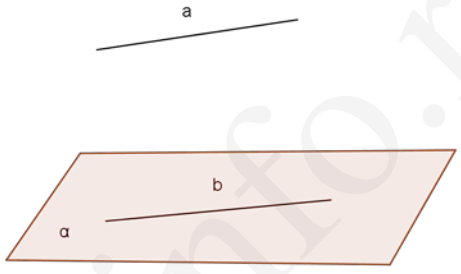
Geometrie – pentru pregătirea Evaluarii Naționale la Matematică

(Cls. a VIII a)

TEOREME DE PARALELISM

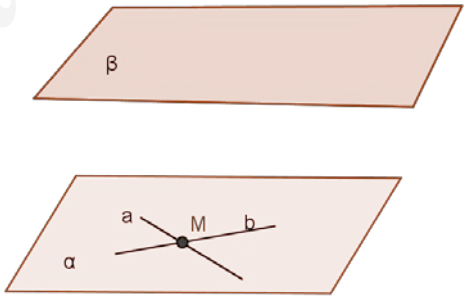
Teorema 1

$$\left.\begin{array}{l} a \parallel b \\ b \subset \alpha \end{array}\right\} \Rightarrow a \parallel \alpha$$



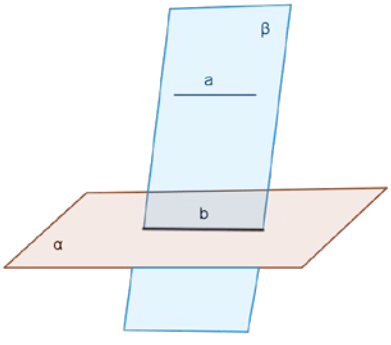
Teorema 2

$$\left.\begin{array}{l} a, b \subset \alpha \\ a \cap b = \{M\} \\ a \parallel \beta, b \parallel \beta \end{array}\right\} \Rightarrow \alpha \parallel \beta$$



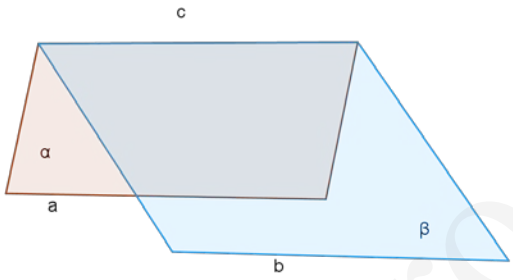
Teorema 3

$$\left.\begin{array}{l} a \parallel \alpha \\ a \subset \beta \\ \alpha \cap \beta = b \end{array}\right\} \Rightarrow a \parallel b$$



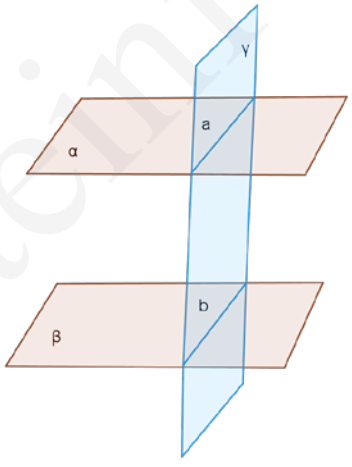
Teorema 4 (“Teorema acoperisului”)

$$\left.\begin{array}{l} a \parallel b \\ a \subset \alpha \\ b \subset \beta \\ \alpha \cap \beta = c \end{array}\right\} \Rightarrow a \parallel b \parallel c$$



Teorema 5

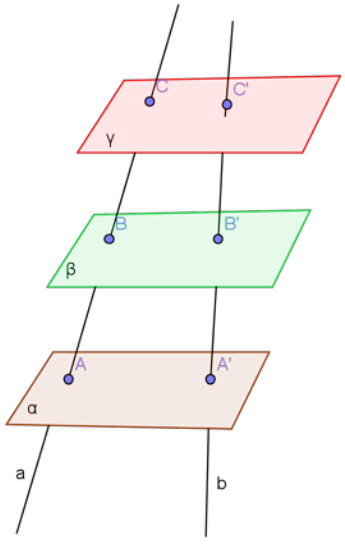
$$\left.\begin{array}{l} \alpha \parallel \beta \\ \lambda \cap \alpha = a \\ \lambda \cap \beta = b \end{array}\right\} \Rightarrow a \parallel b$$



Teorema 6

$$\left.\begin{array}{l} \alpha \parallel \beta \parallel \lambda \\ a \cap \alpha = \{A\}, b \cap \alpha = \{A'\} \\ a \cap \beta = \{B\}, b \cap \beta = \{B'\} \\ a \cap \lambda = \{C\}, b \cap \lambda = \{C'\} \end{array}\right\} \Rightarrow$$

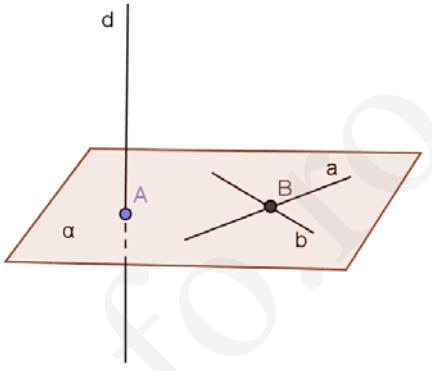
$$\frac{AB}{A'B'} = \frac{BC}{B'C'}$$



TEOREME DE PERPENDICULARITATE

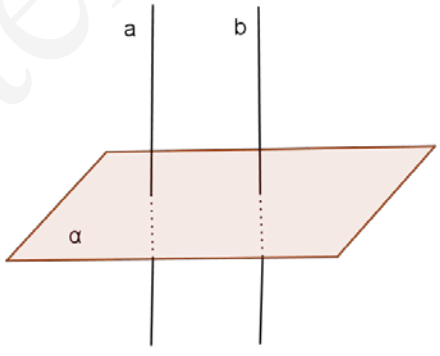
Teorema 1

$$\left.\begin{array}{l} d \perp a \\ d \perp b \\ a, b \subset \alpha \\ a \cap b = \{B\} \end{array}\right\} \Rightarrow d \perp \alpha$$



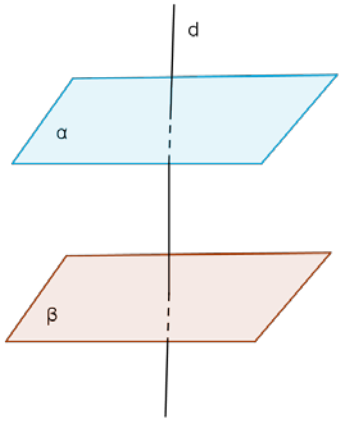
Teorema 2

$$\left.\begin{array}{l} a \perp \alpha \\ b \perp \alpha \end{array}\right\} \Rightarrow a \parallel b$$

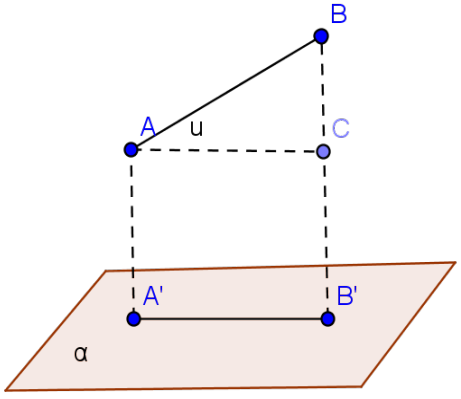


Teorema 3

$$\left.\begin{array}{l} \alpha \perp d \\ \beta \perp d \end{array}\right\} \Rightarrow \alpha \parallel \beta$$



UNGHIUL UNEI DREPTE CU UN PLAN



$\Pr_\alpha AB = A'B'$

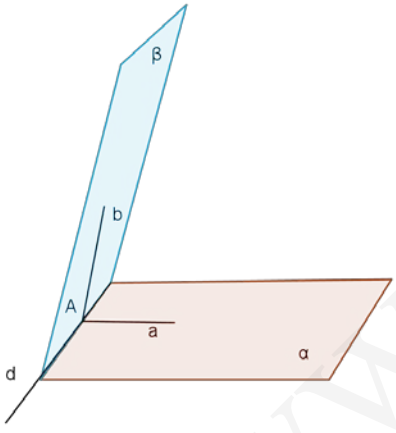
$(\widehat{AB,\alpha}) = (\widehat{AB,A'B'}) = (\widehat{AB,AC}) = \widehat{BAC}$

$unde\ AC \parallel A'B'$

$m(\widehat{AB,\alpha}) = m(\widehat{BAC}) = u^o$

$A'B' = AB \cdot \cos u^o$

UNGHI DIEDRU

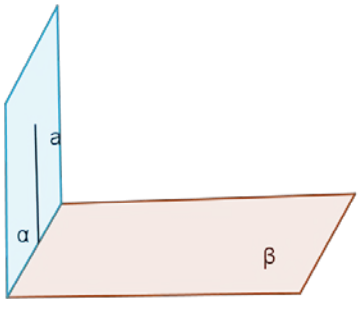


$$\left.\begin{array}{l}\alpha \cap \beta = d \\ a \perp d, a \subset \alpha \\ b \perp d, b \subset \beta\end{array}\right\} \Rightarrow (\widehat{\alpha,\beta}) = (\widehat{a,b})$$

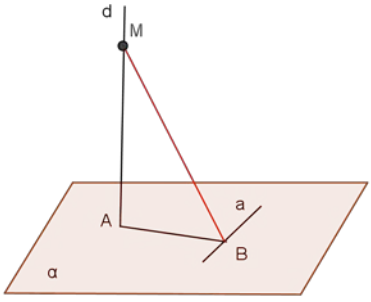
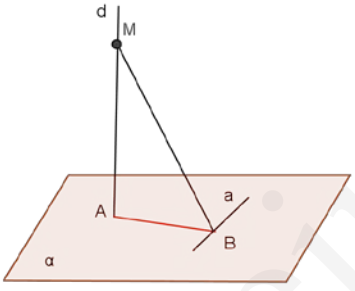
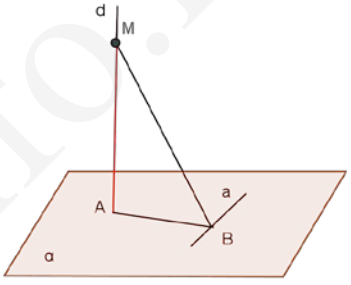
$Daca\ m(\widehat{\alpha,\beta}) = 90^o \Rightarrow \alpha \perp \beta$

PLANE PERPENDICULARE

$$\left.\begin{array}{l}a \perp \beta \\ a \subset \alpha\end{array}\right\} \Rightarrow \alpha \perp \beta$$

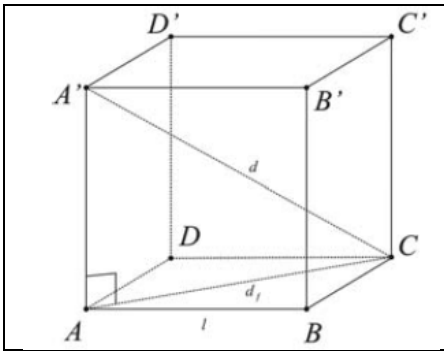


TEOREMA CELOR TREI PERPENDICULARE

Teorema directă	Teorema reciproca 1	Teorema recoproca 2
$\left.\begin{array}{l} d \perp \alpha \\ AB \perp a \\ AB, a \subset \alpha \end{array}\right\} \Rightarrow d \perp a$	$\left.\begin{array}{l} d \perp \alpha \\ MB \perp a \\ AB, a \subset \alpha \end{array}\right\} \Rightarrow AB \perp a$	$\left.\begin{array}{l} d \perp AB \\ AB \perp a \\ MB \perp a \\ AB, a \subset \alpha \end{array}\right\} \Rightarrow d \perp \alpha$
		

POLIEDRE

1. Cubul



$A_l = 4l^2$

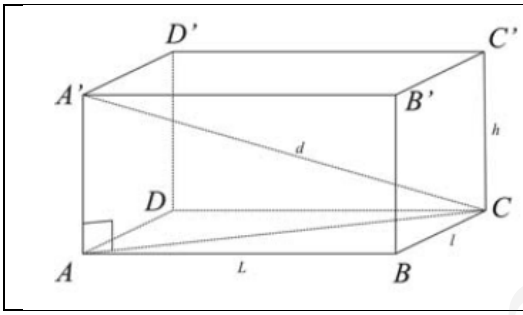
$A_t = 6l^2$

$V = l^3$

$d_{cub} = l\sqrt{3}$

$d_{patrat} = l\sqrt{2}$

2. Paralelipipedul dreptunghic



$A_l = P_b \cdot h$

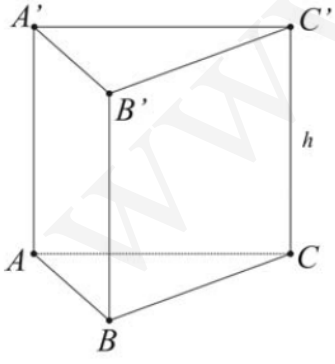
$A_t = 2(L \cdot l + L \cdot h + l \cdot h)$

$V = L \cdot l \cdot h$

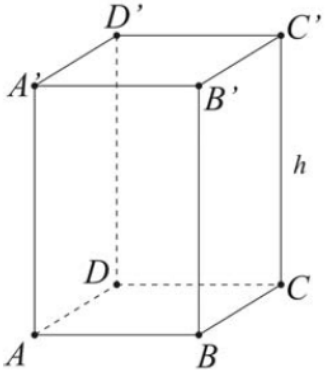
$d_{paralelipiped\ dr} = \sqrt{L^2 + l^2 + h^2}$

3. Prisma

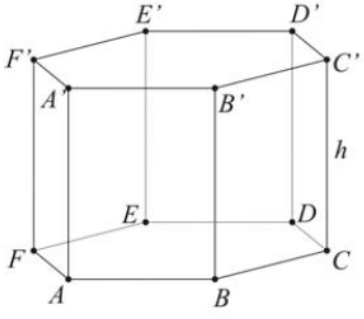
Prisma triunghiulară ragulată



Prisma patrulateră regulată



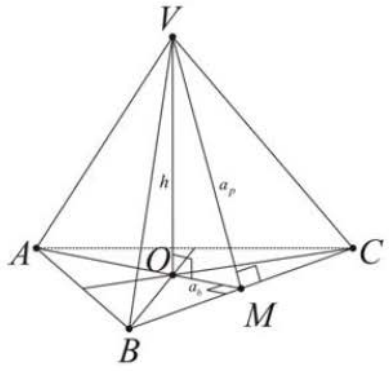
Prisma hexagonală regulată



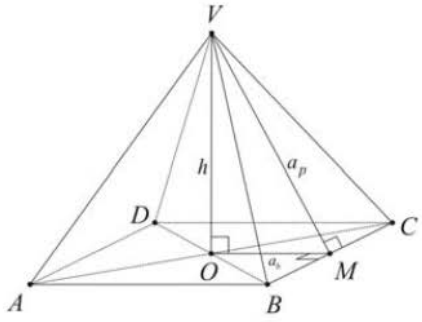
$A_l = P_b \cdot h$	$A_t = A_l + 2A_b$	$V = A_b \cdot h$

4. Piramida

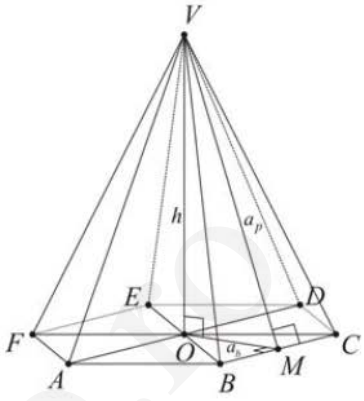
Prisma triunghiulară ragulată



Prisma patrulateră regulată



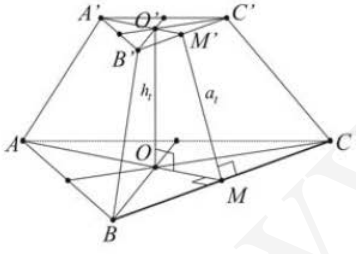
Prisma hexagonală regulată



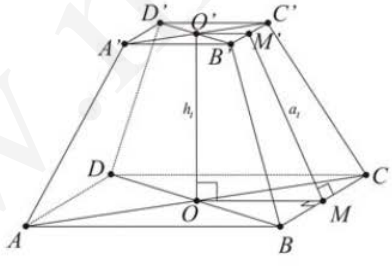
$A_l = \frac{P_b \cdot a_p}{2}$	$A_t = A_l + A_b$	$V = \frac{A_b \cdot h}{3}$

5. Trunchiul de piramidă (*)

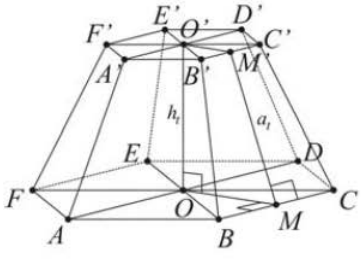
Trunchiul de piramidă triunghiulară ragulată



Trunchiul de piramidă patrulatera regulată



Trunchiul de piramidă hexagonală regulată



$A_l = \frac{(P_B + P_b) \cdot a_t}{2}$	$A_t = A_l + A_b + A_B$	$V = \frac{h_t}{3}(A_B + A_b + \sqrt{A_B \cdot A_b})$

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