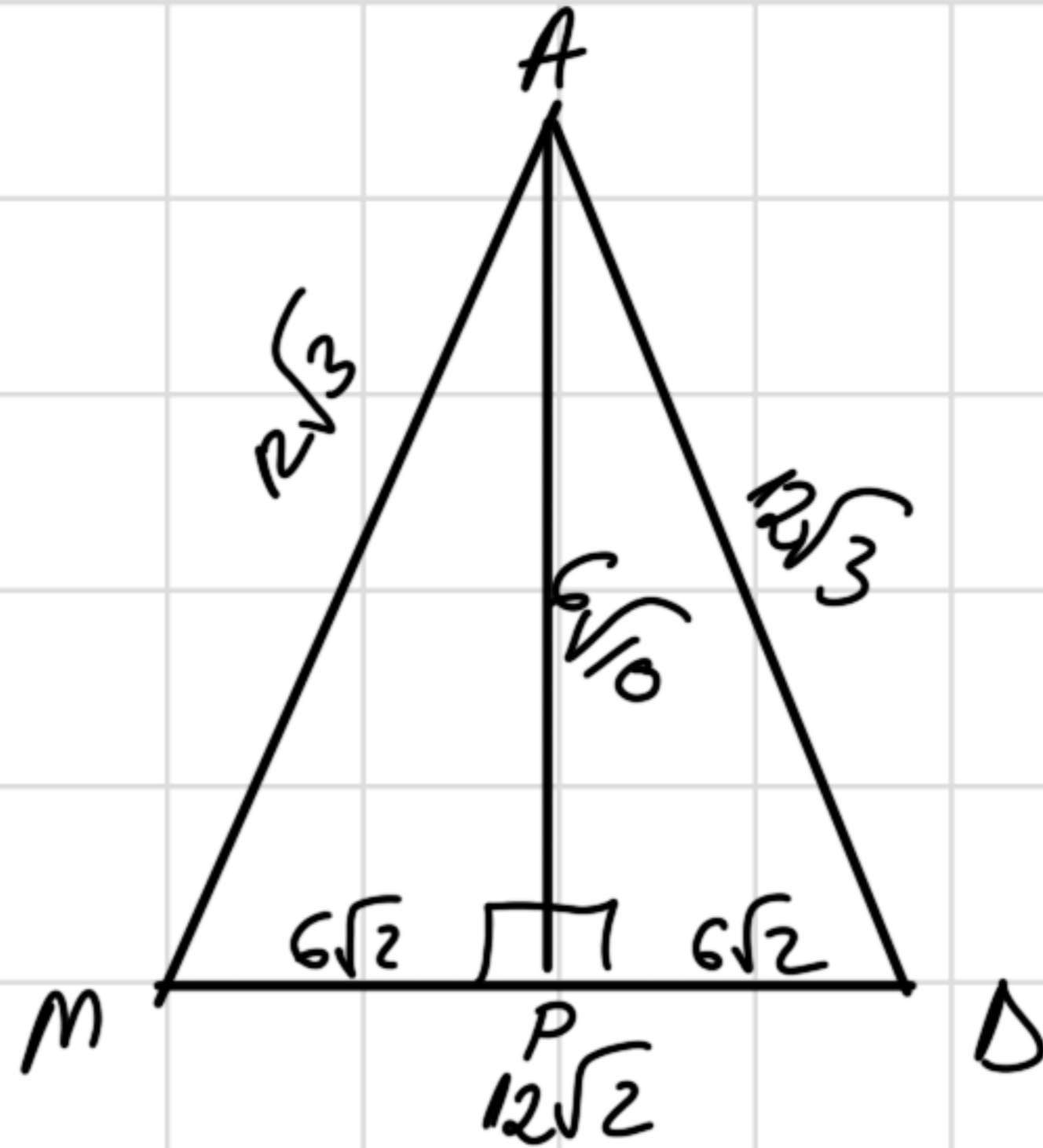
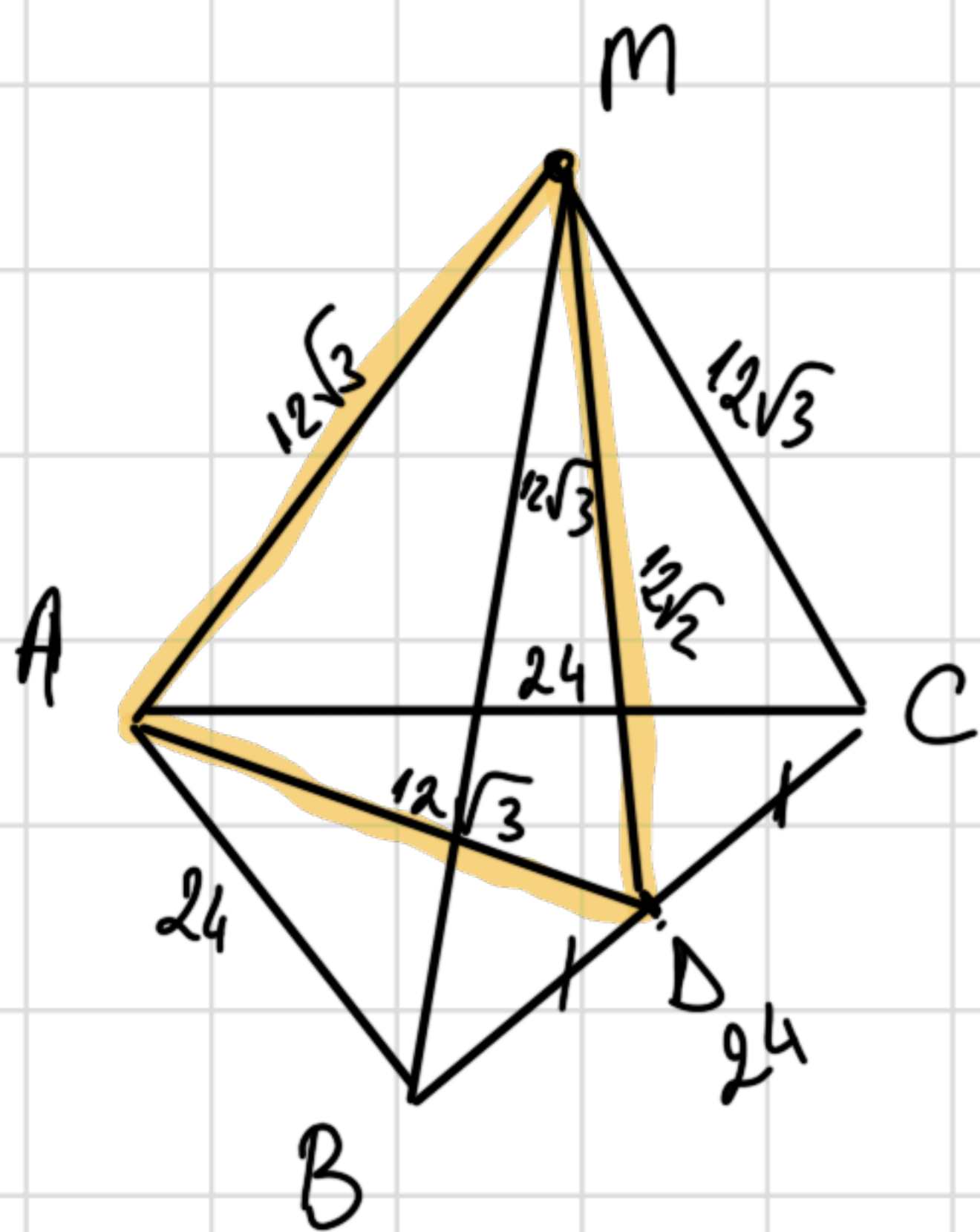


$$BD = DC = \frac{BC}{2} = 12 \text{ cm}$$

ΔMBD (dr) \xrightarrow{TP}

$$\begin{aligned}
 MD^2 &= BM^2 - BD^2 = \\
 &= (12\sqrt{3})^2 - 12^2 = \\
 &= 12^2 \cdot 3 - 12^2 = \\
 &= 12^2 (3 - 1) = \\
 &= 12^2 \cdot 2
 \end{aligned}$$

$$MD = \sqrt{12^2 \cdot 2} = 12\sqrt{2} \text{ cm}$$



$\left. \begin{array}{l} \text{Fie } AP \perp MD \\ \Delta AMD \text{ is} \end{array} \right\} \Rightarrow \begin{array}{l} AP - \text{median} \\ P - \text{mij } MD \end{array}$

$$\Rightarrow MP = PD = \frac{MD}{2} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

$$\Delta AMP \text{ (dr)} \xrightarrow{TP} AP^2 = MA^2 - MP^2 =$$

$$= 12^2 \cdot 3 - 6^2 \cdot 2 =$$

$$= 6^2 (2^2 \cdot 3 - 2) =$$

$$= 6^2 \cdot 10$$

$$AP = \sqrt{6^2 \cdot 10} = 6\sqrt{10}$$

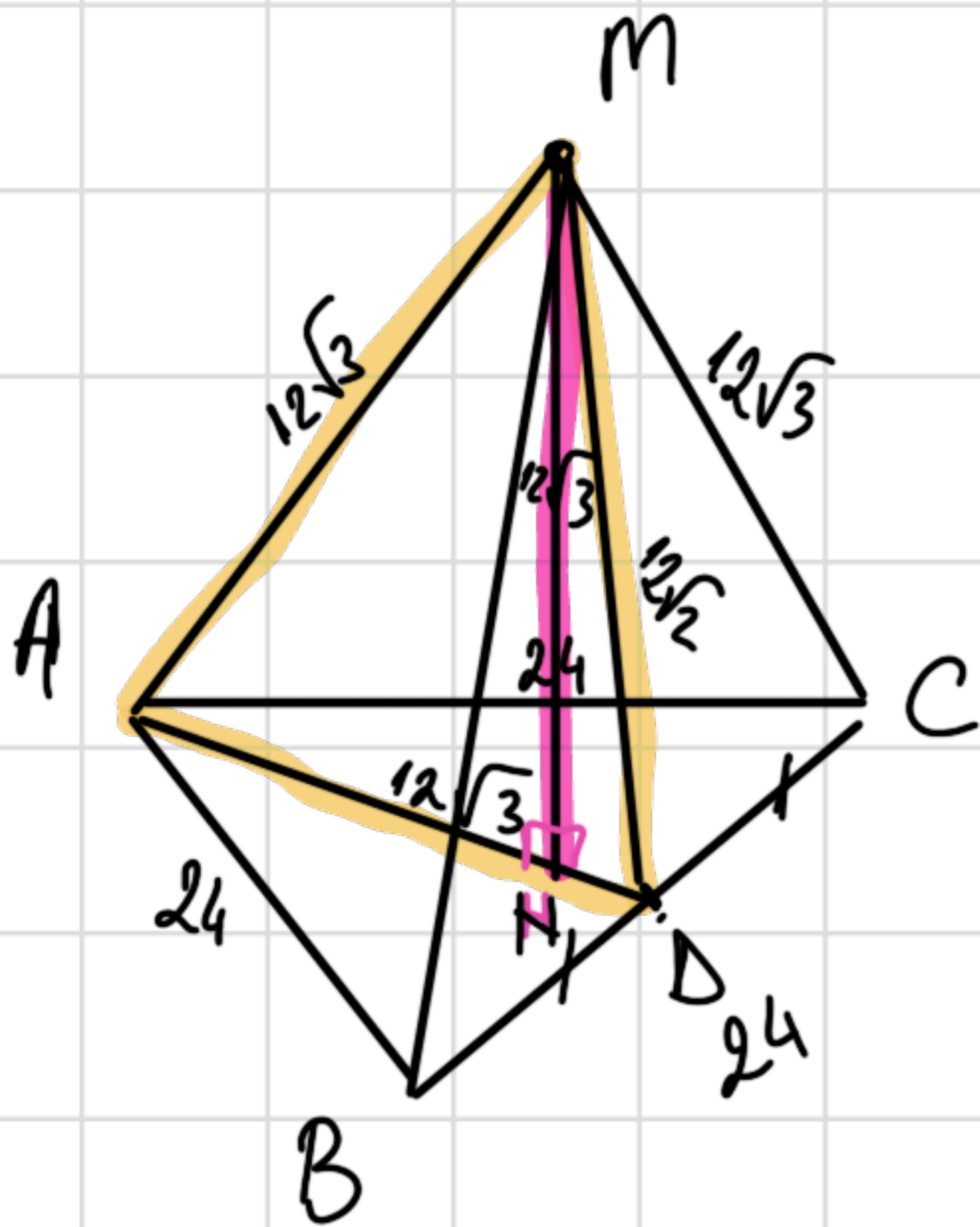
$$A_{\Delta AMD} = \frac{b \cdot h}{2} = \frac{MD \cdot AP}{2} = \frac{12\sqrt{2} \cdot 6\sqrt{10}}{2}$$

$$= 36\sqrt{20} = 36 \cdot 2\sqrt{5} =$$

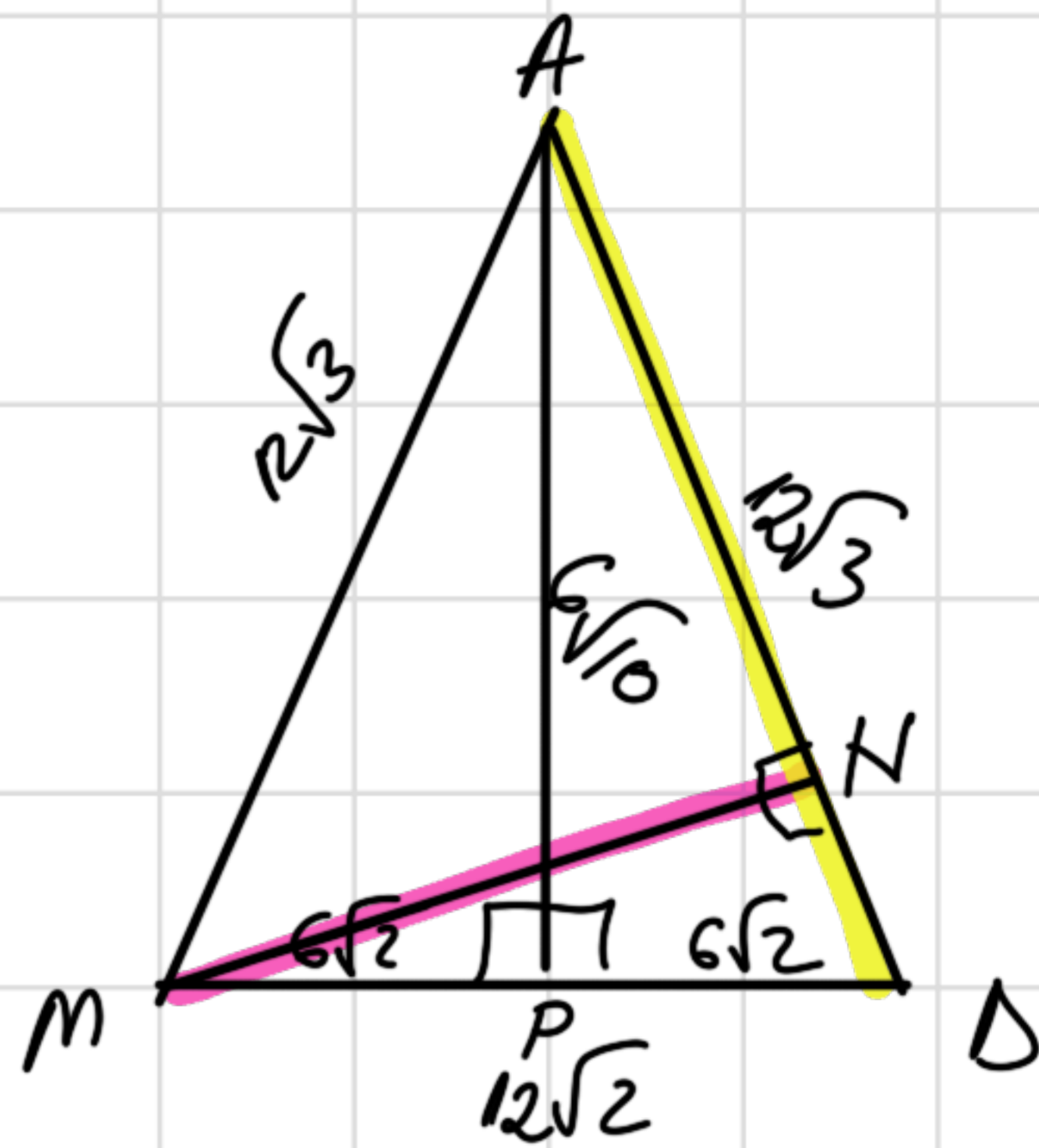
$$\underbrace{72\sqrt{5}}_{2\sqrt{5}} = 72\sqrt{5} \text{ cm}^2$$

$$\begin{array}{r} 20/2 \\ 10/2 \\ 5/5 \\ 1 \end{array}$$

$$a\sqrt{b} \cdot c\sqrt{d} = a \cdot c\sqrt{b \cdot d}$$



f) Dacă $MN \perp AD$
 $MN = ?$



$$A_{\Delta AMD} = \frac{b \cdot h}{2} = \frac{AD \cdot MN}{2} = \frac{12\sqrt{3} \cdot MN}{2} =$$

$$= 6\sqrt{3} \cdot MN = 72\sqrt{5}$$

$$\boxed{MN} = \frac{72\sqrt{5}}{6\sqrt{3}} =$$

$$= \frac{\sqrt{3}}{12\sqrt{5}} = \frac{12\sqrt{15}}{3} =$$

$$= \boxed{4\sqrt{15} \text{ cm}^2}$$

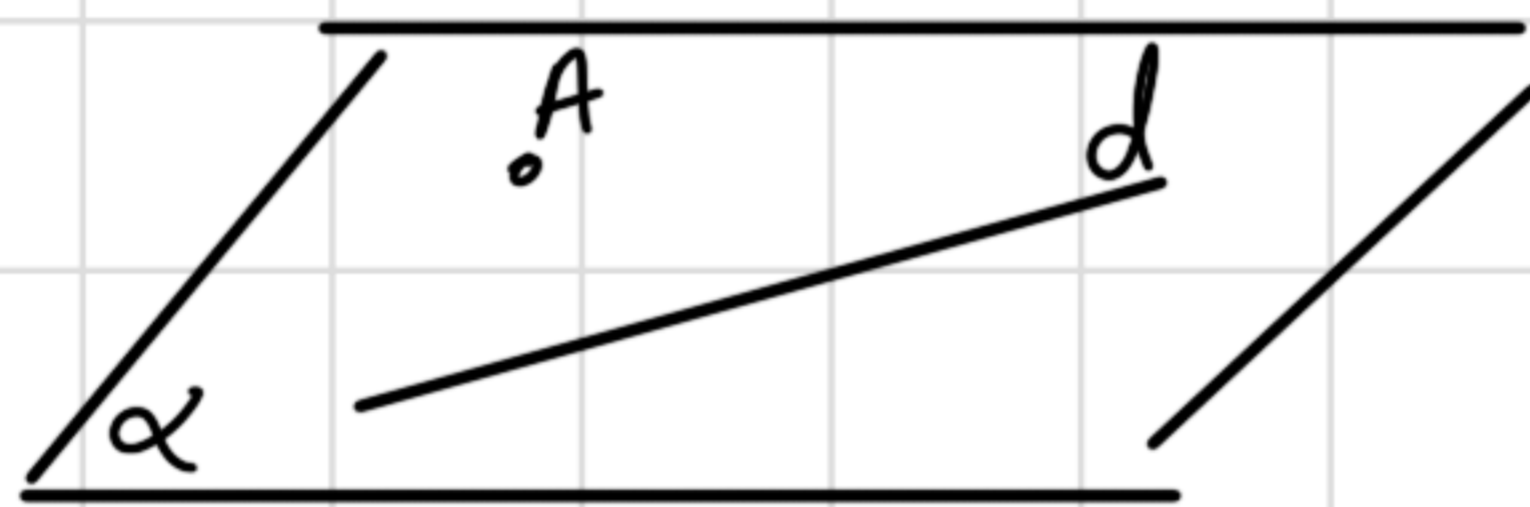
$$MN = 4\sqrt{15}$$

Determinarea planului

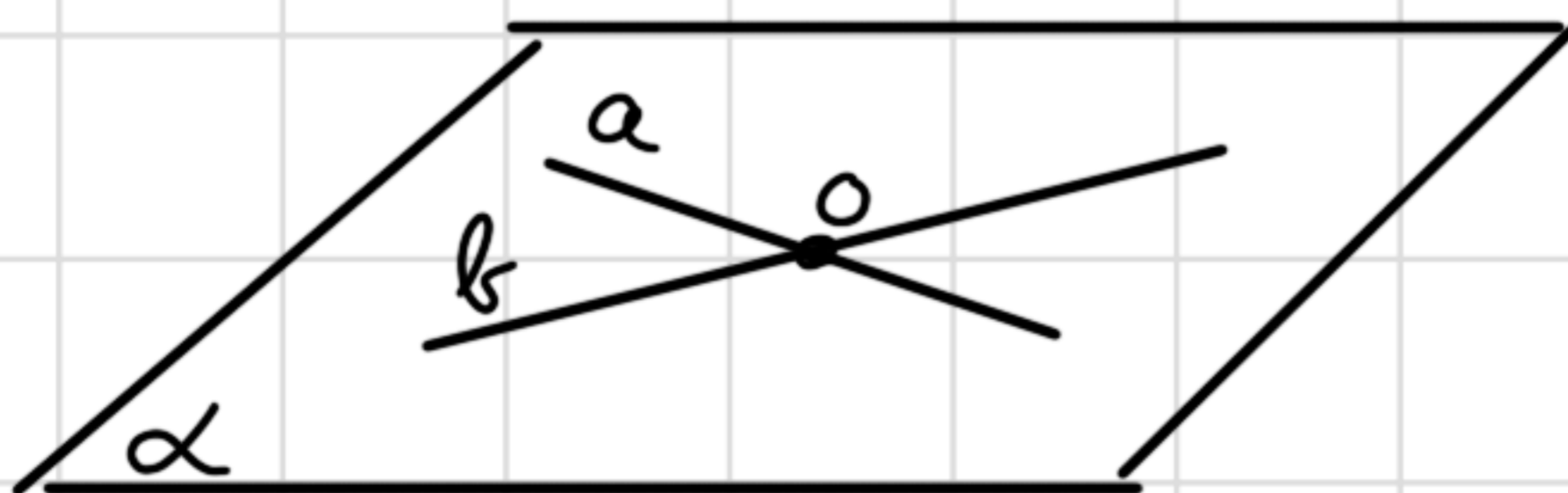
- 1) Trei puncte necoliniare determină un plan.



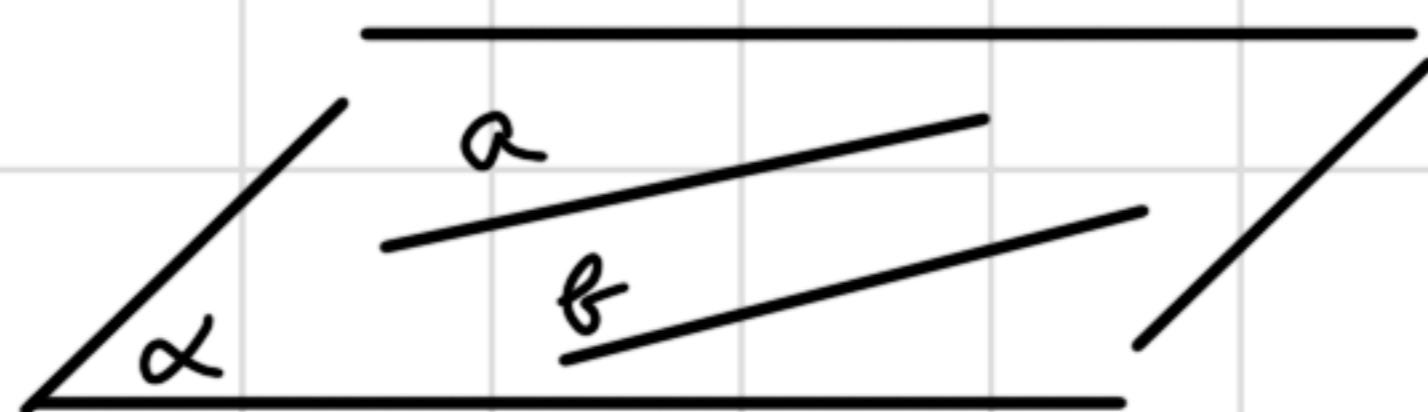
- 2) O dreaptă și un punct det. un plan.



- 3) Două drepte concomente det un plan.
↪ au punct comun.



- 4) Două drepte paralele det. un plan.

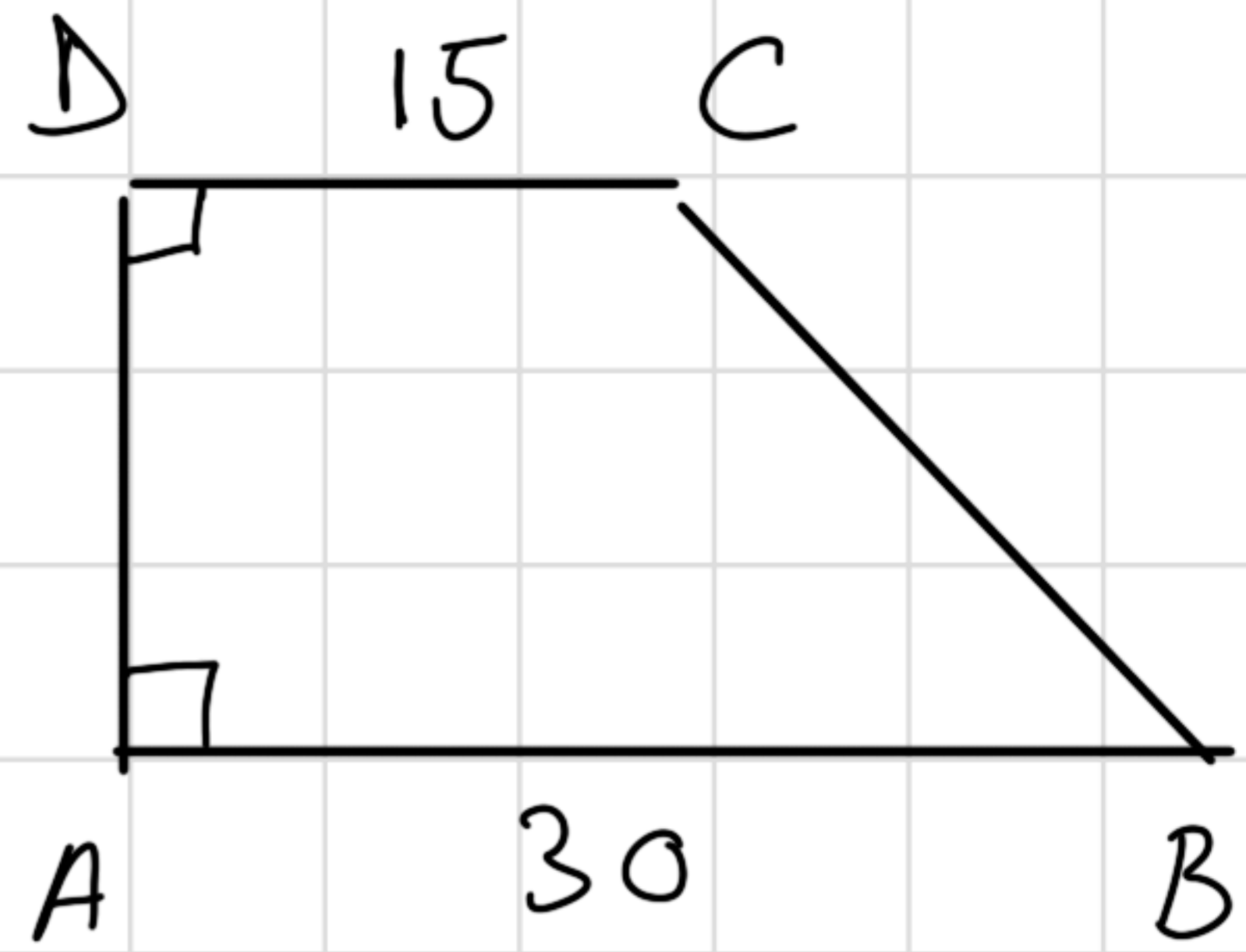


⑩ ABCD tr. dr.

109 $AB \parallel CD$

$\angle A = \angle D = 90^\circ$

$AD \subset \alpha$ — *Cincus* — *planul alfa.*



a) Dacă $BC \cap \alpha = \{M\}$
 arătați că $M \in AD$

b) Dacă $AB = 30 \text{ cm}$, $DC = 15 \text{ cm}$,
 $\angle B = 60^\circ$,
 $A_{\Delta MAB} = ?$

a)

$BC \cap \alpha = \{M\}$

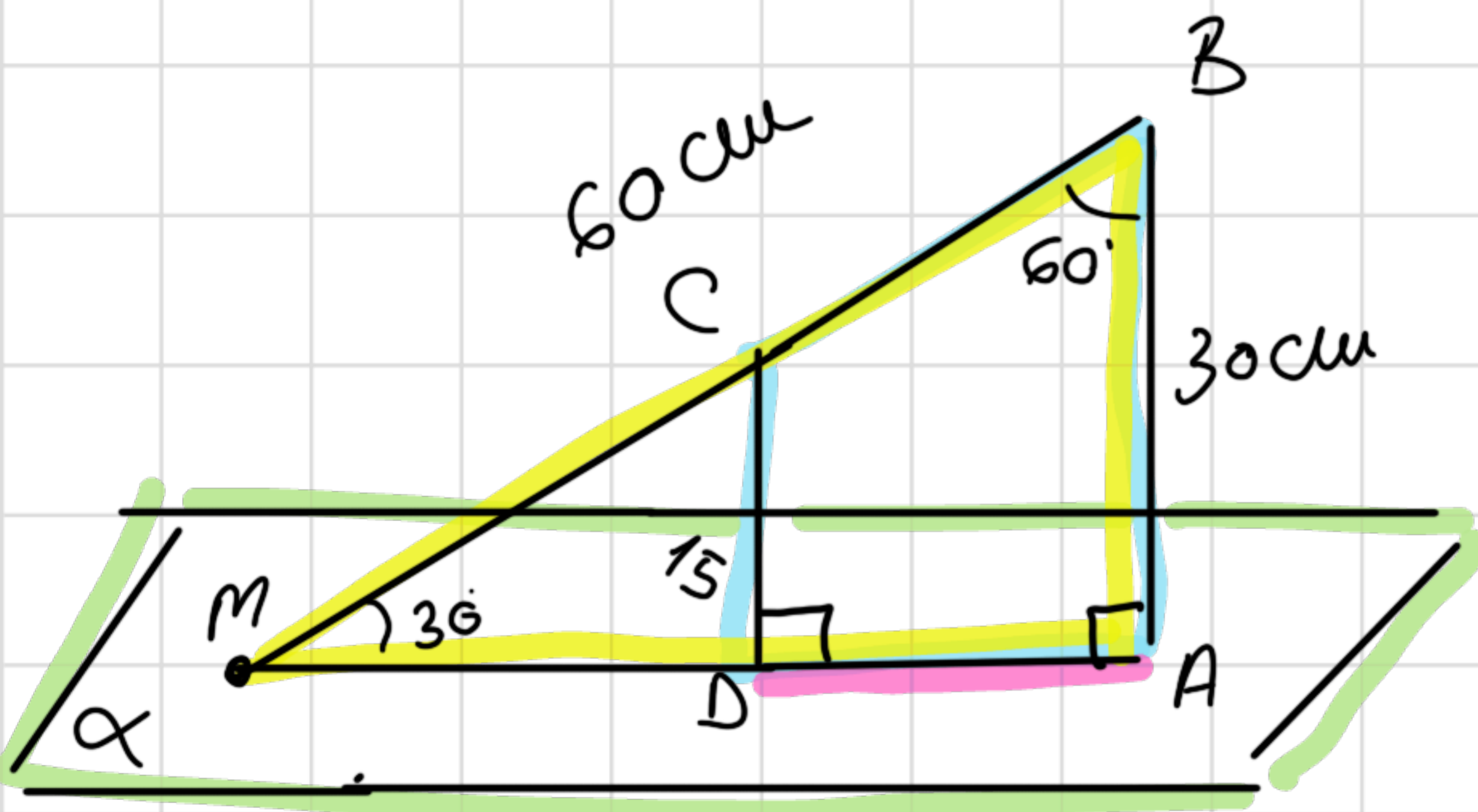
$\Rightarrow M \in BC$

$BC \subset (ABCD)$
 \parallel
 (ABC)

$M \in \alpha$

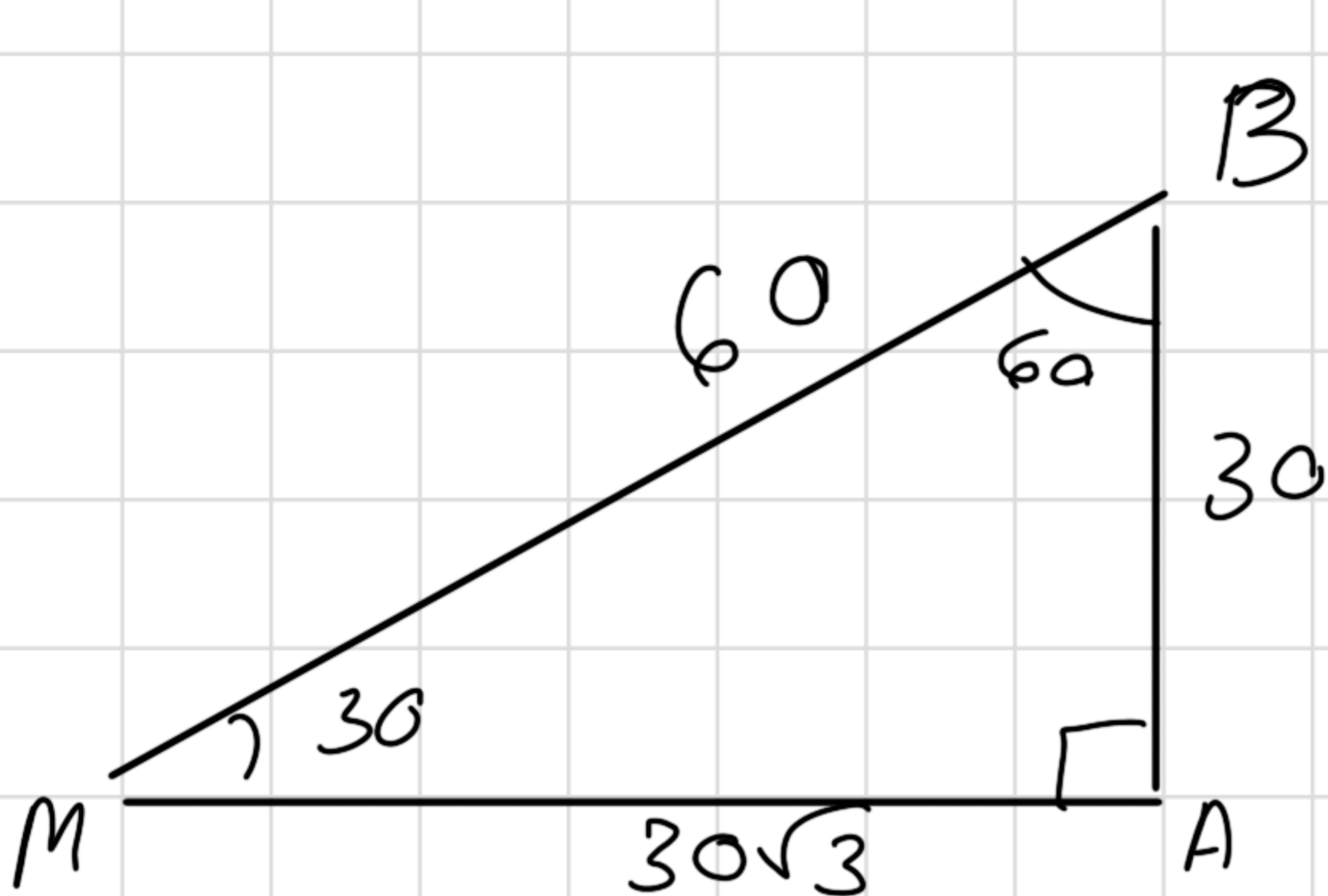
$(ABCD) \cap \alpha = DA$
 $DA \in \alpha$.

$\Rightarrow \underline{\underline{M \in AD}}$



b) $A_{\Delta dr} = \frac{c_1 \cdot c_2}{2}$

$A_{\Delta MAB} = \frac{MA \cdot AB}{2}$



$$\triangle MAB \text{ (dn)} \xrightarrow{T \neq 30^\circ}$$

$$AB = \frac{MB}{2}$$

$$\begin{aligned} \Rightarrow MB &= 2AB = \\ &= 2 \cdot 30 = 60 \text{ cm} \end{aligned}$$

$$\triangle MAB \text{ (dn)} \xrightarrow{TP} \quad MA^2 = MB^2 - AB^2 =$$

$$= 60^2 - 30^2 =$$

$$= 30^2 (2^2 - 1) =$$

$$= 30^2 \cdot 3$$

$$MA = \sqrt{30^2 \cdot 3} = 30\sqrt{3}$$

$$A_{\triangle MAB} = \frac{c_1 \cdot c_2}{2} = \frac{AM \cdot AB}{2} =$$

$$= \frac{30\sqrt{3} \cdot \overset{15}{\cancel{30}}}{\cancel{2}} = 450\sqrt{3} \text{ cm}^2$$

Tema: p 107 ex 9, 10
p 109 ex 7, 8
+ tema veche.