**Numele:** _____

**Prenumele:** _____

**Patronimicul:** _____

**Instituția de învățământ:**

_____

_____

**Localitatea:**

_____

**Raionul / Municipiul:**

_____

***MINISTERUL EDUCAȚIEI,
CULTURII ȘI CERCETĂRII
AL REPUBLICII MOLDOVA***

Agenția Națională pentru
Curriculum și Evaluare

## MATEMATICA (ÎN LIMBA ENGLEZĂ)

EXAMEN NAȚIONAL DE ABSOLVIRE A GIMNAZIULUI

SESIUNEA DE BAZĂ

06 iunie 2019
Timp alocat – 120 de minute

Rechizite și materiale permise: *pix cu cerneală albastră, creion, riglă, radieră.*

Instrucțiuni pentru candidat:

- Citește cu atenție fiecare item și efectuează operațiile solicitate.
- Lucrează independent.

## *Îți dorim mult succes!*

Numele și prenumele evaluatorului: _____ Punctaj total:_____

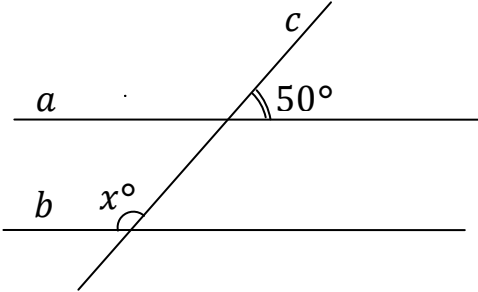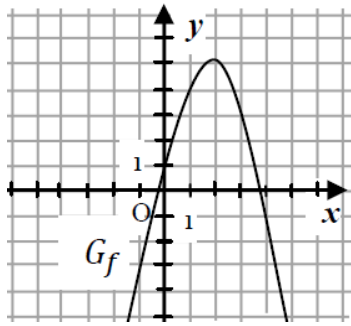## Annex

$$x^m \cdot x^n = x^{m+n}$$

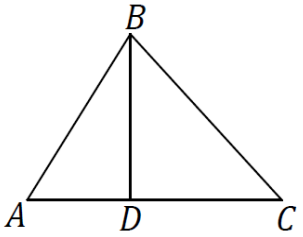$$x^m : x^n = x^{m-n}$$

$$(x^m)^n = x^{m \cdot n}$$

$$(a - b)(a + b) = a^2 - b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$\mathcal{V}_{parallelepiped} = abc$$

| Nr. | Items | Score |
|---|---|---|
| 1. | Fill in the box so that the statement becomes true.<br><br>"If $a = \dfrac{4}{3} : \dfrac{2}{9}$ and $b = 3 - 6$ , then $\dfrac{a}{b} = \boxed{\phantom{xxx}}$ ." | L<br>0<br>3 |
| 2. | On the picture, the straight lines $a$ and $b$ are parallel, and $c$ is a transversal line. Using the picture determine and write in the box the value of $x$.<br><br>$x = \boxed{\phantom{xxx}}$ . | L<br>0<br>3 |
| 3. | On the picture, the graph of the function<br><br>$\qquad f : \mathbb{R} \to \mathbb{R}, \qquad f(x) = ax^2 + bx + c, \qquad a \neq 0,$<br><br>is represented.<br>Using the picture, fill in the box with one of the symbols "<", ">" or "=", so that the statement becomes true.<br><br>$\qquad \Delta = b^2 - 4ac \boxed{\phantom{xx}} \; 0.$ | L<br>0<br>3 |
| 4. | A laptop costs 5000 lei. Determine the price of the laptop after a 12% discount.<br><br>*Solution:*<br><br><br><br><br><br><br><br><br><br><br><br><br>*Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4 |

| 5. | Calculate the value of the expression: $\dfrac{6^4 \cdot 2^{-2}}{2^2 \cdot 3^3}$ . <br> *Solution:* <br><br><br><br><br><br><br><br><br><br> *Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4 |
|---|---|---|
| 6. | Let $A$ be the set of real solutions of the equation $2x^2 + 5x - 3 = 0$. Determine the set $A \setminus \{-3; -1\}$. <br> *Solution:* <br><br><br><br><br><br><br><br><br><br> *Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4 |
| 7. | Consider the acute triangle $ABC$, where $AB = 13$ cm, $m(\angle ACB) = 45°$ and $AD = 5$ cm, where $D$ is the foot of the altitude $BD$. Determine the length of the side $AC$. <br> *Solution:* <br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br> *Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4<br>5 |

| 8. | The test for a mathematics competition contains items of 4 points and items of 5 points. A pupil completely solved 12 items and obtained the total number of 53 points. Determine how many items of each type has the pupil solved.<br><br>*Solution:*<br><br><br><br><br><br><br><br><br><br><br>*Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4<br>5 |
|---|---|---|
| 9. | Consider the functions $f, g: \mathbb{R} \to \mathbb{R}$, $f(x) = -4x + 2$, $g(x) = 2x + 9$. Determine the real values of $x$, for which the value of the expression $f(x) - g(x)$ is nonnegative.<br><br>*Solution:*<br><br><br><br><br><br><br><br>*Answer:* $x \in$ _____. | L<br>0<br>1<br>2<br>3<br>4<br>5 |
| 10. | A metal rectangular parallelepiped, whose dimensions are 4 cm, 6 cm and 9 cm, was melted and turned into a cube. Determine the length of the edge of the cube.<br><br>*Solution:*<br><br><br><br><br><br><br><br><br><br><br><br><br>*Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4 |

| | | |
|---|---|---|
| 11. | Determine the values of $x \in \mathbb{R} \setminus \{-3; 3\}$, for which the sum of the values of the algebraic fractions $\dfrac{x^2+5x+6}{x^2-9}$ and $\dfrac{4x-5}{x-3}$ is equal to 1.<br><br>*Solution:*<br><br><br><br><br><br><br><br><br><br><br><br><br><br>*Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4<br>5<br>6 |
| 12. | Consider the function $f: \mathbb{R} \rightarrow \mathbb{R}, \ f(x) = ax + 1 - a^2$. Determine all real values of $a$, for which the graph of the function $f$ passes through the origin of coordinate system, and the function $f$ is strictly decreasing.<br>*Solution:*<br><br><br><br><br><br><br><br><br><br><br><br><br><br>*Answer:*_____. | L<br>0<br>1<br>2<br>3<br>4 |