MINISTERUL EDUCAŢIEI


Agenţia de Asigurare a Calităţ̧ii

## Numele:

$\qquad$
Prenumele:
Patronimicul:
Instituţia de învăţămînt:

Localitatea:

Raionul / Municipiul:

# MATEMATICA (ÎN LIMBA ENGLEZĂ) 

## EXAMEN DE ABSOLVIRE A GIMNAZIULUI

08 iunie 2015
Timp alocat - 120 de minute

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

Instrucțiuni pentru candidat:

- Citeşte cu atenţie fiecare item şi efectuează operaţiile solicitate.
- Lucrează independent.


## Îţi dorim mult succes!

$\qquad$ Punctaj total: $\qquad$

## Annex

$$
\begin{gathered}
(a-b)(a+b)=a^{2}-b^{2} \\
V_{\text {rectang.par. }}=a \cdot b \cdot c \\
V_{\text {cyl. }}=\pi R^{2} H \\
\mathcal{A}_{\text {right tr. }}=\frac{1}{2} a \cdot b
\end{gathered}
$$

| Nr. | Items | Score |
| :---: | :---: | :---: |
| 1. | Fill in the box so that the statement becomes true. "If $a=9-12$ and $b=\frac{4}{3}: \frac{6}{9}$, then the value of the product $a \cdot b$ is the number $\square$ ." | $\begin{aligned} & L \\ & 0 \\ & 3 \end{aligned}$ |
| 2. | On the picture, the triangle $A B C$ is represented. Using the picture, determine and write in the box the value of $x$. $x=\square .$ | $\begin{aligned} & \mathrm{L} \\ & 0 \\ & 3 \end{aligned}$ |
| 3. | On the picture, the graph of the function $f: \mathbb{R} \rightarrow \mathbb{R}, \quad f(x)=a x^{2}+b x+c, \quad a \neq 0$, is represented. <br> Using the picture, fill in the box with one of the symbols "<" or ">", so that the statement becomes true. <br> a $\square$ 0. | $\begin{aligned} & L \\ & 0 \\ & 3 \end{aligned}$ |
| 4. | The annual profit of a company is 40000 lei. Determine the amount used for advertising, if it constitutes $5 \%$ of the annual profit of the company. <br> Solution: <br> Answer: | $\begin{aligned} & \mathrm{L} \\ & 0 \\ & 1 \\ & 2 \\ & 3 \\ & 3 \\ & 4 \end{aligned}$ |


| 5. | Calculate: $\frac{2^{23}}{4^{3 \cdot} \cdot 8^{5}}$. <br> Solution: <br> Answer: | L 0 1 2 3 4 |
| :---: | :---: | :---: |
| 6. | Let $A$ be the set of real solutions of the equation $5 x^{2}-9 x-2=0$. Determine the set $A \cap[-\sqrt{2} ; 1]$. <br> Solution: <br> Answer: $\qquad$ | L 0 1 2 3 3 4 |
| 7. | Let $A B C$ be a right triangle, where the hypotenuse $A B$ has the length equal to 8 cm and it forms with the cathetus $B C$ a $30^{\circ}$ angle. Determine the area of the triangle $A B C$. <br> Solution: <br> Answer: | L 0 1 2 3 4 4 |


| 8. | The sum of two numbers is equal to 55 , and their ratio is equal to $\frac{2}{9}$. Determine the numbers. <br> Solution: <br> Answer: $\qquad$ | L 0 1 2 3 4 5 |
| :---: | :---: | :---: |
| 9. | Consider the function $f: \mathbb{R} \rightarrow \mathbb{R}, f(x)=-2 x+3$. Determine the real values of $x$, for which the function $f$ takes non-negative values. Solution: <br> Answer: $x \in$ $\qquad$ | L 0 1 2 3 4 5 |
| 10. | At a petrol station the diesel fuel is stored in a tank shaped as a cube with the edge of 3 m . To the petrol station the diesel fuel is transported in cisterns shaped as a right circular cylinder with base radius of 1 m and height of 3 m . Determine if the diesel fuel from three full cisterns will fit in the empty tank. <br> Solution: <br> Answer: | L 0 1 2 3 4 |


| 11. | Find all real values of $x$, for which the sum of algebraic fractions $\frac{2}{x-3}$ and $\frac{2 x}{x+3}$ is equal to the product of these fractions. <br> Solution: <br> Answer: $\qquad$ | L 0 1 2 3 4 5 6 |
| :---: | :---: | :---: |
| 12. | Consider the function $f: \mathbb{R} \rightarrow \mathbb{R}, f(x)=a x+a^{2}-2$. Determine all real values of $a$, such that $x=1$ is zero of the function $f$ and the function $f$ is strictly increasing on $\mathbb{R}$. <br> Solution: <br> Answer: $\qquad$ | L 0 1 2 3 4 |

