



MEMO24 TREASURE HUNT

NATIONALITY

MOON'S NAME

Dear Treasure Hunters,

Welcome to the beautiful city of Szeged, the City of Sunshine!

Today, you are about to embark on an exciting adventure where you will discover not only the hidden treasures of Szeged, but also face thrilling tasks and challenges.

Get ready for laughter, teamwork, and fun as you explore our city's historical and cultural landmarks.

Let this day be filled with memorable experiences and joyful moments! Play hard, enjoy yourselves, and let the charm of Szeged captivate you. Onward to adventure, and may you find the city's secret treasures!

Have a great time!

Welcome to our city exploration game! Before you embark on this adventure, let's go over the rules and key details. The game features 20 checkpoints along with 7 ongoing tasks. Each team will begin with their guide at the Bolyai Institute, where you will receive the task booklet. You have 4 hours to complete the game, so make sure to return to the Bolyai Institute by 6:00 PM and submit one completed booklet per team. Ensure that all solved tasks are included, and don't forget to write your nationality on the first page. Note that not all tasks need to be completed.

Some of the tasks at the checkpoints are partially described in the booklet and must be solved on-site, while other checkpoints are staffed, where you will face skill-based, educational, or logic challenges. Please send your photos to memoguide2024@gmail.com—this can be done from the hotel if you don't have mobile internet, but make sure it's done by 7:00 PM. The numbers on the map correspond to the task numbers, so use them as a reference. Be sure to record all solutions in the booklet, and for staffed checkpoints, have the staff write in the scores where necessary. Throughout the competition, the six team members and the guide must stay together as a group. Please take care of each other, follow the rules, and enjoy the game! We wish everyone good luck and lots of fun!

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TASKS

THESE TASKS DO NOT HAVE STATIONS
SOLVE THEM DURING THE WHOLE GAME

MOON HUNTING

Marvin has already visited the entire Solar System several times,
and now he handed out his 10 favourite moons among the MEMO teams.
Find out the others!

AUSTRIA	
CROATIA	
CZECH REPUBLIC	
GERMANY	
HUNGARY	

LITHUANIA	
POLAND	
SLOVAKIA	
SLOVENIA	
SWITZERLAND	

for 10 points



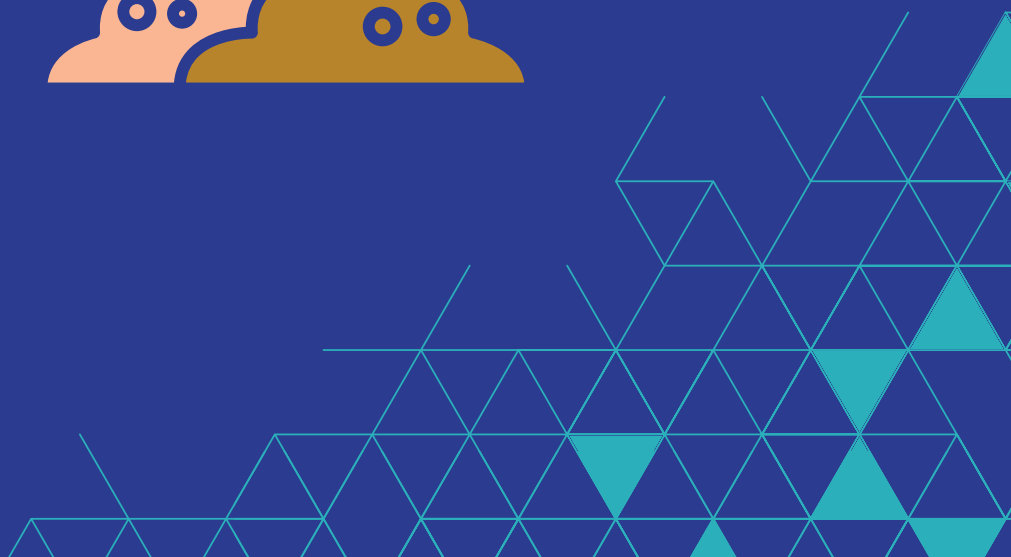
AN INTERESTING THING

Collect ONE interesting thing and give it to the Jury.
The THING should be free and legal to bring with you
like dust, rocks, four-leaf clovers or wild animals.

The more interesting and special your object is
the more points you get.

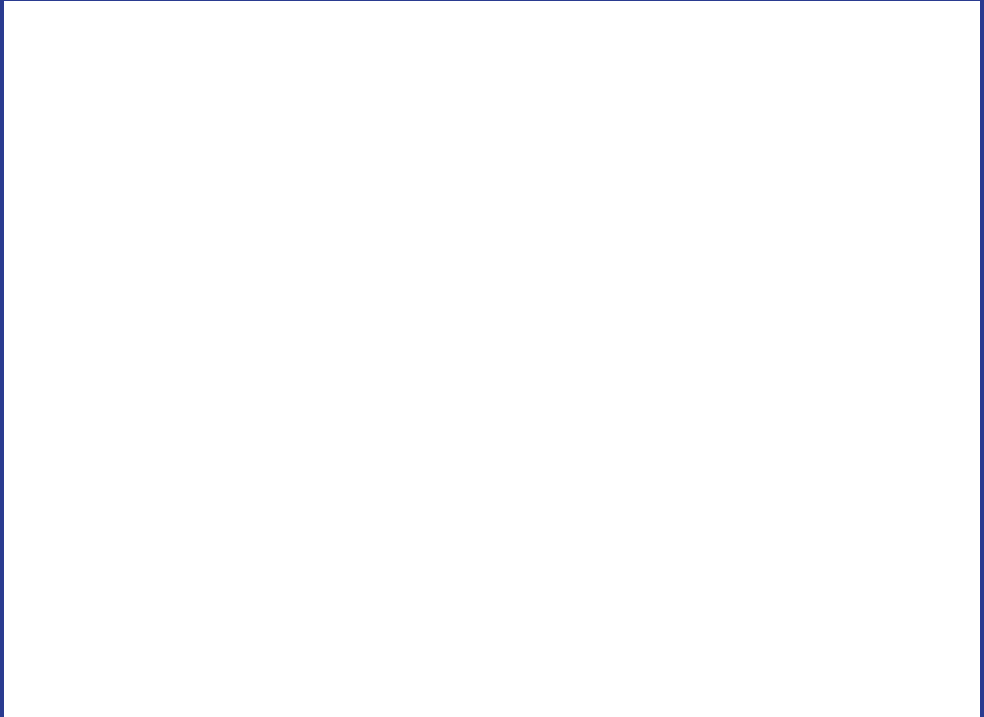


for 5 points



Make a team flag or crest

Your task is to create a flag or crest that represents your country and your team.
We have given you some examples for brainstorming.



for 10 points

The flag of Hungary.
In the Hungarian flag, red stands for strength,
white symbolizes faithfulness and
green represents hope.



The crest of Szeged



IMITATE A STATUE

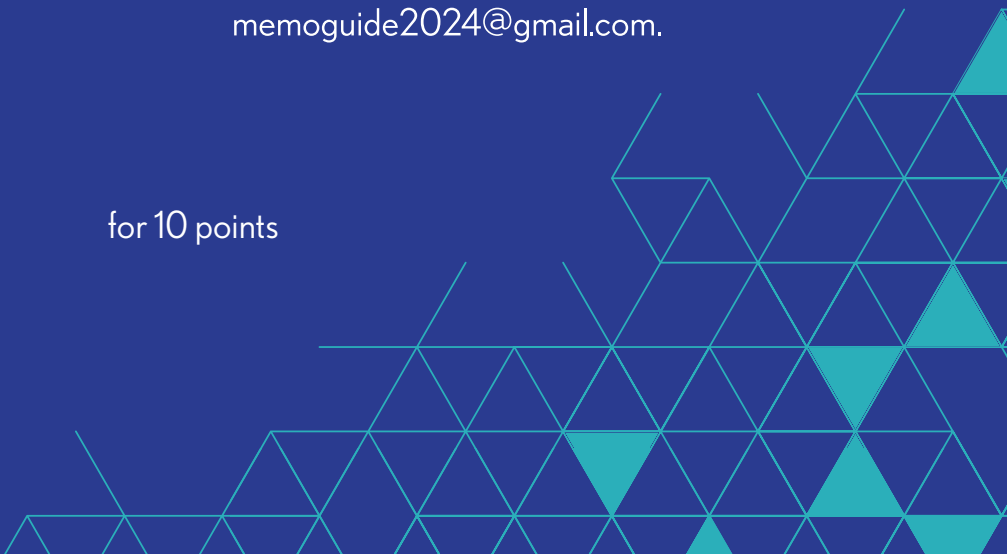


Ever since Marvin arrived in Hungary, he has been really interested in our history and art. However, he has yet to discover the sculptures of Szeged and won't have time this week either, as he'll have important tasks, such as cheering up the coordinators and providing them with coffee. So, he asks you to help him get to know Szeged.

Your task is to replicate the statues by mimicking their pose next to them and take a photo. You can get points for at most 10 statues. You have to send the pictures to

memoguide2024@gmail.com.

for 10 points



ROCK PAPER SCISSORS LIZARD SPOCK

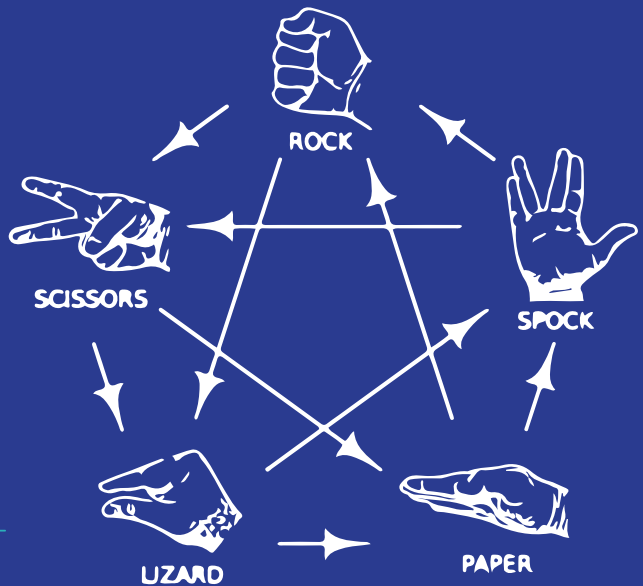
Whenever you meet another team during your journey,
you have to play a round of Rock Paper Scissors Lizard Spock.

You have 10 seconds to choose as a team.

You get one point for a win and lose one with a loss,
if you choose the same, nothing happens.

If more than two teams meet,
each pair should play a match separately.

for -1/0/+1 point



SUDOKU

4		6		9	5			
			6	A		8		
		2			B		7	
		7				2	1	3
				4	C			
2		D			1			
			1	5				
9							8	
E			F	6		4		7

To make it solvable,
you need to obtain the
value of at least 3 letters.

for 10 points

QUIZ

Task a)

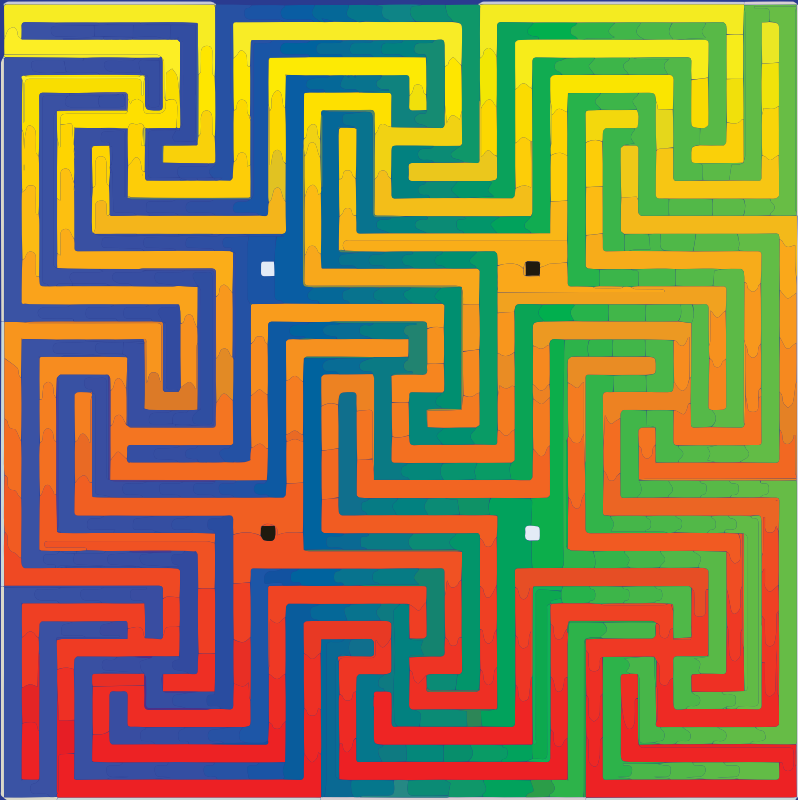
Which is more likely:
that January the 1st falls on a Saturday or a Sunday?

Don't forget to
provide
justification.

for 4 points

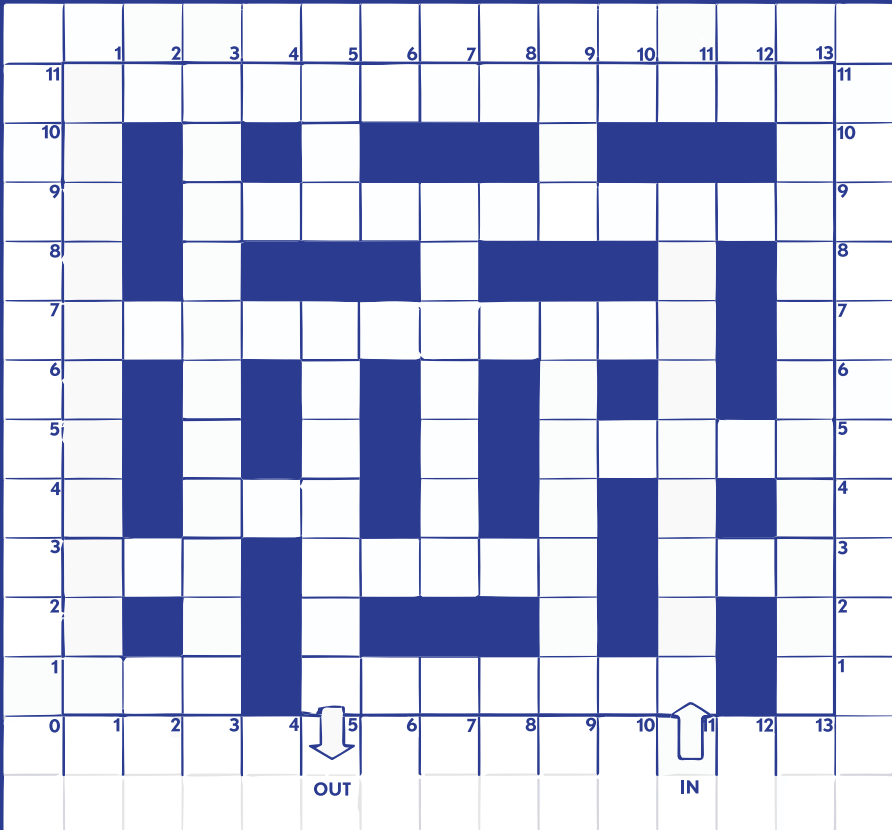
Task b)

Find your way from black to black,
and from white to white in the maze.



for 4 points

Task c)

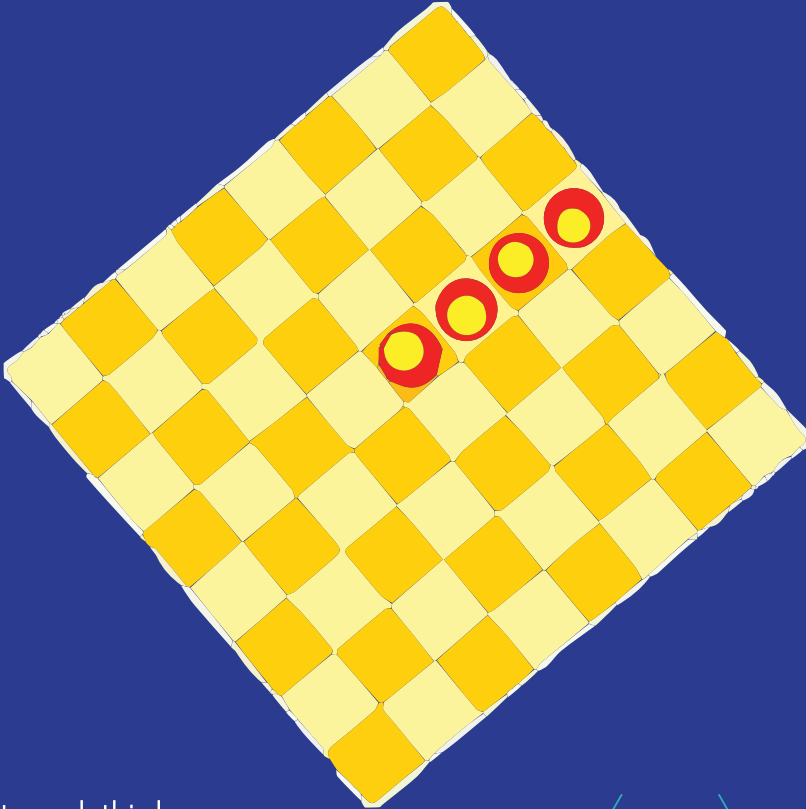


Always turning right, reach the exit;
starting from the entrance.

for 4 points

Task d)

Is it possible to divide the following chess board into 4 congruent parts, each containing exactly one of the allocated squares?



If not, mark this box:

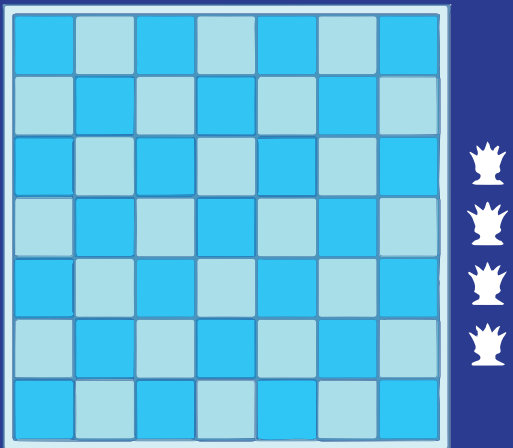
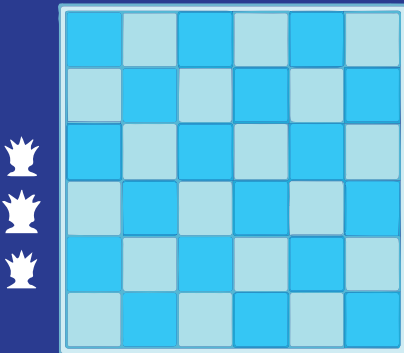
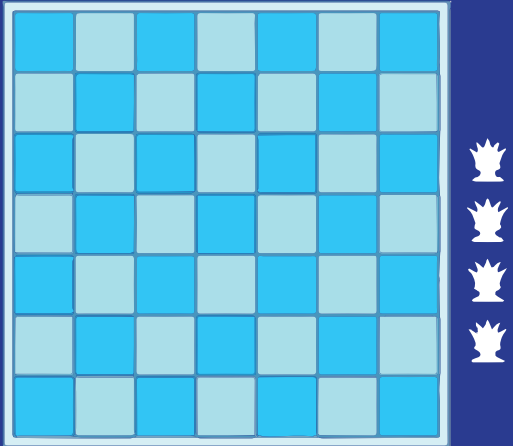
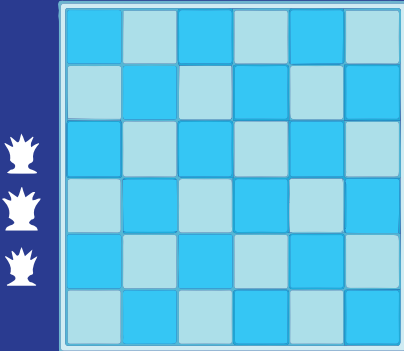


for 4 points

Task e)

Place 3 queens on a 6x6 board in such a way that they are in control of all squares.

Do the same on a 7x7 board, this time with 4 queens.



for 4 points



TASKS

THESE TASKS HAVE STATIONS
AT SPECIFIC LOCATIONS

STATION #1

Hungary has contributed numerous outstanding artists and scientists, including mathematicians, to the world. Among the country's famous Nobel Prize-winning scientists is Katalin Karikó, recognized for her work on the mRNA-based vaccines. In the realm of music, Hungary boasts legendary names such as Béla Bartók, Zoltán Kodály, Ferenc Liszt, and Ferenc Erkel, who have significantly influenced the world of music. We also have to mention brilliant minds such as Albert Szent-Györgyi, János Neumann, Ede Teller, and Dénes Gábor, who have significantly influenced the world of science.

Task a) for 8 points

Mathematicians Among the Statues in Dóm Square

Identify the mathematicians among the statues around Dóm Square and write down their names! How many did you find?

Task b) for 7 points

A Famous Transcendental Number

There is a famous transcendental number (not Pi) that contains a 19th-century year twice in a row in its first 10 decimal places.

How many of the individuals pictured by the statues were alive during this year?

The answer is again a prime number.

The last (or first) statue is not a person, just a memory of the Hungarian poets



MAP

STATION #2

А а Б б В в Г г Д д Е е Ё ё

A a B b V v G g D d Yeh yeh Yo yo

Ж ж З з И и Й й К к Л л

Zh zh Z z Ec ee Ih ih K k L l

М м Н н О о П п Р р С с

M m N n O o P p R r S s

Т т У у Ф ф Х х Ц ц Ч ч Ш ш

T t U u F f X x Tz tz Ch ch Sh sh

for 10 points

Щ щ Ъ ъ Ы ы Э э Ю ю Я я

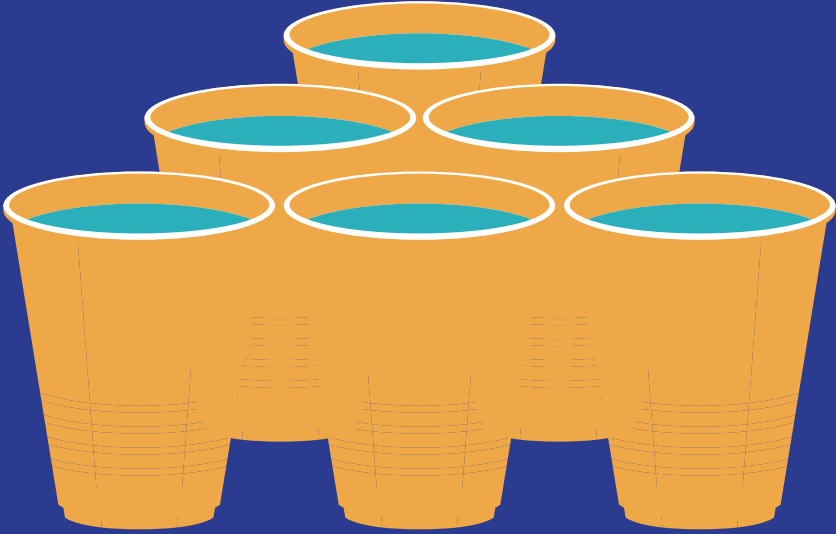
Shch shch — ih — Eh eh Yu yu Ya ya



MAP



STATION #3



for 10 points



MAP



**AFTER
15:30**

STATION #4



Task a) for 4 points

Despite its name, the "Tisza blooming" does not mean the blooming of the Tisza, but rather the mass emergence of mayflies on the water's surface. During this time, they swarm into the sky in search of mates. On the sculpture, all the mayflies are flying in the same direction except for one. Find it and send a picture of it to memoguide2024@gmail.com.

Task b) for 6 points

1879 is an important date in Szeged's history because the Tisza flooded the city. Since then, several higher water levels have been recorded nearby. How many prime numbers are there among the water level heights?



STATION #5

Formula 1 has conquered the hearts of many worldwide with its carefully engineered, unique cars, thrilling races and unmistakable buzzing sound.

Each part of such a specialized car has to be cleverly designed; then, all of them must be assembled the right way in order to create a superior result. Naturally, the foundation of all this is having innovative ideas.

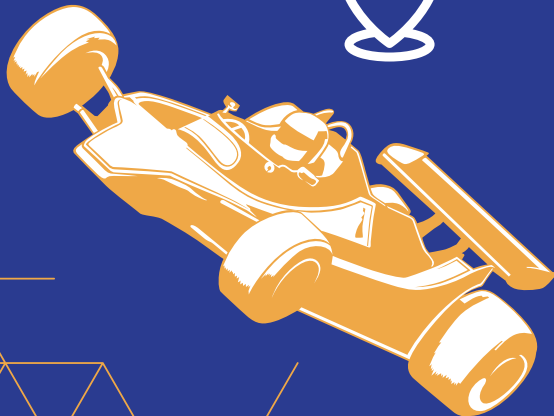
Now it is your turn to cooperate and imitate an F1 car, each of you playing a part informing the vehicle (one of you may play the part of the driver if you wish). Once you have come up with the wittiest plan on how to do that, put it into practice by following along the allocated track near the water fountain. Be as fast as you can, while at the same time aim to maintain the shape of the F1 car.

Let your imagination roam free!

for 10 points



MAP



STATION #6

You will be given 10 bottles/dishes. Order them by volume. First, you have to order them by only touching and looking, then you can order them again using water.



MAP

for 10 points

STATION #7



POINTS
FOR
THE
FIRST
QUESTION



for 4 points

ANSWER TO THE SECOND QUESTION

for 6 points

A large white rectangular box, likely for the second question.

MAP

STATION #8



for 5 points



MAP



STATION #9



Task a) for 2 points: The monument and cathedral in the photos are connected to a major event in Szeged. What was this event? When was it?

Task b) for 2 points each:
Fill in the table below.

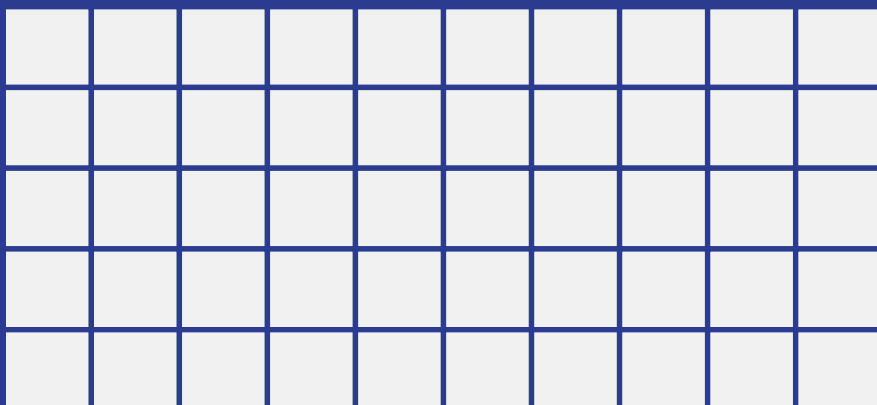
	1 st image	2 nd image
HEIGHT		
AGE		

STATION #10

Sometimes, we have to take a step back to go forward.

This time, you'll have to go back to the start. Ludmilla and Marvin are lonely, and they are waiting for you with some exciting challenges.

Make sure to be at Szőkefalvi Hall by 15 o'clock or 16 o'clock (you only need to come once, the tasks will be the same).



for 2 points

What is this number?



for 2 points



for 2 points

What are these two numbers?



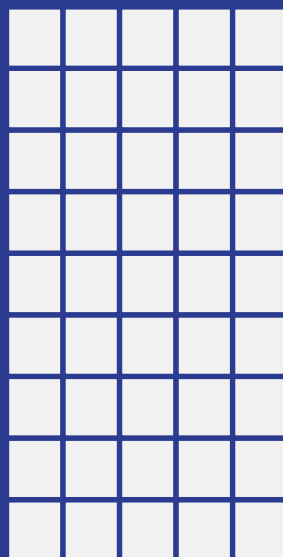
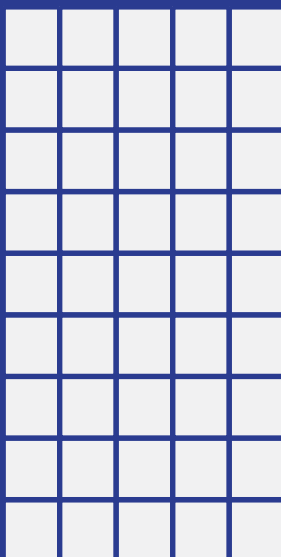
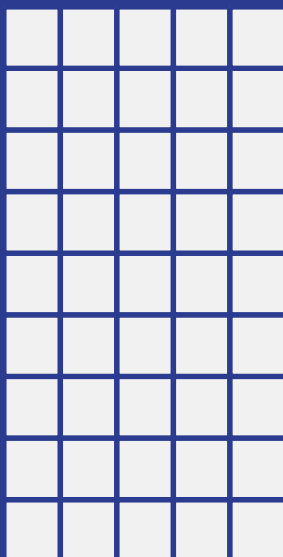
and



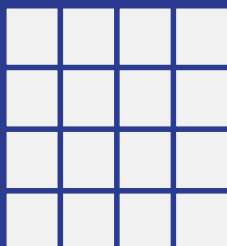
for 3 points



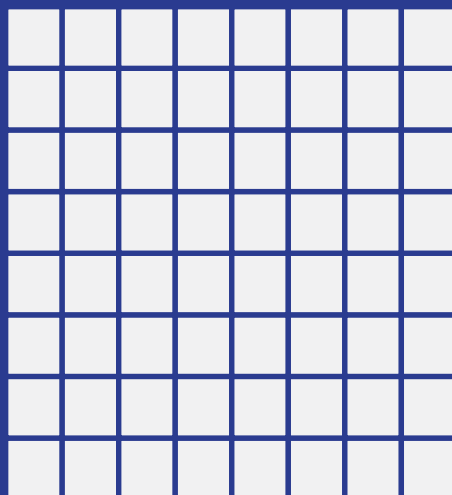
**BOLYAI
INSTITUTE**



for 3 points



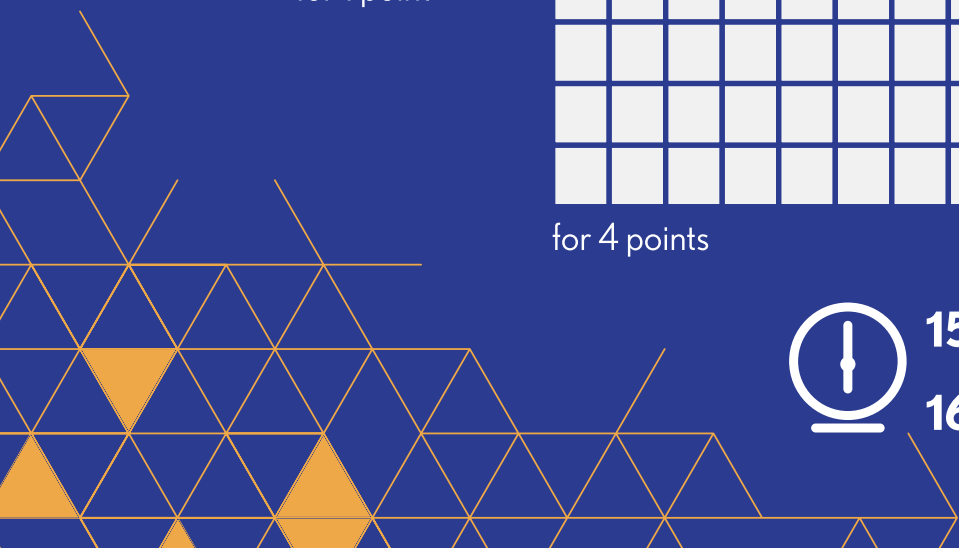
for 1 point

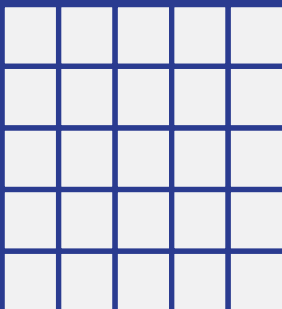


for 4 points

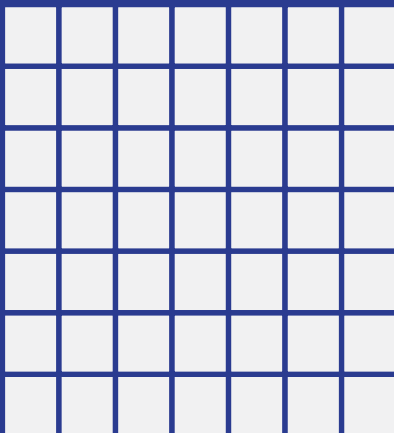


15:00
or
16:00





for 2 points



for 3 points

1

2

3

4

5

6

7

8

9

10

for 10 points



STATION #11



MAP

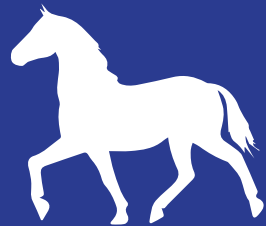
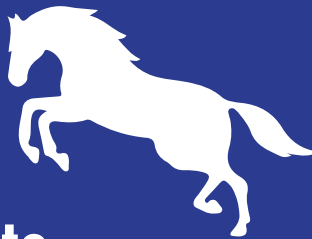
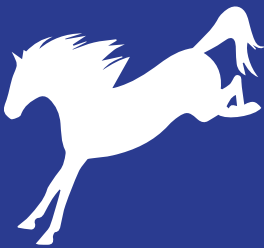
for 10 points

STATION #12

The ancestors of the Hungarian people were nomads who lived on horseback on the Eurasian steppes. This heritage is evident throughout our history, and horses still hold a special place in our culture. Our great historical heroes are often depicted riding horses, as seen in the painting on the gate. The Gate of the Heroes is not only a beautiful part of the city's architecture but also functions as a passage for both cars and trams.

Task for 5 points:

How many horses are depicted in the painting on the gate?



**Gate
of the
Heroes**



STATION #13

Ludmilla loves physics experiments, so it's no wonder that one of her favourite places in Szeged is the Water Tower, where, in addition to the physics history exhibition, there is also a Foucault pendulum. You will find statues in the square around the tower, count how many there are and write their names for 8 points.

Guess what they have in common for 2 points.



MAP



STATION #14



for 10 points



MAP

STATION #15

The Golden Team Statue
Solve the encryption, and find the statue!



[bcfg acdefg . abdeg bcfg abcdefg abc , abdeg abcdef . bc acdfg bc abdeg]

What does this statue represent? (for 2 points)

How many times have the Hungarians competed in this cup? (for 5 points)

What were their best results? (for 3 points)



STATION #16

There is a certain structure located here in Szeged, which is the second largest in Hungary and fourth largest in Europe.

What is the name of this structure? (for 2 points)

When was it built? (for 3 points)



Count how many doors this structure has!

(for 5 points)

(This counts as 3 separate doors)



**FROM
TEXT**

STATION #17

This exercise will test your football skills.

You have to juggle a football as many as possible, each team member has 3 attempts (after a short practice).

The sum of the 3 best scores is what counts!

Good luck to you!



for 10 points



MAP

STATION #18

Find the fountain in the following picture!
Who is the spring named after? (for 4 points)

Who has built the statue on the top of the fountain?
In which year? (for 3+3 points)



IMAGE

STATION #19

Hello Guys!

I heard from the organizers that there is a locomotive nearby. I asked Ludmilla whether she knows where it is, but she just sang a weird song. It was like “ddddu udddd . dduuu ddddd ddddd dduuu , dduuu uuuuu . duuuu ddddu uuddd uuddd”.

I can not figure out what it means, help me! (for 5 points)

Please find the locomotive and take a picture with it. (for 3 points)
I would be very happy if you could write its number down for me. (for 2 points)

Thanks for helping me!

Marvin

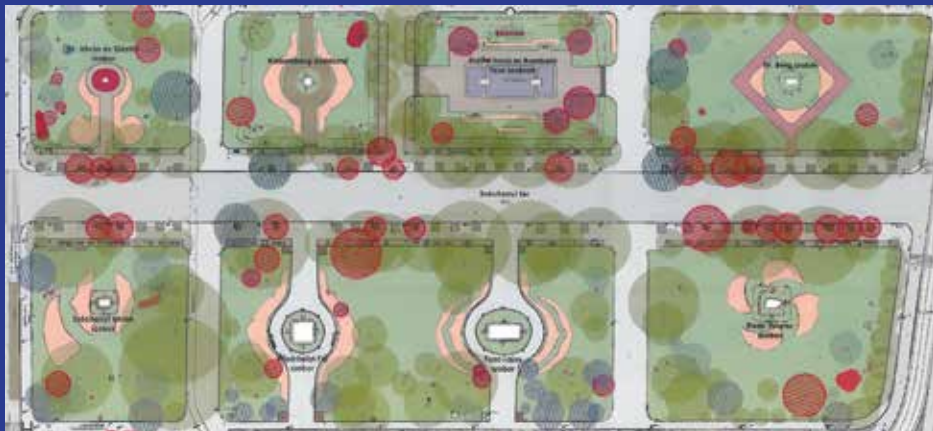
send everything here:
memoguide2024@gmail.com



CODE



STATION #20



There is one special tree, the hidden gem of Szeged, the breathtaking, matchless, one and only Pig-headed tree. Your task is to find the precious plant, take a picture of it or with it, and send it to the following e-mail address: memoguide2024@gmail.com

for 10 points

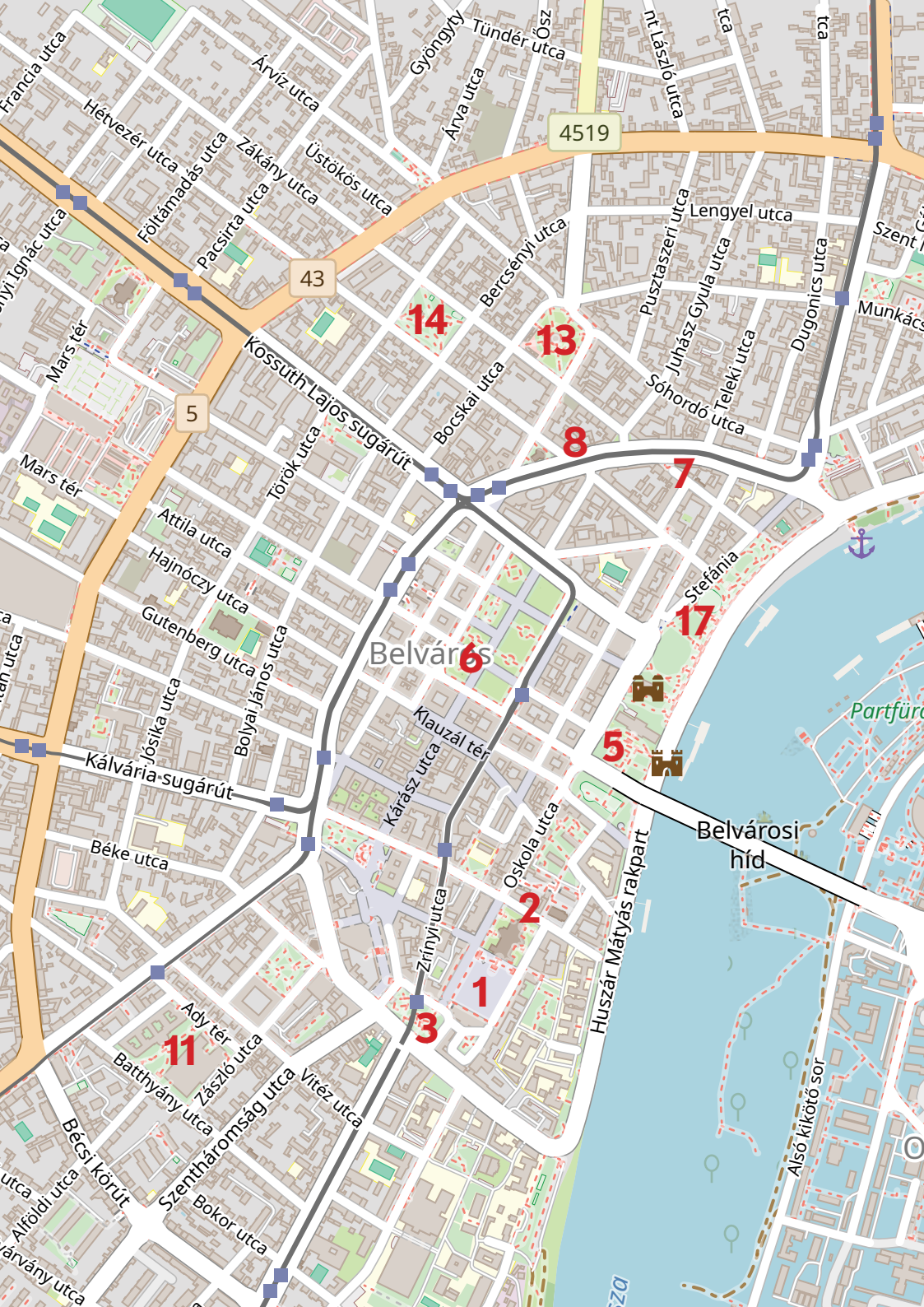


**Széchenyi
square
& image**

ADDITIONAL SPACE

ADDITIONAL SPACE

ADDITIONAL SPACE





20 GUIDES • 5 HELPERS • 60 PARTICIPANTS
20 LEADERS • 15 COORDINATORS • 8 ORGANISERS

EMERGENCY NUMBERS

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NATIONAL EMERGENCY NUMBER

112



18TH MIDDLE EUROPEAN
MATHEMATICAL OLYMPIAD
24 - 30 AUGUST, 2024 | SZEGED, HUNGARY