

Prezenta lucrare conține \_\_\_\_\_ pagini

**EVALUAREA NAȚIONALĂ PENTRU  
ABSOLVENȚII CLASEI a VIII-a**

**Anul școlar 2020 – 2021**

**Matematică**

**Numele:** .....

**Inițiala prenumelui tatălui:** .....

**Prenumele:** .....

**Școala de proveniență:** .....

**Centrul de examen:** .....

**Localitatea:** .....

**Județul:** .....

| Nume și prenume asistent | Semnătura |
|--------------------------|-----------|
|                          |           |
|                          |           |
|                          |           |
|                          |           |

| A | COMISIA DE EVALUARE | NOTA (CIFRE ȘI LITERE) | NUMELE ȘI PRENUMELE PROFESORULUI | SEMNĂTURA |
|---|---------------------|------------------------|----------------------------------|-----------|
|   | EVALUATOR I         |                        |                                  |           |
|   | EVALUATOR II        |                        |                                  |           |
|   | EVALUATOR III       |                        |                                  |           |
|   | EVALUATOR IV        |                        |                                  |           |
|   | NOTA FINALĂ         |                        |                                  |           |

| B | COMISIA DE EVALUARE | NOTA (CIFRE ȘI LITERE) | NUMELE ȘI PRENUMELE PROFESORULUI | SEMNĂTURA |
|---|---------------------|------------------------|----------------------------------|-----------|
|   | EVALUATOR I         |                        |                                  |           |
|   | EVALUATOR II        |                        |                                  |           |
|   | EVALUATOR III       |                        |                                  |           |
|   | EVALUATOR IV        |                        |                                  |           |
|   | NOTA FINALĂ         |                        |                                  |           |

| C | COMISIA DE EVALUARE | NOTA (CIFRE ȘI LITERE) | NUMELE ȘI PRENUMELE PROFESORULUI | SEMNĂTURA |
|---|---------------------|------------------------|----------------------------------|-----------|
|   | EVALUATOR I         |                        |                                  |           |
|   | EVALUATOR II        |                        |                                  |           |
|   | EVALUATOR III       |                        |                                  |           |
|   | EVALUATOR IV        |                        |                                  |           |
|   | NOTA FINALĂ         |                        |                                  |           |

- Toate subiectele sunt obligatorii.
- Se acordă zece puncte din oficiu.
- Timpul de lucru efectiv este de două ore.

## SUBIECTUL I

*Încercuiește litera corespunzătoare răspunsului corect.*

**(30 de puncte)**

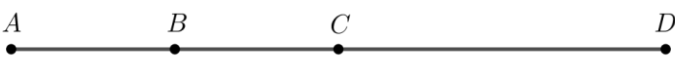
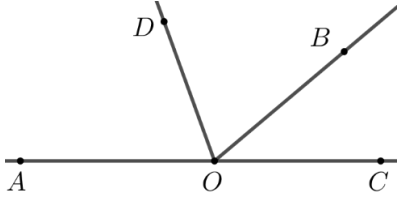
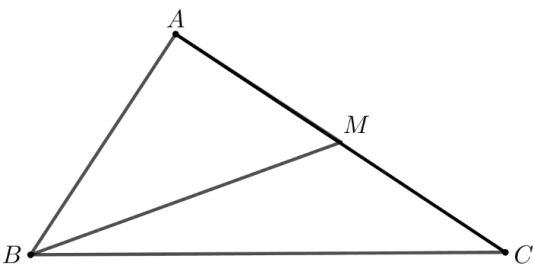
|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |      |       |             |       |      |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|-------------|-------|------|
| 5p          | 1. Dintre numerele 15 , 17 , 25 și 30 , numărul divizibil cu 10 este:<br>a) 15<br>b) 17<br>c) 25<br>d) 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |      |       |             |       |      |
| 5p          | 2. Un obiect costă 100 de lei. După o scumpire cu 10% , noul preț al obiectului este egal cu:<br>a) 10 lei<br>b) 90 de lei<br>c) 100 de lei<br>d) 110 lei                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |      |       |             |       |      |
| 5p          | 3. Temperaturile aerului măsurate de Maria, într-o zi, la ora 8:00 și la ora 12:00 , sunt înregistrate în tabelul de mai jos.<br><table><tr><td>Ora</td><td>8:00</td><td>12:00</td></tr><tr><td>Temperatura</td><td>-3° C</td><td>5° C</td></tr></table> <p>Conform informațiilor din tabel, temperatura măsurată la ora 12:00 este mai mare decât temperatura măsurată la ora 8:00 cu:</p> <p>a) 8° C<br/>b) 2° C<br/>c) -2° C<br/>d) -8° C</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ora   | 8:00 | 12:00 | Temperatura | -3° C | 5° C |
| Ora         | 8:00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 12:00 |      |       |             |       |      |
| Temperatura | -3° C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5° C  |      |       |             |       |      |
| 5p          | 4. Frația subunitară din mulțimea $A = \left\{ \frac{44}{10}, \frac{5}{4}, \frac{4}{5}, 4 \right\}$ este:<br><p>a) <math>\frac{4}{5}</math>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          </p> |       |      |       |             |       |      |

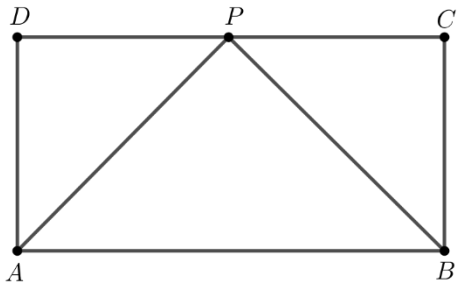
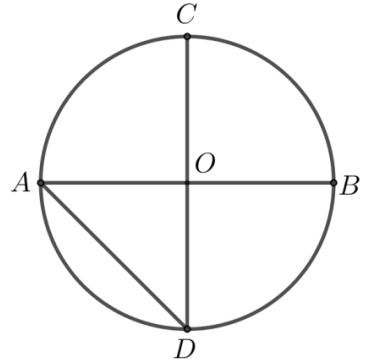
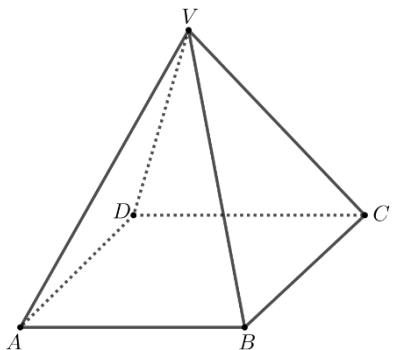
|    |                                                                                                                                                                                                                           |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5p | <p>5. Rezultatul calculului <math>2\sqrt{2} - 6\sqrt{2} + 3\sqrt{2}</math> este egal cu:</p> <p>a) <math>11\sqrt{2}</math><br/>b) <math>-4\sqrt{2}</math><br/>c) <math>-\sqrt{6}</math><br/>d) <math>-\sqrt{2}</math></p> |
| 5p | <p>6. Bunica lui Andrei are în curte 10 găini și de două ori mai multe rațe. Andrei afirmă că: „Bunica are în curte 10 găini și 20 de rațe.”. Afirmatia lui Andrei este:</p> <p>a) adevărată<br/>b) falsă</p>             |

## SUBIECTUL al II-lea

Încercuiește litera corespunzătoare răspunsului corect.

(30 de puncte)

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5p | <p>1. În figura alăturată sunt reprezentate punctele distincte <math>A</math>, <math>B</math>, <math>C</math> și <math>D</math>. Punctul <math>B</math> este mijlocul segmentului <math>AC</math> și punctul <math>C</math> este mijlocul segmentului <math>AD</math>. Valoarea raportului <math>\frac{BD}{AB}</math> este egală cu:</p> <p>a) 3<br/>b) 2<br/>c) 0,75<br/>d) 0,50</p>                                                            |
| 5p | <p>2. În figura alăturată sunt reprezentate unghiurile <math>AOB</math> și <math>BOC</math>, adiacente suplementare, semidreapta <math>OD</math> este bisectoarea unghiului <math>AOB</math> și măsura unghiului <math>BOC</math> este de <math>40^\circ</math>. Măsura unghiului <math>BOD</math> este egală cu:</p> <p>a) <math>70^\circ</math><br/>b) <math>60^\circ</math><br/>c) <math>40^\circ</math><br/>d) <math>30^\circ</math></p>  |
| 5p | <p>3. În figura alăturată este reprezentat triunghiul <math>ABC</math>, dreptunghic în <math>A</math>, cu <math>AB = 4</math> cm și <math>AC = 6</math> cm. Punctul <math>M</math> este mijlocul laturii <math>AC</math>. Lungimea segmentului <math>BM</math> este egală cu:</p> <p>a) 3 cm<br/>b) 4 cm<br/>c) 5 cm<br/>d) 6 cm</p>                                                                                                           |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p><b>5p</b></p> | <p><b>4.</b> În figura alăturată este reprezentat dreptunghiul <math>ABCD</math>, cu <math>AB = 6</math> cm și <math>BC = 3</math> cm. Bisectoarea unghiului <math>BAD</math> intersectează latura <math>DC</math> în punctul <math>P</math>. Măsura unghiului <math>APB</math> este egală cu:</p> <p>a) <math>135^\circ</math><br/>b) <math>90^\circ</math><br/>c) <math>60^\circ</math><br/>d) <math>45^\circ</math></p> |   |
| <p><b>5p</b></p> | <p><b>5.</b> În figura alăturată este reprezentat cercul de centru <math>O</math> și raza de 2 cm, unde <math>AB</math> și <math>CD</math> sunt diametre perpendiculare. Distanța de la punctul <math>C</math> la dreapta <math>AD</math> este egală cu:</p> <p>a) 2 cm<br/>b) <math>2\sqrt{2}</math> cm<br/>c) <math>2\sqrt{3}</math> cm<br/>d) 4 cm</p>                                                                  |   |
| <p><b>5p</b></p> | <p><b>6.</b> În figura alăturată este reprezentată o piramidă patrulateră regulată <math>VABCD</math>, cu baza <math>ABCD</math> și <math>VA = AB = 4</math> cm. Aria laterală a piramidei <math>VABCD</math> este egală cu:</p> <p>a) <math>16 \text{ cm}^2</math><br/>b) <math>16\sqrt{2} \text{ cm}^2</math><br/>c) <math>16\sqrt{3} \text{ cm}^2</math><br/>d) <math>32 \text{ cm}^2</math></p>                        |  |

### SUBIECTUL al III-lea

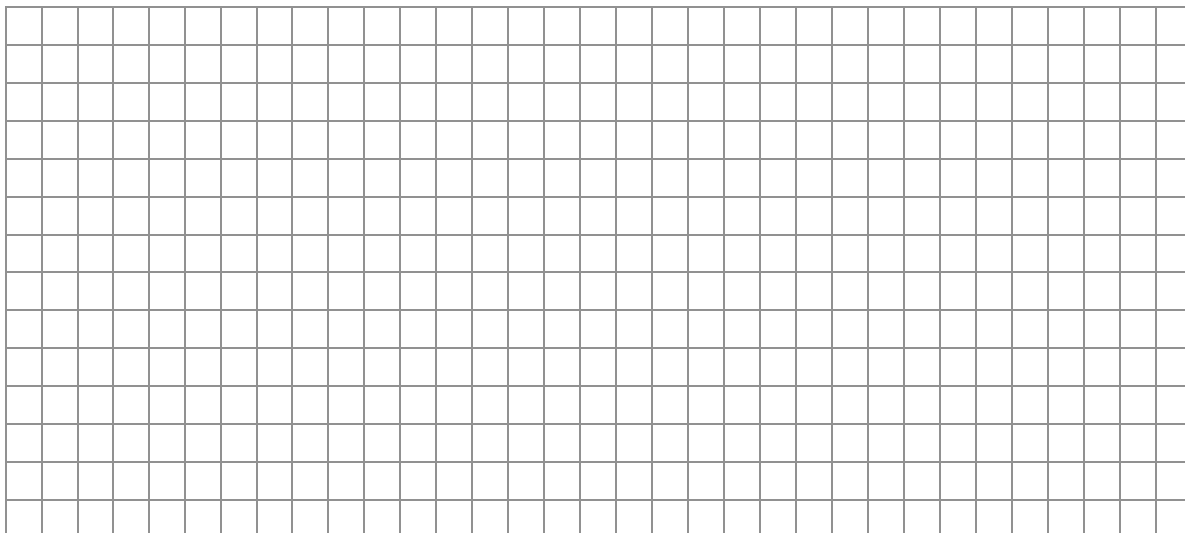
Scrive rezolvările complete.

(30 de puncte)

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>5p</b></p> | <p><b>1.</b> Un turist a parcurs un traseu în trei zile. În a doua zi a parcurs cu 6 km mai puțin decât în prima zi, iar în a treia zi 50% din distanța parcursă în primele două zile.</p> <p><b>(2p) a)</b> Este posibil ca distanța parcursă de turist în primele două zile să reprezinte 50% din lungimea întregului traseu? Justifică răspunsul dat.</p> <div style="border: 1px solid black; height: 217px; width: 747px; margin-top: 10px;"></div> |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

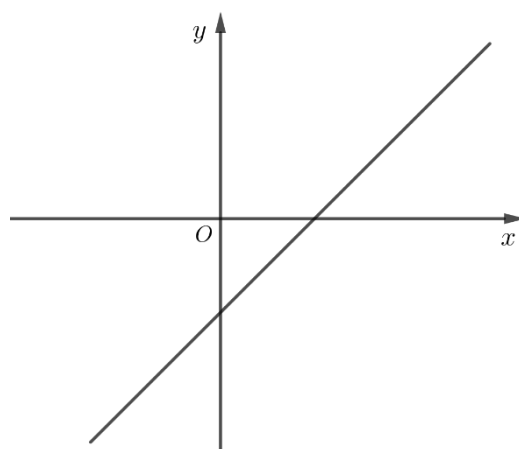
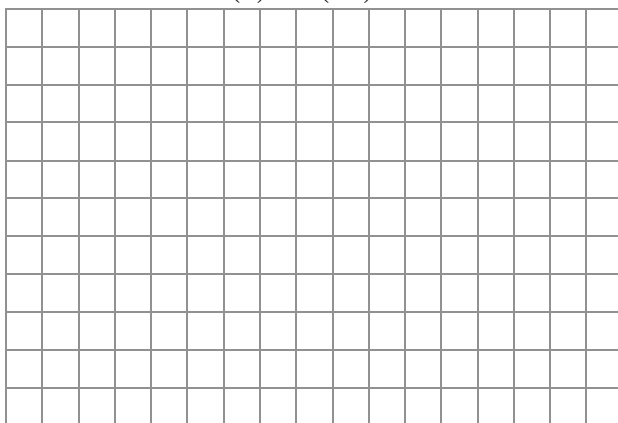
|           |                                                                                                                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5p</b> | <p><b>(3p) b)</b> Știind că turistul a parcurs în a treia zi 9 km, determină lungimea traseului parcurs în prima zi.</p>                                                                                                                     |
|           | <div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0; background: linear-gradient(to right, transparent 49%, #ccc 49% 51%, #ccc 51% 53%, transparent 53%); background-size: 20px 20px;"></div>                               |
|           | <p><b>2.</b> Se consideră expresia <math>E(x) = (2x-1)^2 - (2x-4)(x+2) + (x+3)^2</math>, unde <math>x</math> este număr real.</p> <p><b>(2p) a)</b> Arată că <math>E(x) = 3x^2 + 2x + 18</math>, pentru orice număr real <math>x</math>.</p> |
|           | <div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0; background: linear-gradient(to right, transparent 49%, #ccc 49% 51%, #ccc 51% 53%, transparent 53%); background-size: 20px 20px;"></div>                               |

**(3p) b)** Demonstrează că numărul natural  $A = E(n) + n$  este multiplu de 6, pentru orice număr natural  $n$ .

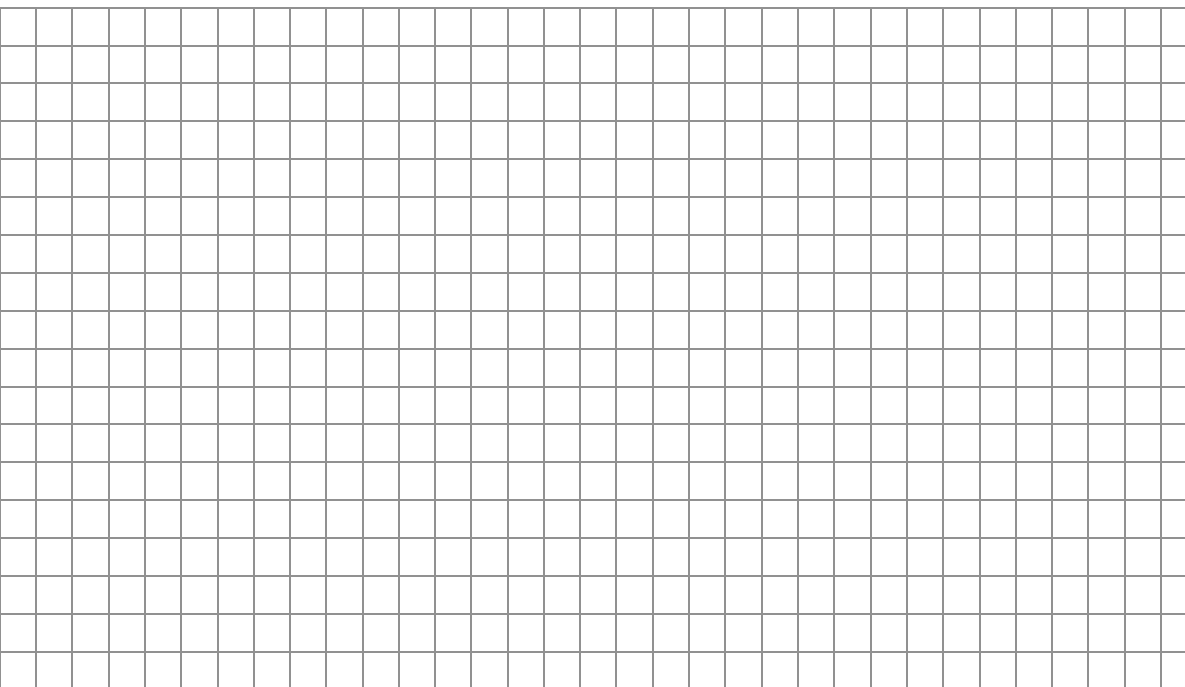


**5p** 3. Se consideră funcția  $f: \mathbb{R} \rightarrow \mathbb{R}$ ,  $f(x) = x - 2$ .

**(2p) a)** Arată că  $f(3) - f(-3) = 6$ .

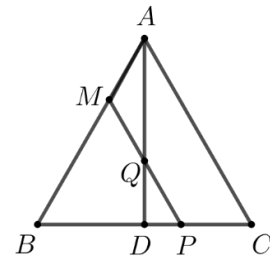


**(3p) b)** În sistemul de axe ortogonale  $xOy$ , determină distanța de la punctul  $C(-2, 0)$  la reprezentarea grafică a funcției  $f$ .

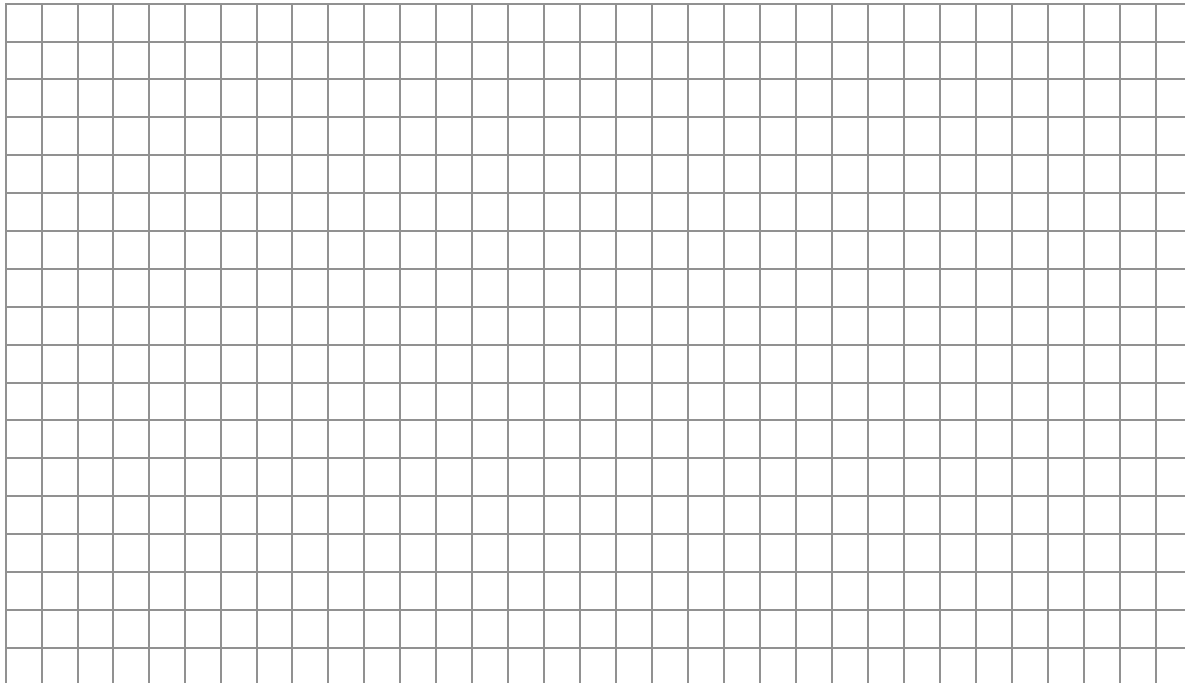


5p

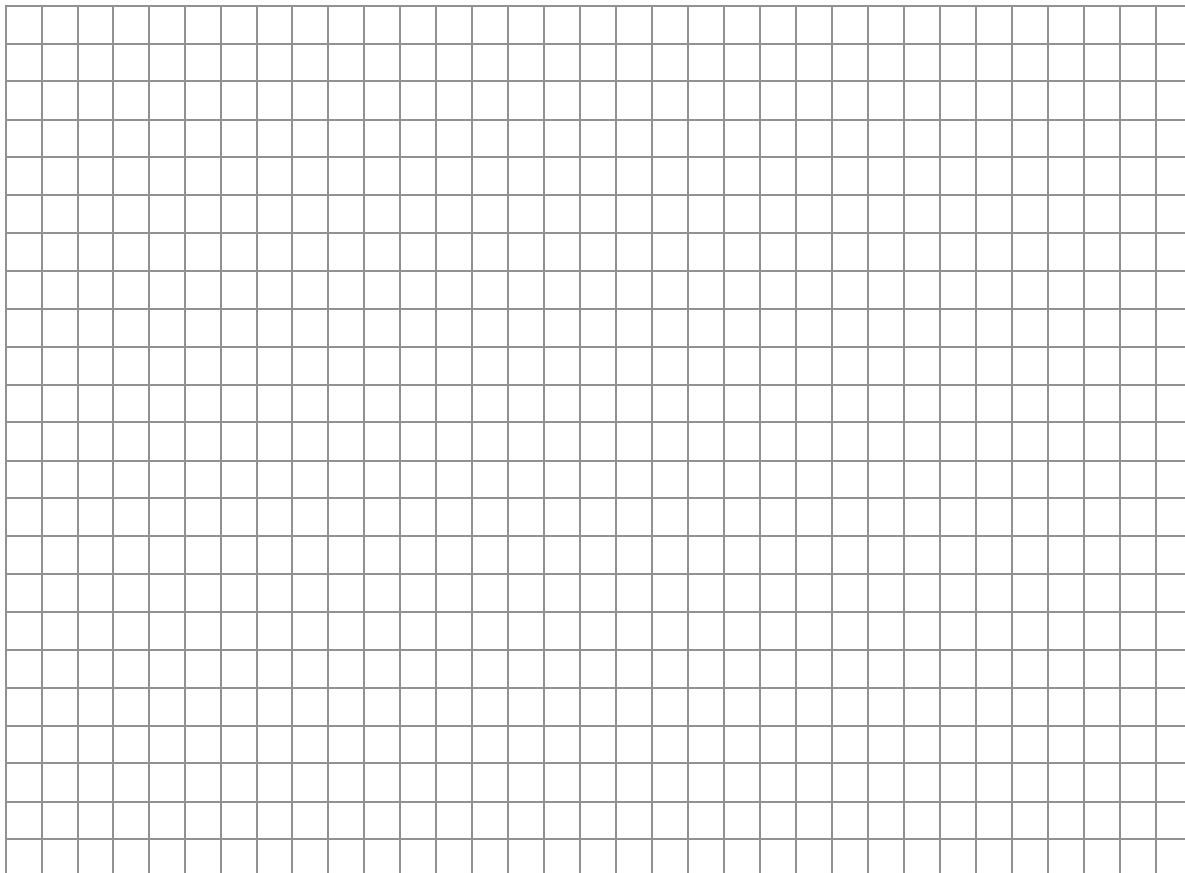
4. În figura alăturată este reprezentat triunghiul echilateral  $ABC$ , cu  $AB = 3$  cm și înălțimea  $AD$ , unde punctul  $D$  se află pe latura  $BC$ . Punctul  $M$  aparține laturii  $AB$ , astfel încât  $AM = 1$  cm. Paralela prin punctul  $M$  la dreapta  $AC$  intersectează dreapta  $AD$  în punctul  $Q$  și dreapta  $BC$  în punctul  $P$ .



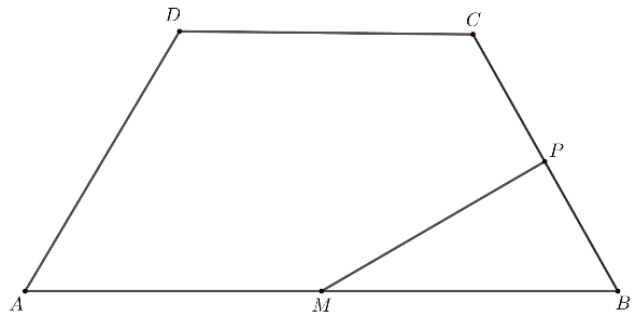
(2p) a) Arată că perimetrul triunghiului  $BMP$  este egal cu 6 cm.



(3p) b) Determină lungimea segmentului  $PQ$ .



**5.** Se consideră trapezul isoscel  $ABCD$ , cu  $AB \parallel CD$ , măsura unghiului  $ADC$  este egală cu  $120^\circ$  și  $AD = DC = 6$  cm. Dreapta  $MP$  este mediatoarea segmentului  $BC$ , unde punctul  $M$  aparține dreptei  $AB$  și punctul  $P$  aparține dreptei  $BC$ .



**(2p) a)** Arată că  $AB=12\text{cm}$ .

[illegible]

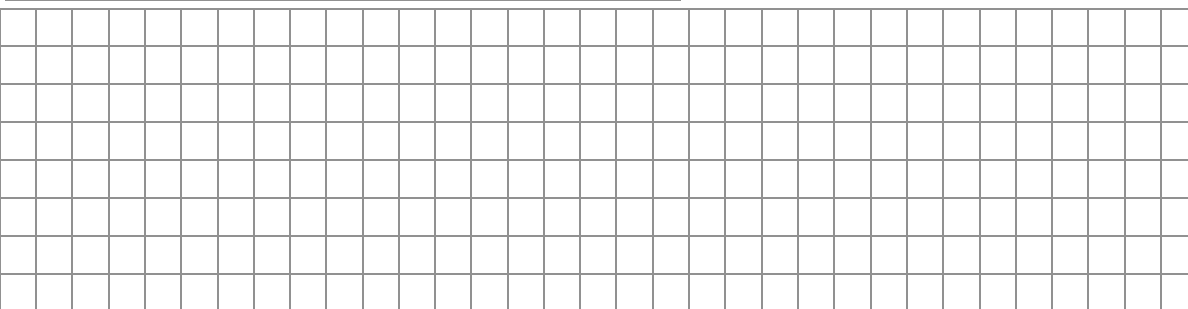
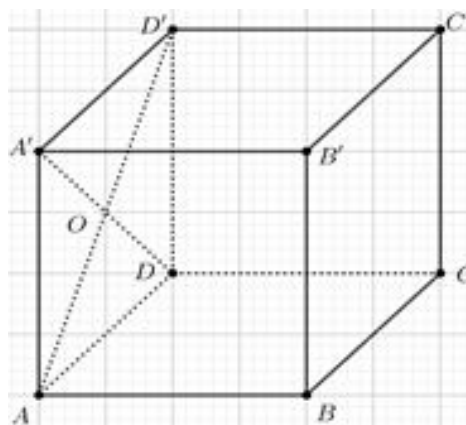
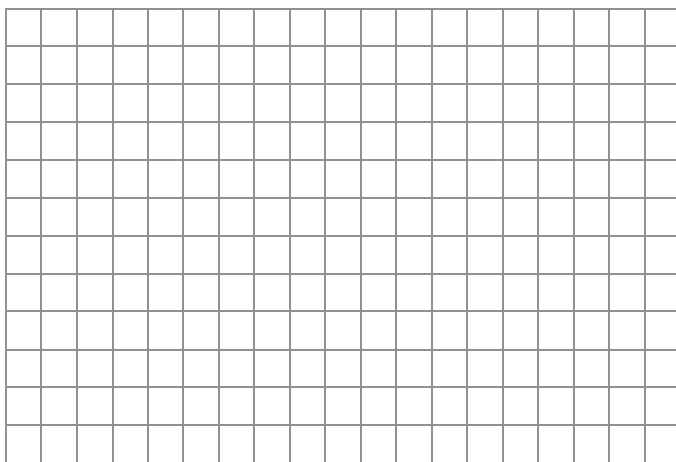
**(3p) b)** Demonstrează că dreptele  $DM$  și  $MP$  sunt perpendiculare.

[illegible]

5p

6. Se consideră cubul  $ABCD A' B' C' D'$ , cu  $AB = 6\sqrt{2}$  cm.

(2p) a) Arată că volumul cubului  $ABCD A' B' C' D'$  este egal cu  $432\sqrt{2}$  cm<sup>3</sup>.



(3p) b) Determină distanța de la punctul  $O$  la planul  $(BDD')$ , unde  $O$  este punctul de intersecție a dreptelor  $AD'$  și  $A'D$ .

