

OLIMPIADA DE MATEMATICĂ

ETAPA LOCALĂ - 16 februarie 2013

Clasa a VI-a

VARIANTA 3

BAREM DE CORECTARE:

- 1) $B = 111(a+b+c) = 3 \cdot 37(a+b+c)$1p
 $51/B \Rightarrow 3 \cdot 17/3 \cdot 37(a+b+c) \Rightarrow 17/(a+b+c) \Rightarrow a+b+c = 17$2p
 $3/A \Rightarrow A = 3(333a+33b+3c) + (a+b+2c) \Rightarrow 3/(a+b+2c)$2p
 $3/(a+17) \Rightarrow c \in \{1,4,7\}$, $4/A \Rightarrow c = 4$1p
 $a+b = 13 \Rightarrow (a;b) \in \{(4,9), (5,8), (6,7), (7,6), (8,5), (9,4)\} \Rightarrow$
 $\overline{abcc} \in \{4944, 5844, 6744, 7644, 8544, 9444\}$1p
- 2) a) $A = \text{suma de 4 numere impare} \Rightarrow A : 2$ 1p
 $A = (6-1)^n + (6+1)^n + (6 \cdot 2 - 1)^n + (6 \cdot 3 + 1)^n = M_3$ 2p
 $A : 2$ si $A : 3 \Rightarrow A : 6$ 1p
 b) Daca p prim, $p \neq 2 \Rightarrow p$ impar $\Rightarrow p^2 + 1 = \text{par} \neq \text{prim}$ 2p
 Daca $p = 2 \Rightarrow$ numerele 5, 7, 13, 19 prime1p
- 3) $a+10b+6c=62$, a, b, c numere prime $\Rightarrow a=2$ $b=3$ $c=5$ 2p
 $2 \cdot m(\sphericalangle COD) = 3 \cdot m(\sphericalangle AOC) \Rightarrow m(\sphericalangle AOC) = \frac{2 \cdot m(\sphericalangle COD)}{3}$
 $3 \cdot m(\sphericalangle BOC) = 5 \cdot m(\sphericalangle COC) \Rightarrow m(\sphericalangle BOC) = \frac{5 \cdot m(\sphericalangle COD)}{3}$ 2p
 $m(\sphericalangle AOC) + m(\sphericalangle COB) = 140^\circ$; $\frac{7 \cdot m(\sphericalangle COD)}{3} = 140^\circ$; $m(\sphericalangle COB) = 60^\circ$ 2p
 $m(\sphericalangle AOC) = 40^\circ$; $m(\sphericalangle COB) = 100^\circ$ 1p
- 4) a) $\triangle ABN \equiv \triangle ACM (L.U.L) \Rightarrow [BN] \equiv [CM]$ 3p
 b) $\triangle MBP \equiv \triangle NCP (U.L.U.) \Rightarrow [BP] \equiv [CP]$ 2p
 $\triangle ABP \equiv \triangle ACP (L.L.L.) \Rightarrow [AP]$ este bisectoarea unghiului BAC.....2p