

BAREM DE CORECTARE
SIMULARE 1 - 18.10 .2023
CLASA a 8-a

SUBIECTUL I

1. C
2. B
3. C
4. A
5. A
6. A

SUBIECTUL II

1. B
2. C
3. A
4. B
5. A
6. C

SUBIECTUL III

1. a) $\left| \frac{2x-1}{3} \right| \leq 3 \Leftrightarrow -3 \leq \frac{2x-1}{3} \leq 3 \dots\dots\dots 1p$
 $A = [-4; 5] \dots\dots\dots 1p$
 b) $B = \{-3; -2; -1; 0; 1; 2; 3; 4\} \dots\dots\dots 2p$
 $A \cap B = B \Rightarrow \text{card}(A \cap B) = 8 \dots\dots\dots 1p$
2. a) Presupunem că ar putea fi 51 de elevi, $51 - 2 = 49 \dots\dots\dots 1p$
 $3 \nmid 49 \Rightarrow$ Nu pot fi 51 de elevi $\dots\dots\dots 1p$
 b) $b = \text{nr. de bănci}, e = \text{nr. de elevi}$

$$\begin{cases} 2(b-8) + 1 = e \\ 3(b-16) + 2 = e \end{cases} \Leftrightarrow 2(b-8) + 1 = 3(b-16) + 2 \dots\dots\dots 2p$$

 $b = 31 \text{ (nr. de bănci)} \dots\dots\dots 1p$
3. a) $a = 10 \left(2\sqrt{10} - \frac{10}{\sqrt{10}} \right) \cdot 2\sqrt{5} = \frac{10}{\sqrt{10}} \cdot 2\sqrt{5} = \frac{20}{\sqrt{2}} \dots\dots\dots 1p$
 $a = 10\sqrt{2} \dots\dots\dots 1p$
 b) $b = \sqrt{5} \dots\dots\dots 2p$
 $x = a\sqrt{2} + b\sqrt{5} = 25 = 5^2 \rightarrow p.p. \dots\dots\dots 1p$
4. a) $\triangle AED \equiv \triangle AEM \text{ (cazul C.C.)} \dots\dots\dots 1p$
 $\Rightarrow AD \equiv AM \dots\dots\dots 1p$
 b) $A_{\triangle ADC} = \frac{AD \cdot DC}{2} = 24 \text{ cm}^2 \dots\dots\dots 1p$
 $\triangle DEC \sim \triangle ADC \text{ (cazul u.u.)} \Rightarrow \frac{DC}{AC} = \frac{6}{10} = \frac{3}{5} \dots\dots\dots 1p$
 $\frac{A_{\triangle DEC}}{A_{\triangle ADC}} = \left(\frac{3}{5} \right)^2 \Leftrightarrow \frac{A_{\triangle DEC}}{24} = \frac{9}{25} \Rightarrow A_{\triangle DEC} = \frac{216}{25} = 8,64 \text{ cm}^2 \dots\dots\dots 1p$
5. a) $\sphericalangle AMD = \sphericalangle BMC = 15^\circ \dots\dots\dots 1p$
 $\sphericalangle AMB = 60^\circ - 15^\circ - 15^\circ = 30^\circ \dots\dots\dots 1p$
 b) Fie $MP \perp AB, P \in AB$ și $MP \cap DC = \{S\}$.
 $MP = MS + SP = 3\sqrt{3} + 6 \dots\dots\dots 1p$
 $\triangle BCN \sim \triangle MPB \text{ (cazul u.u.)} \Rightarrow \frac{BC}{MP} = \frac{BN}{MB} = \frac{CN}{PB} \dots\dots\dots 1p$
 $\frac{6}{6+3\sqrt{3}} = \frac{CN}{3} \Rightarrow CN = \frac{18}{3(2+\sqrt{3})} = \frac{6}{2+\sqrt{3}} = 6(2-\sqrt{3}) \dots\dots\dots 1p$
6. a) $(ABN) = (ABC) \dots\dots\dots 1p$
 $(ABN) \cap (MAC) = AC \dots\dots\dots 1p$
 b) $\triangle MBC$ isoscel, N mijl lui $BC \Rightarrow MN \perp BC$ Cu T. Pitagora în $\triangle MNC \Rightarrow NC = 2\sqrt{3} \text{ cm} \Rightarrow BC = 4\sqrt{3} \dots\dots\dots 1p$
 $\triangle ABC$ echilateral, $BC = 4\sqrt{3} \Rightarrow AN = 6 \text{ cm} \dots\dots\dots 1p$
 $P_{\triangle MAN} = MA + AN + MN = 3\sqrt{2} + 3\sqrt{2} + 6 = 6\sqrt{2} + 6$
 $6\sqrt{2} + 6 < 15 \Leftrightarrow 6\sqrt{2} < 9 \Leftrightarrow 2\sqrt{2} < 3 \Leftrightarrow \sqrt{8} < \sqrt{9} \Rightarrow P_{\triangle MAM} < 15 \text{ cm} \dots\dots\dots 1p$