

STEM ARMENIA NATIONAL CONTEST

November 2025

Dive into the world of creative thinking and intellectual abilities!

1. The Contest

The “STEM Armenia | November 2025” national contest consists of six critical thinking tasks that must be solved within six hours. The competition is open to students aged 13 to 17 studying in middle and high schools in Armenia. Answers must be submitted by 3:00 PM on the day of the competition via this [link](#), under the **Participate** tab.

2. Tasks

The tasks have varying degrees of difficulty. The points for individual tasks are not specified, but the initial tasks are easier than the subsequent ones. The sum of the points for the six tasks is 20.

3. Use of Artificial Intelligence (AI)

The online format of the “STEM Armenia” contest allows participants to use a variety of resources, including AI chatbots. While the usefulness of AI in many questions is undeniable, in the case of complex queries its results can often be wrong. We strive to create tasks that require individual thinking and research skills. We can confidently say that direct copying and pasting of AI solutions will be easily detected.

4. Technical Considerations

We have taken steps to ensure a smooth technical process for the contest. To minimize potential issues with entering answers, we recommend using a computer or tablet, rather than a phone. If you experience technical difficulties, please try using a different web browser. Please note that we are unfortunately unable to provide individual technical support.

4. Warning

When submitting solutions, you must guarantee that you are the author. DO NOT SHARE your solutions with other participants in the competition, otherwise you will be disqualified.

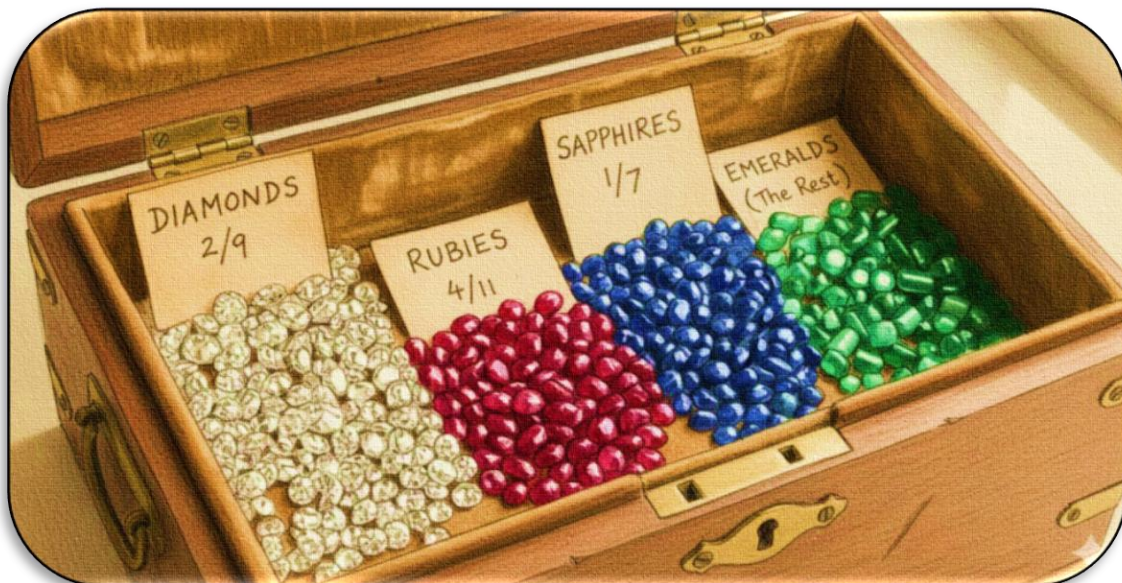
TASK #1

IN THE CASTLE OF IF

In the gloomy dungeon of the Castle of If, Abbe Faria showed Edmond a hand-drawn picture of a treasure chest. "Edmond," he began, "This chest is located on the island of Monte Cristo. Diamonds, rubies, sapphires and, most precious of all, emeralds. Your task, my friend, is to determine the number of emeralds."

Dantes, who was studying mathematics with the abbe, thought for a long time and insisted that it was impossible to know, since we do not know the total number of stones. At that moment, Abbe Faria exclaimed: "Ah, I forgot to tell you that the total number of stones is less than a thousand."

Can Dantes now determine the number of emeralds?



TASK #2

NUMEROLOGY

Find a 7-digit number $\overline{D_1D_2D_3D_4D_5D_6D_7}$ which has the following digits:

- **D₁ (Chemistry)**

Take the atomic number of the element that makes up around 21% of the Earth's atmosphere, subtract the atomic number of the element that forms the backbone of all organic molecules, then divide this number by two.

- **D₂ (Information Technology)**

The number of bits in a byte divided by the number of values that a bit can have.

- **D₃ (Biology)**

The number of chambers in the heart of a typical adult human.

- **D₄ (Math)**

The numerical value of the following expression

$$(a-x)(b-x)(c-x) \cdots (y-x)(z-x)$$

if $a=1, b=2, \dots, z=26$

- **D₅ (Astronomy)**

Multiply the number of planets in our Solar System by the number of natural satellites orbiting Earth.

- **D₆ (Math)**

Take the units digit of 7th number in the Fibonacci sequence and add it to the units digit of 2^{2026} .

- **D₇ (Biology)**

Consider the molecule that is the main source of energy in cells. Divide the number of hydrogen atoms in this molecule by the number of oxygen atoms.

- **Check**

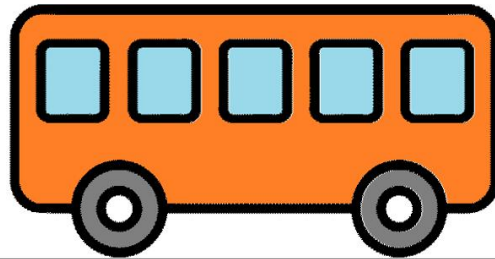
The sum of the digits is equal to the atomic number of the chemical element that gives blood its color.

TASK #3**SARI'S SCHOOL TRIP**

It was a Sunday evening when Sari returned from a class trip. Her shoes were dusty, and her eyes were shining with excitement. As she stepped through the door, her younger brother Banyu ran up to her, eager to know where she had gone.

“Tell me, tell me!” he begged.

But Sari didn’t say a word. Instead, she pulled out a postcard from her backpack, handed it to Banyu with a wink and said, “If you can figure this out, you’ll know exactly where we went.” Can Banyu find out where his sister went on her school trip?



TASK #4

WORLD LANGUAGES

In the following [video](#), there are speech segments in six languages #1 through #6, and your task is to identify those languages in the correct order. The speech segments are followed by segments of national music from each culture, however, in random order.



TASK #5

SECRET WORD

12345678=?

U4_ _ _ 4	-26.74	0.0
U_ _ _ 3U	-1.46	8.6
45_ _ _ U	-0.74	310
S_ _ _ _ L	-0.27	4.3
U_6_ _ r	-0.05	37
4_ _ U	0.03	25
47_ _ _ U	0.08	43
n_ _ _ L	0.13	860
n_ _ _ _ L	0.34	11
U_ _ _ 8_ r	0.46	140
1_ _ _ _ 2_ t	0.50	640

ALI BABA AND THE FORTY THIEVES 2.0

Ali Baba was deep in the forest cutting down an old oak tree when he saw forty thieves riding donkeys stopping in front of a huge rock. Much to his astonishment, a scarred man approached the rock and quickly shouted out some numbers that Ali couldn't hear well. Suddenly, the rock slid aside to reveal a dark cave.

One by one, the thieves unloaded heavy chests from their donkeys and carried them into the cave. Gold coins and jewels spilled from the open lids, glittering in the slivers of sunlight. Once all the chests were inside, the leader shouted the numbers again, and the stone door slid shut, leaving no trace of an entrance.

His heart pounding with a mix of fear and insatiable curiosity, Ali approached the rock. At first, he didn't notice anything out of the ordinary. He shouted out some random numbers, but nothing happened. Upon closer inspection, however, he noticed a faintly carved image on the rock that resembled a multiplication puzzle. Ali copied the image onto a piece of tree bark to show his wife Morgiana, who taught math at the village school. Maybe the solution to this puzzle is the key to opening the treasure cave? A year has passed since then, and Morgiana proclaimed that the puzzle is unsolvable. Do you agree with her, or perhaps you can find the password to the treasure cave?

