No.	Items	Sc	ore
	ALGEBRA		
1.	Calculate: $0,25 \cdot 64^{\frac{2}{3}}$ . Solution:	L 0 1 2 3 4 5	L 0 1 2 3 4 5
2.	Calculate the value of the expression $25^{\log_5 2} + \log_3 2 - \log_3 18$ . Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8
	Answer:		
3.	Solve in the set $\mathbb{C}$ the equation $z^2 + 6z + 25 = 0$ and determine the absolute value of the solutions. Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8
	Answer:		

4.	Ion wants to order a bouquet of 3 tulips, 2 daffodils and 4 irises. On the store's website, a bouquet of 5 tulips, 2 daffodils and 2 irises costs 260 lei, a bouquet of 5 tulips and 2 daffodils costs 190 lei, a bouquet of 3 daffodils and 2 irises costs 130 lei. Determine the price of the bouquet that Ion wants to order. <i>Solution:</i>	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8
5.	Determine the minimum value of the sum of squares of the real solutions of the equation $x^2 + 3ax + a^2 - 2 = 0, a \in \mathbb{R}$ . Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8

	GEOMETRY		
6.	On the picture, the points <i>A</i> , <i>B</i> and <i>C</i> belong to a circle, so that <i>AB</i> is a diameter and $m(\angle BAC) = 20^\circ$ . Determine the measure in degrees of the minor arc <i>AC</i> . <i>Solution:</i>	L 0 1 2 3 4 5	L 0 1 2 3 4 5
7.	Answer:	L 0 1 2 3 4 5	L 0 1 2 3 4 5
8.	In the isosceles triangle <i>ABC</i> the altitude <i>AK</i> divides the side <i>BC</i> in the line segments $BK = 12$ cm and KC = 8 cm. Determine the length of the altitude corresponding to the base <i>AC</i> . <i>Solution:</i>	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8

9.	In a frustum of a right circular cone, the radiuses of the bases are of $\sqrt{3}$ cm and $3\sqrt{3}$ cm, and the angle formed by the slant height and the large base is of 30°. Determine the area of the lateral surface of the frustum. <i>Solution:</i>	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8
	Answer:		
10.	FUNCTIONS    Consider the function $f: \mathbb{R} \setminus \{\sqrt{3}\} \to \mathbb{R}, f(x) = \frac{3}{\sqrt{3}-x}$ . Determine the abscissa of the point on the graph of the function $f$ , which has the ordinate equal to $\sqrt{3}$ . Solution:    Solution:    Answer:	L 0 1 2 3 4 5	L 0 1 2 3 4 5

11.	Consider the function $f: \mathbb{R} \to \mathbb{R}$ , $f(x) = -2x^2 + 5x + 12$ . Show that the sum of the integer values of $x$ , for which the corresponding values of the function $f$ are nonnegative, is a perfect square. Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8
12.	Determine the first term of a geometric progression with positive terms, if it is known that the product of the first term and the third term is equal to 4 and the fourth term of the progression is equal to 50. Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8

ELEMENTS OF COMBINATORICS, MATHEMATICAL STATISTICS,				
FINANCIAL CALCULUS AND PROBABILITY THEORY				
13.	A die is thrown 4 times. Determine the probability that the product of the points appearing on the die is equal to 250. <i>Solution:</i>	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8	
	Answer:			
14.	After a 20% price increase, then a 15% discount, a computer costs 9180 lei. Determine the initial price of the computer. Solution:	L 0 1 2 3 4 5 6 7 8	L 0 1 2 3 4 5 6 7 8	
	Answer:			

Annex

$$\begin{split} \log_a b - \log_a c &= \log_a \frac{b}{c}, \ a \in \mathbb{R}^*_+ \setminus \{1\}, \ b, c \in \mathbb{R}^*_+ \\ \log_a b^c &= c \log_a b, \ a \in \mathbb{R}^*_+ \setminus \{1\}, \ b \in \mathbb{R}^*_+, c \in \mathbb{R} \\ a^{\log_a b} &= b, \ a \in \mathbb{R}^*_+ \setminus \{1\}, \ b \in \mathbb{R}^*_+ \\ \mathcal{V}_{prism} &= \mathcal{A}_b \cdot H \\ \mathcal{A}_{lat.surf.frustum} &= \pi G(R+r) \\ b_n &= b_1 q^{n-1} \end{split}$$