

Cazul II

a)  $m(\sphericalangle MON) = m(\sphericalangle MOB) - m(\sphericalangle NOB) = x \Rightarrow x = 40^\circ, m(\sphericalangle AOB) = 120^\circ,$   
 $m(\sphericalangle BOC) = 40^\circ, m(\sphericalangle AOC) = 80^\circ$  .....1,50p

b)  $m(\sphericalangle AOB') = 60^\circ$  .....0,5p    **Total=7p**

BAREM DE CORECTARE

Clasa aVII-a

**Subiectul 1.**

$\frac{100}{1+0+0} = 100$  (intuirea valorii maxime) 2 puncte

Presupunem prin reducere la absurd că

$\frac{\overline{abc}}{a+b+c} > 100 \Rightarrow \overline{abc} > 100(a+b+c) \Rightarrow 100a+10b+c > 100a+100b+100c \Rightarrow$

$\Rightarrow 0 > 90b+99c$  (fals)  $\Rightarrow \frac{\overline{abc}}{a+b+c} \leq 100 \Rightarrow$  valoarea maximă este 100. 5 puncte

**Subiectul 2.**

$\frac{360+x}{x} \in \mathbb{N}$ . 1 punct

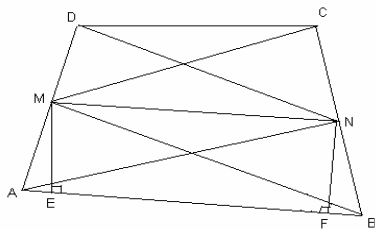
$x|360$  2 puncte

$\text{card}(M \cap \mathbb{N}) = \text{nr. divizorilor lui } 360$  2 puncte

$360 = 2^3 \cdot 3^2 \cdot 5$  1 punct

Nr. divizorilor lui 360 este 24  $\Rightarrow \mathbb{R} : 24$  de elemente 1 punct

**Subiectul 3.**



Directa:

$\sphericalangle AND = \sphericalangle BMC \Rightarrow \sphericalangle ANM = \sphericalangle BMN$  (1) 1 punct

$ME \perp AB, NF \perp AB, (1) \Rightarrow ME = NF, ME \parallel NF \Rightarrow MEFN$  paralelogram  $\Rightarrow MN \parallel AB$  1 punct

Analog se arată că  $MN \parallel CD \Rightarrow AB \parallel CD$  1 punct

Reciproca:  $AB \parallel CD \Rightarrow ABCD$  trapez

(MN)- linie mijlocie  $\Rightarrow MN \parallel AB$

1 punct

$ME \parallel NF \Rightarrow MEFN$  paralelogram  $\Rightarrow ME = NF \Rightarrow A_{AMB} = A_{ANB} \Rightarrow A_{MNB} = A_{AMN}$

1 punct

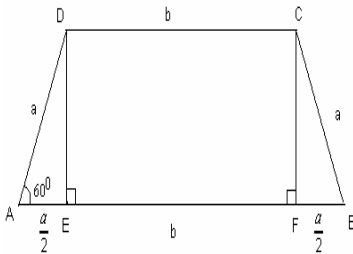
Analog se arată că  $MN \parallel CD \Rightarrow A_{DMN} = A_{MCN}$

1 punct

Deci,  $A_{AND} = A_{BMC}$

1 punct

### Subiectul 4 .



$$\left. \begin{array}{l} AD = a \\ A = 60^\circ \\ DE \perp AB \end{array} \right\} \Rightarrow AE = \frac{a}{2}$$

$$CF \perp AB \Rightarrow FB = \frac{a}{2}$$

1 punct

$$EF = CD = b$$

1 punct

$$P_{ABCD} = 3a + 2b$$

1 punct

$$3a + 2b = 38 \Rightarrow \left. \begin{array}{l} a:2 \\ b \neq 0 \end{array} \right\} \Rightarrow a \in \{2, 4, 6, \dots, 12\}$$

2 punct

Prezentarea fiecărui caz în parte

2 puncte

### BAREM DE CORECTARE

#### Clasa aVIII-a

### Subiectul 1.

a) Pentru fiecare caz câte **0,5p = 3p**

adica: c1)  $x < -1 \Rightarrow x^3 < x < -1 < \frac{1}{x} < 1 < x^2 \dots \mathbf{0,5p}$

c2)  $x = -1 \Rightarrow x^3 = -1 = x = \frac{1}{x} < 1 < x^2 \dots \mathbf{0,5p}$

c3)  $x \in (-1, 0) \Rightarrow \frac{1}{x} < -1 < x < x^3 < x^2 < 1 \dots \mathbf{0,5p}$

c4)  $x = 1 \Rightarrow -1 < \frac{1}{x} = x = 1 = x^2 = x^3 \dots \mathbf{0,5p}$

c5)  $x \in (0, 1) \Rightarrow -1 < x^3 < x^2 < x < 1 < \frac{1}{x} \dots \mathbf{0,5p}$