

Barem de corectare OLM 2023 Clasa a VI-a

P1 – autor b) Lucian Dragomir - Supliment GM 10/2022

a) $\text{card}A = 2^{2023} - 2^{2021} = 2^{2021} \cdot (2^2 - 1) = 2^{2018} \cdot 2^3 \cdot 3$	1p
$\text{card}B = 3^{2021} - 3^{2019} = 3^{2019} \cdot (3^2 - 1) = 3^{2018} \cdot 3 \cdot 2^3$	1p
$2^{2018} < 3^{2018} \Rightarrow \text{card}A < \text{card}B$	1p
b) $8 \in A \Rightarrow 2 \in A \Rightarrow 2 \cdot 5 + 3 = 13 \in A$	1p
$8 \in A \Rightarrow 8 \cdot 5 + 3 = 43 \in A$; $8 \in A \Rightarrow 4 \in A \Rightarrow 4 \cdot 5 + 3 = 23 \in A$	1p
$13 \in A \Rightarrow 5 \cdot 13 + 3 = 68 = 4 \cdot 17 \in A \Rightarrow 2 \cdot 17 = 34 \in A \Rightarrow 5 \cdot 34 + 3 = 173 \in A$	2p

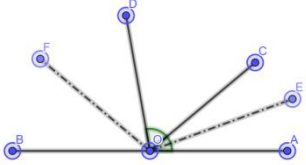
P2

$17x + 12y = 5z \mid +5y \Rightarrow 17(x+y) = 5(z+y) \xRightarrow{(2,5)=1} (x+y):5, (y+z):17$	3p
$17x + 12y = 5z \mid +5x \Rightarrow 2 \cdot (11x+6y) = 5 \cdot (z+x) \xRightarrow{(2,5)=1} (x+z):2$	3p
$(x+y) \cdot (y+z) \cdot (z+x) : 5 \cdot 17 \cdot 2 = 170$	1p

P3

$a+b+c+d=360$	1p
$\frac{a}{a+1} = \frac{b}{b+2} = \frac{c}{c+3} = \frac{d}{d+4} = \frac{a+b+c+d}{a+b+c+d+10} = \frac{36}{37}$	2p
$\frac{a}{a+1} = \frac{36}{37} \Rightarrow a=36$; $\frac{b}{b+2} = \frac{36}{37} \Rightarrow b=72$	2p
$\frac{c}{c+3} = \frac{36}{37} \Rightarrow c=108$; $\frac{d}{d+4} = \frac{36}{37} \Rightarrow d=144$	2p

P4 – autor Relu Ciupea - GM 9/2022

	1p
a) Realizarea unei figuri corespunzătoare	
$\sphericalangle AOE + 120^\circ + \sphericalangle FOB = 180^\circ \Rightarrow \sphericalangle AOE + \sphericalangle FOB = 60^\circ = \sphericalangle EOC + \sphericalangle DOF$ (OE, OF bisectoare)	1p
$\sphericalangle COD = 120^\circ - (\sphericalangle EOC + \sphericalangle DOF) = 60^\circ$	1p
b) Dacă $OM \in \text{Int} \sphericalangle DOF$: $\sphericalangle DOF - 10^\circ + 60^\circ = 90^\circ \Rightarrow \sphericalangle DOF = 40^\circ \Rightarrow \sphericalangle BOD = 80^\circ$	1p
$\sphericalangle DOF = 40^\circ \Rightarrow \sphericalangle EOC = 20^\circ \Rightarrow \sphericalangle AOC = 40^\circ$	1p
Dacă $OM \in \text{Int} \sphericalangle FOB$: $\sphericalangle DOF + 10^\circ + 60^\circ = 90^\circ \Rightarrow \sphericalangle DOF = 20^\circ \Rightarrow \sphericalangle BOD = 40^\circ$	1p
$\sphericalangle DOF = 20^\circ \Rightarrow \sphericalangle EOC = 40^\circ \Rightarrow \sphericalangle AOC = 80^\circ$	1p