

Barem de corectare

Problema 1.

- a) Aducere la numitor comun.....2p
Finalizare.....1p
b) Observarea regulii de formare a fracțiilor.....2p
 $\frac{1}{3} - \frac{1}{2^{n+1}} = \frac{2}{3} \cdot \frac{2^{2014}-1}{2^{2015}+1}$1p
 $n = 2014$1p

Problema 2.

- $p \in \{4k+1; 4k+2; 4k+3\}$2p
Dacă $p = 4k+1 \Rightarrow U(A) = 5 \Rightarrow A : 5$2p
 $p = 4k+2 \Rightarrow U(A) = 5 \Rightarrow A : 5$2p
 $p = 4k+3 \Rightarrow U(A) = 5 \Rightarrow A : 5$2p

Problema 3.

- Desen.....1p
 $\Delta C_1DD_1 \equiv \Delta A_1BB_1 \Rightarrow (C_1D_1) \equiv (A_1B_1)$1p
 $\Delta AD_1A_1 \equiv \Delta CB_1C_1 \Rightarrow (A_1D_1) \equiv (B_1C_1)$1p
 $A_1B_1C_1D_1$ este paralelogram.....1p
b) $AC \cap BD = \{O\}$ mijlocul diagonalelor.....0,5p
 $A_1C_1 \cap B_1D_1 = \{Q\}$ mijlocul diagonalelor.....0,5p
 $A_1A \parallel CC_1, (A_1A) \equiv (CC_1) \Rightarrow AC_1A_1C$ paralelogram.....1p
 $AC \cap A_1C_1 = \{O\} = \{Q\}$1p

Problema 4.

- Desen.....1p
Fie P mijlocul (ED).
 $MP \parallel CE, MP = \frac{CE}{2}, NP \parallel AD, NP = \frac{AD}{2}, CE = AD \Rightarrow MP = NP \Rightarrow \hat{M} \equiv \hat{N}$2p
 $MP \parallel AC, NP \parallel AB \Rightarrow m(\widehat{MPN}) = 180^\circ - m(\hat{A}) \Rightarrow m(\hat{M}) = m(\hat{N}) = \frac{m(\hat{A})}{2}$2p
 $MN \perp BC$2p