Erasmus + The pupils international math workshop

https://math-workshop.eu

WHAT IS THE PROJECT ABOUT?

The project is about innovating learning methodology in different fields of math, developing pupils' interest and competence in math, significantly improving their language skills in English and enhancing their social a civic life skill as well.

The objectives of the project are:

- Involve partners from different countries with important experience in the using specific methodology or the specific field of learning math.
- Provide opportunity to exchange math knowledge as a one of the best ways to practise the basic skills.
- Involve students with different abilities to develop their competencies in different educational fields.
- By actively participating in the project development, students will be motivated to achieve the expected results, thus enhancing their commitment and social skills towards a common goal.
- Share experiences and knowledge in a teamwork of different countries as the mean of to overcome racial prejudices.
- Learn to cooperate and join different ideas into one result.
- Give all participants the equal opportunities to succeed regardless of individual degree of success in formal education.
- Use new digital resources in math as the way to raise interest in learning about innovative mathematical research.
- Inspire all participants' tuition by the partners' ideas.

CONTENT

INVOLVED SCHOOLS 1

ZS HLUCIN, HORNICKA 7 CZECH REPUBLIC 2
6TH GYMNASION CHANION GREECE 3
LICEUL TEORETIC DE INFORMATICA "GRIGORE MOISIL" ROMANIA 4

1ST WORKSHOP (CZ - HLUCIN) 5

PRE-ACTIVITIES 5
LOGO 5
Geogebra 6
TIME SCHEDULE OF THE 1ST MEETING IN THE CZECH REPUBLIC 7
DAY 1 - GET-TO-KNOW ACTIVITIES 8
Welcome activities 8
Photo-presentation of national teams 9
Photo-get-to-know activities (RO-GR-CZ mixed teams) 10
Photo-"after work" 11
Online documents 12
DAY 2 - WORK IN RO-GR-CZ MIXED TEAMS 13
GEOGEBRA – BASICS - Follow the written proces of the constructions 13
GEOGEBRA – CENTROID, circumcentre, and orthocentre of the triangle 15
GEOGEBRA – SQUARES around parallelogram 16
Photos 17
DAY 3 - WORK IN RO-GR-CZ MIXED TEAMS 21
PHOTO – ROBOTICS – WORKSHOP at Technical University of Ostrava 21
DAY 4 24
Robotics - "Sphero" - worksheet 24
PHOTO – FAREWELL dinner 29

2ND WORKSHOP (RO- IASI) 31

PRE-ACTIVITIES 32
Linear function 32
Math and Art 32
Food for THOUGHTS – VICTOR Vasarely's paints 33
LIIS – RO students paints 34
ZS Hornicka (CZ) - students' paints 35
Schedule 36
2nd workshops - "Review" from Greece 36
DAY 1 39
PHOTO – ONLINE communication 39
DAY 2 40
Leonardo da Vinci BRIDGE – PREPARATION 40
Leonardo da Vinci BRIDGE – ROMANIAN pupils' work 41
Leonardo da Vinci BRIDGE – CZECH pupils' work 42
Leonardo da Vinci BRIDGE – GREEK pupils' work 43
Minecraft CONSTRUCTIONS – MATHEMATICAL task 43
DAY 3 44
FRACTALS – INTRODUCTION 44

Create your own FRACTAL – MATHEMATICAL task *45*
FRACTALS – INTRODUCTION (presented by students from Romania) *46*
FRACTALS – PUPILS' results *47*
DAY 4 ..... **48**
The laws of planetary MOTION – MATHEMATICAL task *48*
ASTRONOMY – ROMANIAN pupils' results *49*
ASTRONOMY – GREEK pupils' results *49*
ASTRONOMY – CZECH pupils' result *50*
3RD WORKSHOP (GR - CHANIA) **51**
Schedule *52*
Review form Greese *52*
DAY 1 ..... **57**
Presentation of 6th Gymnasion Chanion *57*
DAY 2 ..... **60**
Preparation *60*
Calculating of the height of a building - mathematical task *61*
Calculating of the height of a builiding - worksheet template *62*
Calculating of the height of a BUILDING – PUPILS' work and results *63*
PHOTOs *64*
DAY 3 ..... **65**
Preparation *65*
A variation of Eratosthenes' EXPERIMENT – MATHEMATICAL task *66*
A variation of Eratosthenes' EXPERIMENT – PUPILS' work and results *67*
DAY 4 ..... **69**
Mind training math PUZZLES – MATHEMATICAL tasks *69*
Mind training math PUZZLE – ROMANIAN pupils' work *71*
"Goodbye, my friend..." - Greek traditional DANCE – PHOTO *73*
PUBLISHED IN LOCAL MEDIA **74**

INVOLVED SCHOOLS

ZS Hlucin, Hornicka 7 Czech Republic

6th Gymnasion Chanion Greece

Liceul Teoretic de Informatica "Grigore Moisil" Romania

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ZS Hlucin, Hornicka 7 Czech Republic

https://www.zshornicka.cz/

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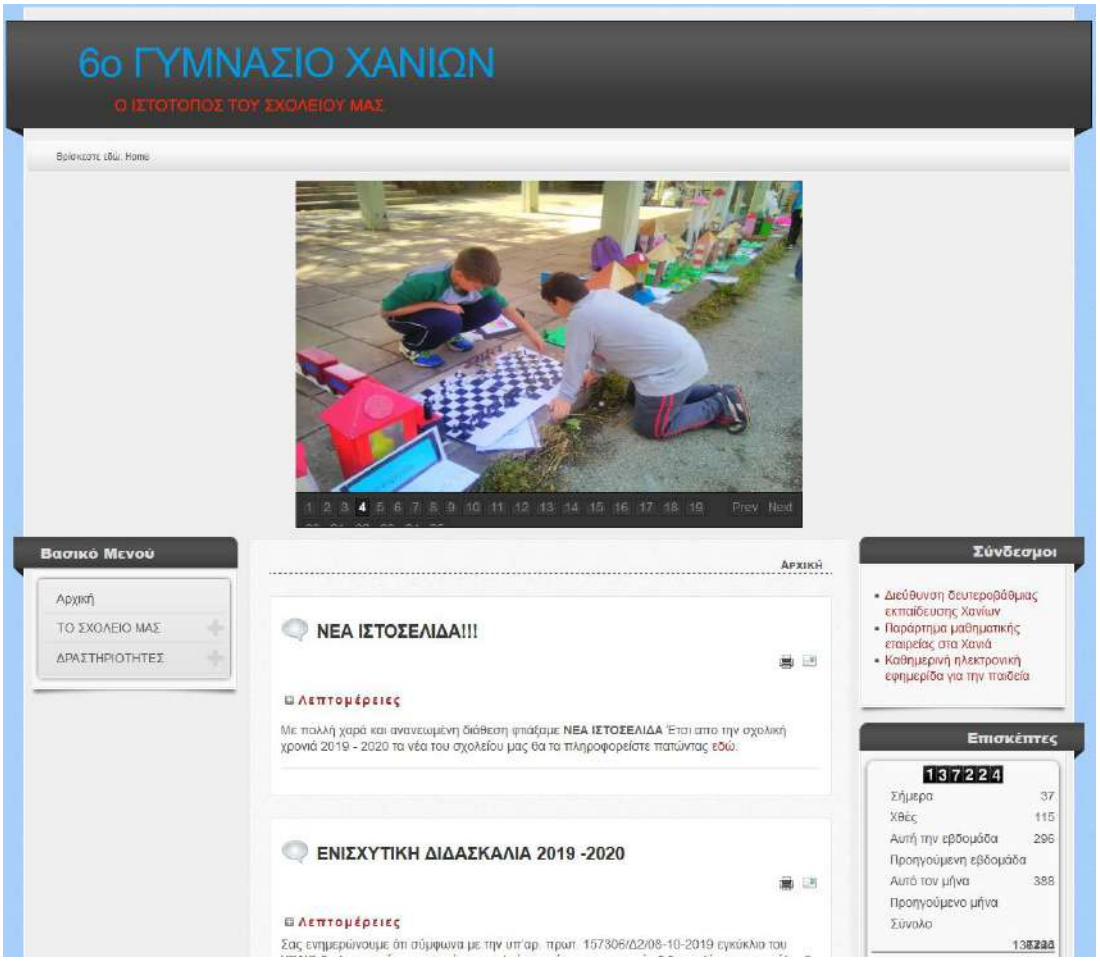
6th Gymnasion Chanion Greece



http://6gym-chanion.chan.sch.gr/

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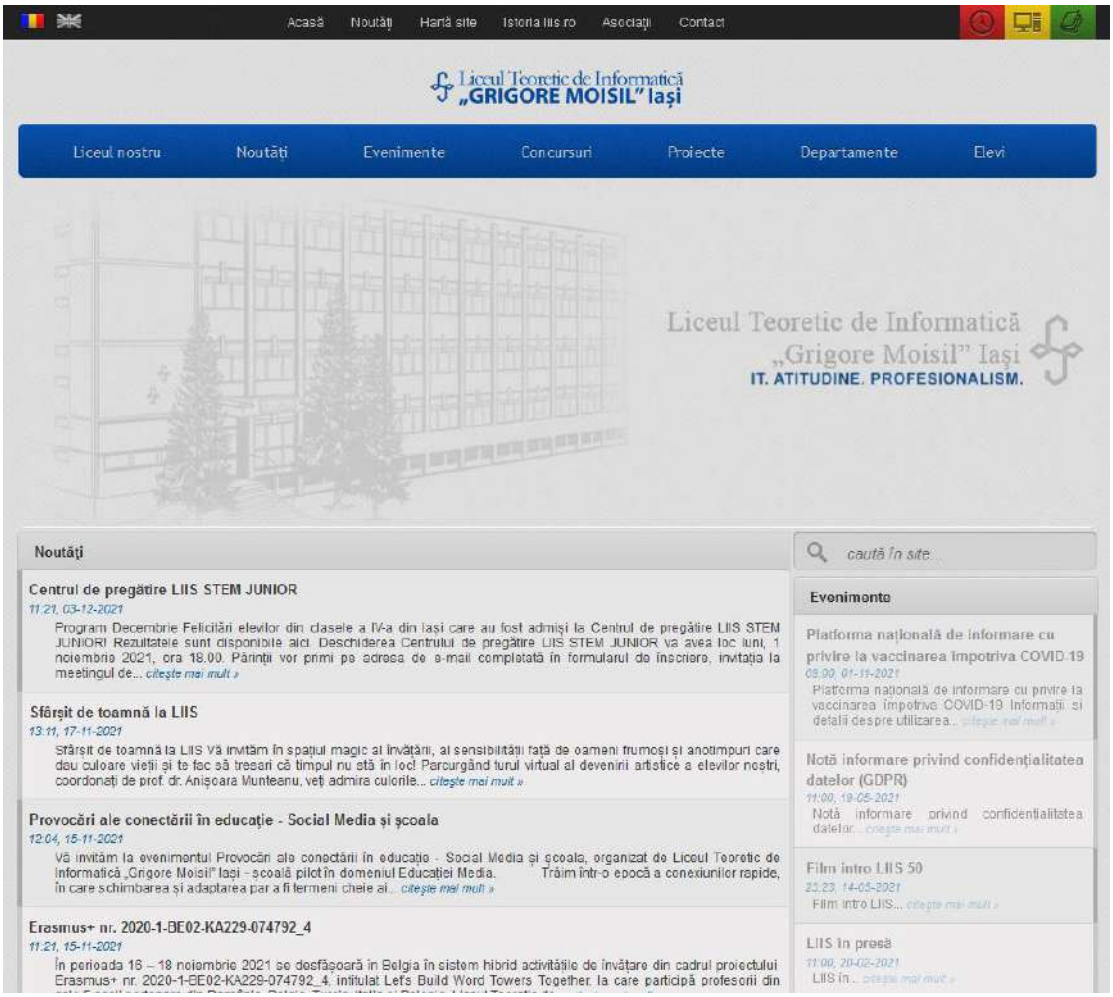
Liceul Teoretic de Informatica "Grigore Moisil" Romania



https://www.liis.ro/

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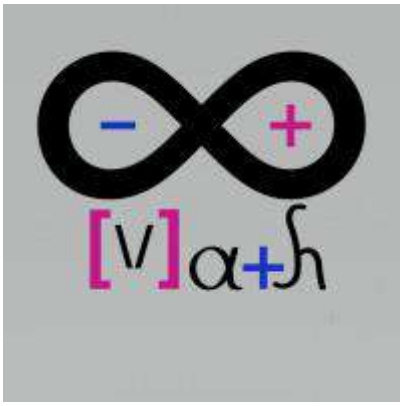
1ST WORKSHOP (CZ - HLUCIN)

Pre-activities

LOGO

LOGO voting



... and the winner

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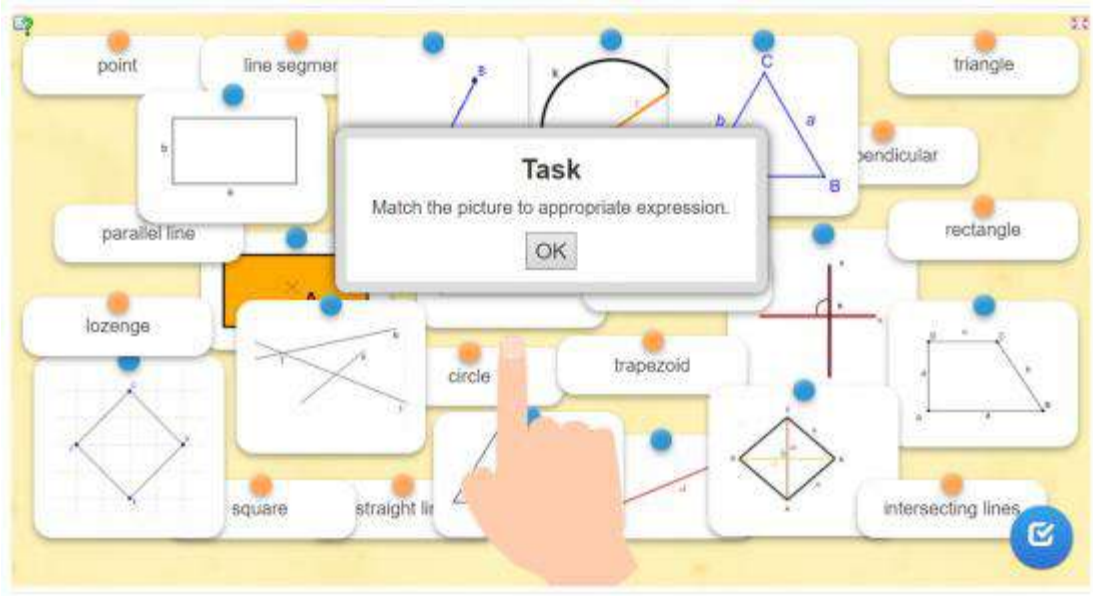
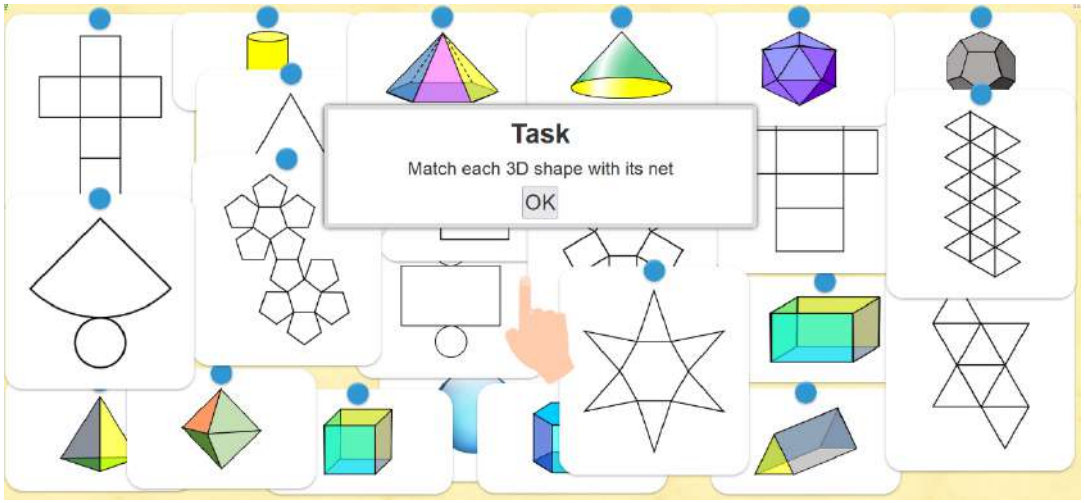


[Match the picture to the correct expression](#)

[Geometry – introduction](#)



[3D Shapes and their nets](#)

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Time schedule of the 1st meeting in the Czech Republic

Day	time (approx.)	Activity
25 / 11	9.00 – 12. 00	get-to-know activities forming international teams first project activities
	12.00	lunch break (school canteen)
	13.00 -13.45	meeting with the mayor of Hlucin town
		free time
	17.30 -20.30	sport activities (bowling) at Slezský dvůr bar with bowling lanes, dinner at bar restaurant
26 / 11	8.30 – 12.00	Geogebra projects – activities in teams
	12.00	lunch break (school canteen)
	13.15 – 18.30	Science and Technology Center
27 / 11	8.00 -15.30	workshop at Technical University of Ostrava - robotics, coding (packed lunch)
		free time
	17.00	*sport activities in school Gym*
28 / 11	8.00 – 11.30	project final activities in teams
	11.30	lunch break (school canteen)
	12.00 -15.30	Planetarium in Ostrava
	17.30	farewell dinner
29 / 11		Nashledanou! La revedere! Στο καλό!

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DAY 1 - get-to-know activities

WELCOME ACTIVITIES

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PHOTO-PRESENTATION OF NATIONAL TEAMS

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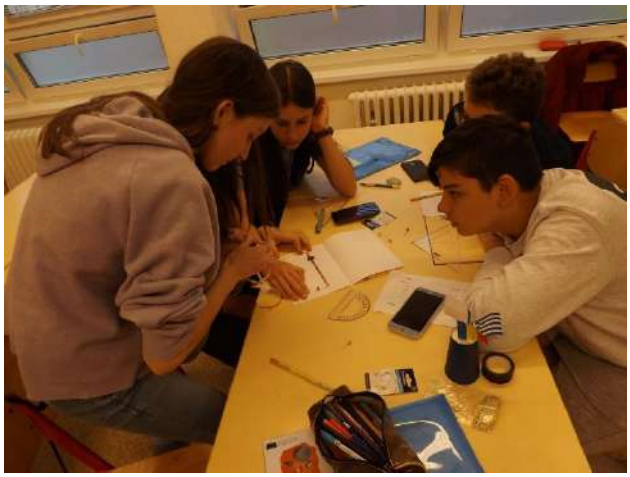
PHOTO-GET-TO-KNOW ACTIVITIES (RO-GR-CZ MIXED TEAMS)



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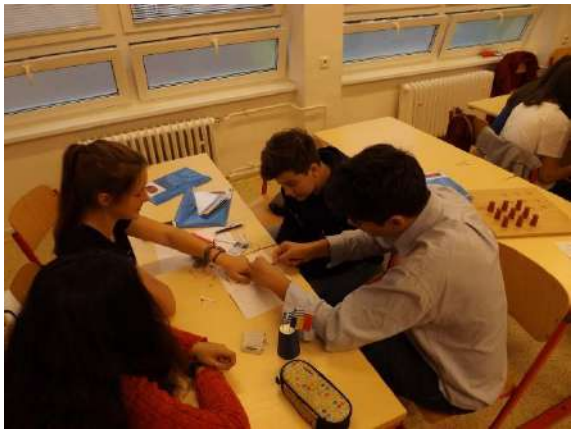

PHOTO-"AFTER WORK"

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ONLINE DOCUMENTS

1st workshop – Greek "Review" (video)

1st workshop – Romanian "Review" (presentation)

1st workshop – Romanian "Review" (in Romanian language)

1st workshop – Arin's diary (RO)

1st workshop – Liviu's diary (RO)

1st workshop – Atudorei's diary (RO)

1st workshop – Călin's journal (RO)

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GEOGEBRA – BASICS - FOLLOW THE WRITTEN PROCES OF THE CONSTRUCTIONS

Follow the written proces of the constructions:

Task 1

1. $KL; |KL| = 7,5 \text{ cm}$
2. k ; $k(K,\ 2,5 \text{ cm})$
3. l ; $l(L,\ 6,1 \text{ cm})$
4. $M; M \in k \cap l$
5. $\Delta\ KLM$

Task 2

1. AB ; $|AB| = 7,6 \text{ cm}$
2. $k; k(B,\ 4,2 \text{ cm})$
3. ; $\measuredangle\ ABX$; $|\measuredangle ABX| - 35\ °\measuredangle$
4. $C; C \in k \cap \rightarrow BX$
5. $\Delta\ ABC$

Task 3

1. $AB; |AB| = c = 5,2 \text{ cm}$
2. $p; p \parallel c \wedge |pc| = 4,1\ cm$
3. $C_0; C_0 \in AB \wedge C_0A \cong C_0B$
4. $t; t(C_0, |C_0A|)$
5. $k; k(A,\ 3,8 \text{ cm})$
6. $A_1; A_1 \in t \cap k$
7. $C; C \in p \cap \rightarrow BA_1$
8. ΔABC

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Task 4 - use **scroll bar** for v_c, **and** a (v_c in geogebra **v_c**)

1. $AB, |AB| = c$
2. $k; k(B, a)$
3. $p, p \parallel c, |p, c| = v_c$
4. $C; C = p \cap k$
5. $\Delta ABC_1, \ldots.?$

Task 4 - use **scroll bar** for v_c, **and** a (v_c in geogebra **v_c**)

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GEOGEBRA – CENTROID, CIRCUMCENTRE, AND ORTHOCENTRE OF THE TRIANGLE

Task 1 - Eras geogebra

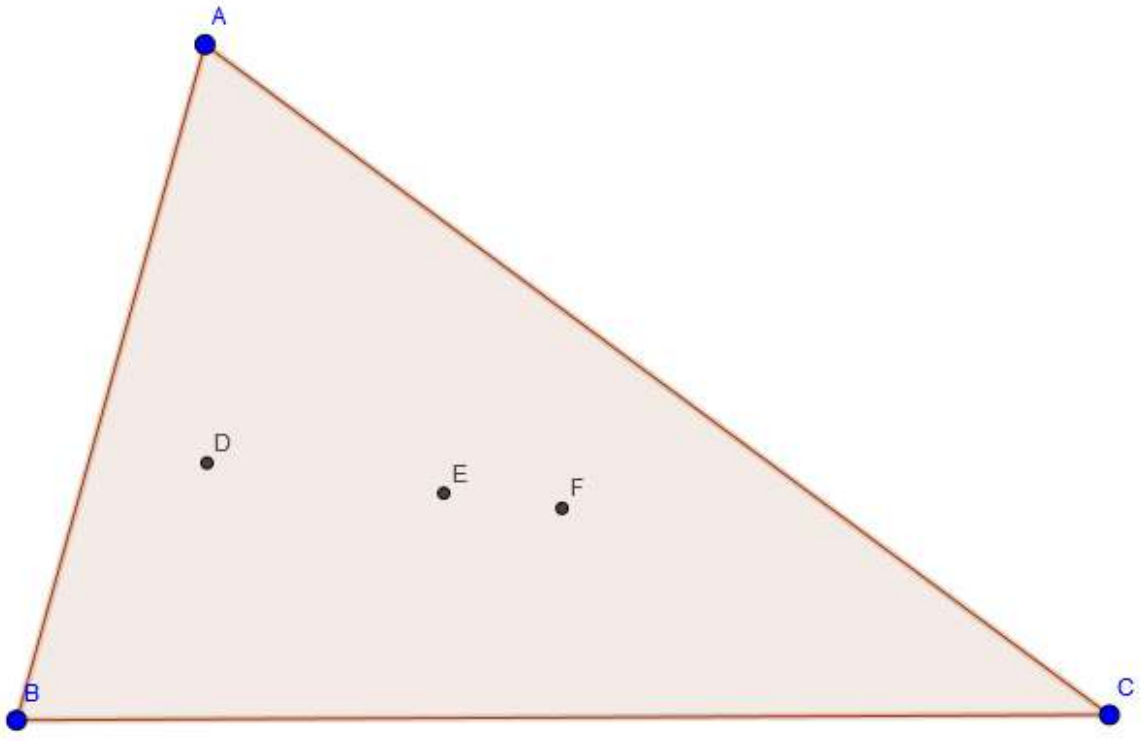
Centroid, circumcentre, and orthocentre of the triangle

***Given information**: Any triangle ABC*

In the GeoGebra classic, construct the points D, E, and F that represent the centroid, circumcentre, and orthocentre of the triangle ABC.

You can do this task also in three constructions (one for centroid, one for circumcentre, one for orthocentre)

Task: The points D, E, and F that represent the centroid, circumcentre, and orthocentre of the triangle ABC. Determine which point (D, E, F) is which and add the answer as a text into the geogebra classic.



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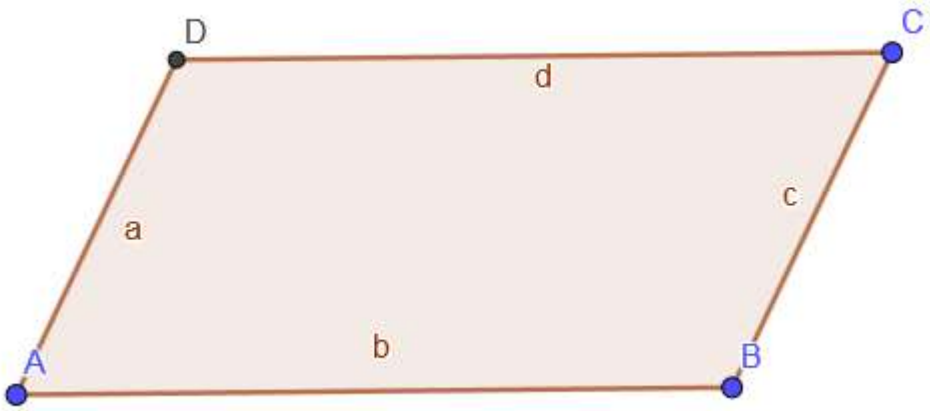
GEOGEBRA – SQUARES AROUND PARALLELOGRAM

Task 2 - Eras geogebra

Squares around parallelogram

Given information: *Any parallelogram ABCD*



1) Construct 4 squares on 4 sides of a parallelogram
2) Consider the centres of these squares.

Task: What can you tell about the quadrilateral formed by these 4 centres?

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PHOTOS

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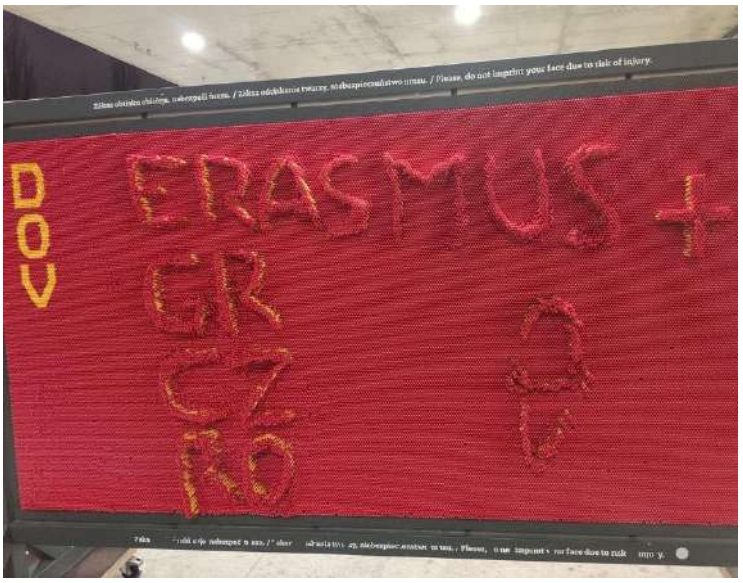

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PHOTO – ROBOTICS – WORKSHOP AT TECHNICAL UNIVERSITY OF OSTRAVA

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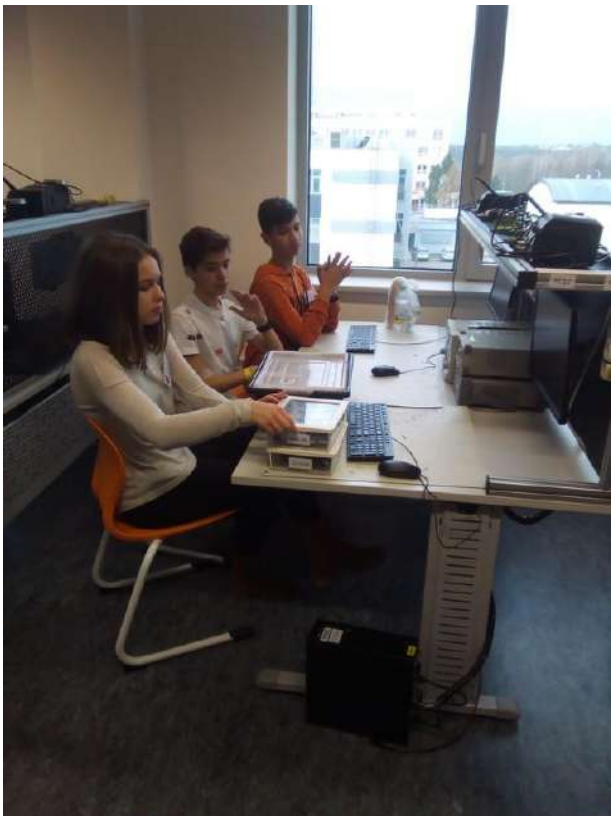

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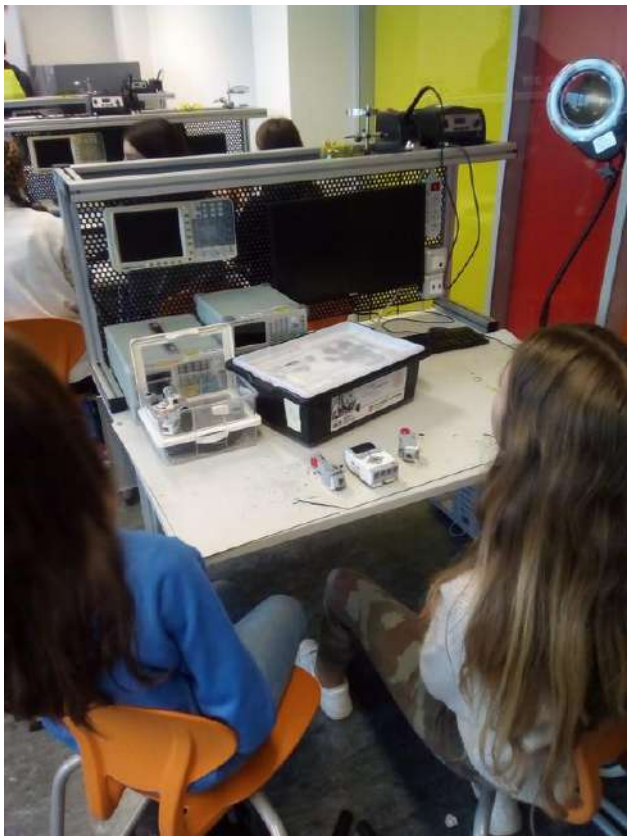

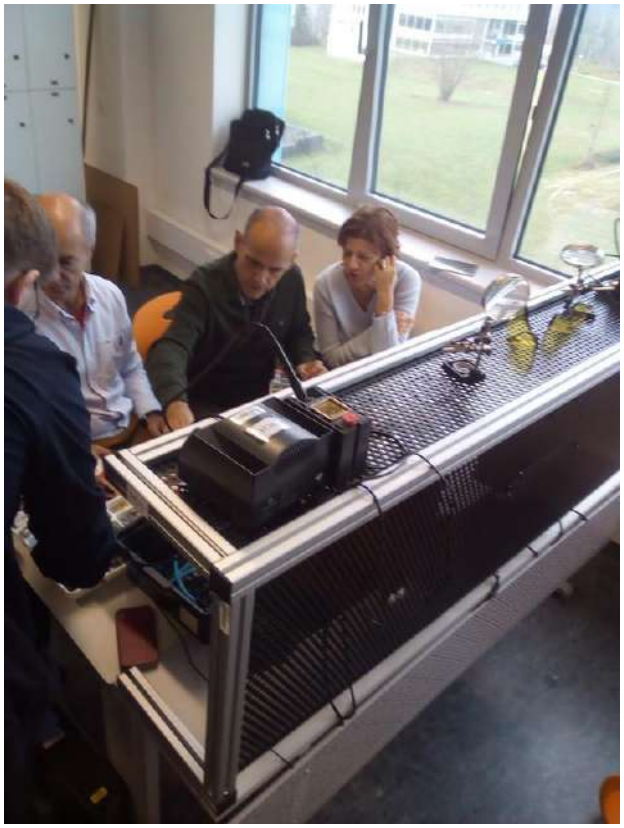

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ROBOTICS - "SPHERO" - WORKSHEET

MISSION: Prepare Your Device

You will control the robot (Sphero SPRK+) wirelessly by the Bluetooth protocol.

Install two applications to your mobile phone: **Sphero Play and Sphero Edu**.

Turn on the **Bluetooth** on your mobile phone (tablet).

MISSION: Have Some Driving Training

Start the Spero Play application.

Choose the SPRK+ robot.

Hold the phone close to robot. The robot has to be turn on or sleeping. Put it into the bowl shape charger to turn it on. Your phone has to connect to the robot.

Aiming: You have to turn around your robot so that it is aiming directly to you by the small blue light. This is the back direction.

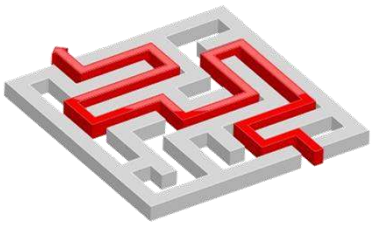
Tap the blue dot and have a fun with the robot. You should get some driving skills to be able navigate your robot along the prepared way.

You can change some settings (e.g. the speed and the colour) by tapping the symbol .

MISSION: The Race

There will be prepared some competition races for you (e.g. the slalom). Your team can get some extra points here if your robot will have the best time. Be careful! There can be some penalties if you touch the cone.

Follow the teacher instructions.



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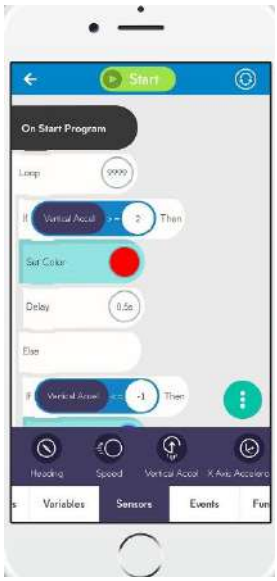
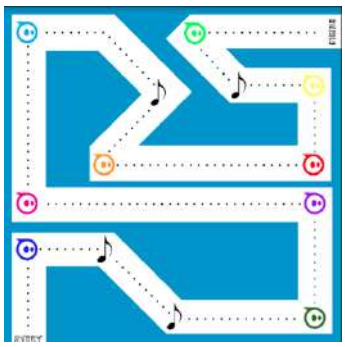
MISSION: The First Code



The second way how to use the robot is controlling it by the code.

Open the **application Sphero Edu** or visit the website **https://edu.sphero.com**.

Use one of the prepared Gmail accounts for your team:



User: miners.team.01@gmail.com

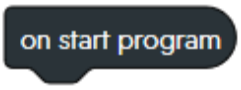
Password: Zshlucinska7

The number 01 represents then number of your team.

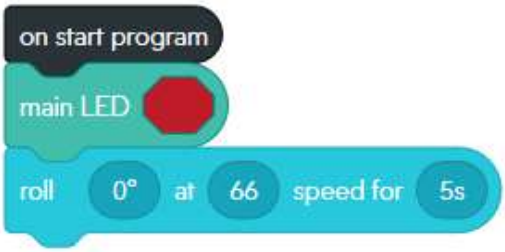
Every code you make will be saved here. Each member of your team can sing up by this account and create program alone by himself.

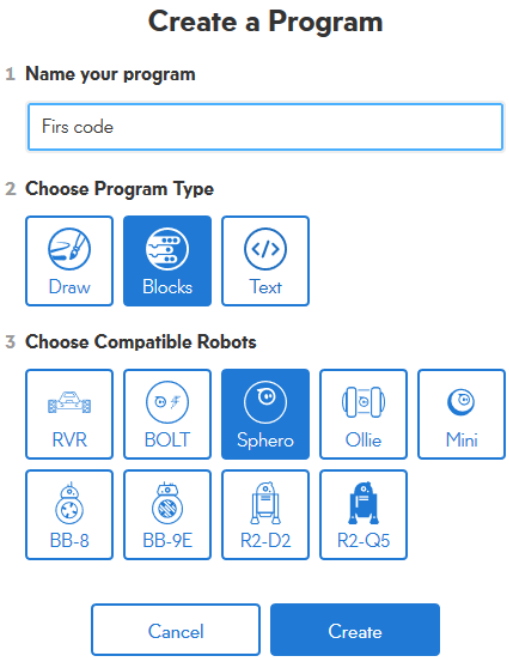
Find the symbol to enter the code environment and taping the plus symbol create your firs code.

Every code starts with the black block e.g. “on start program”.



You can add other blocks from the bottom of your screen.





The blocks are proceeded sequently one by one. Here the code switches the light on in red colour and then run the robot at the angle 0 by the speed 66 for 5 second.

You can create the program online on your PC or in Sphero EDU application on your mobile phone.

If you want to run the code, **you must be connected to your robot** by Bluetooth. So, you can run the code made by your friend on another device.

Ones you are connected to your robot you can run your program by tapping the green button “Start”.

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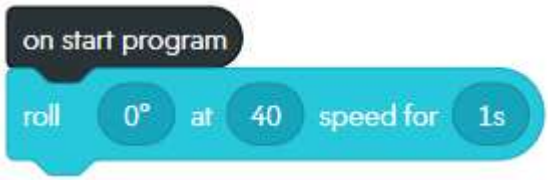
Before you run the program, you should "aim" the robot so, the robot will roll in direction you want to.

MISSION: Get the Distance Constant

You will need move the robot by a specific distance. **Find out the conversion constant.** Choose one particular speed (the lower one from the range 0-255). **Our advice:** use the speed **20 for distances form 15 cm to 50 cm**. Prepare an easy program which will contain only one block.

Make a start point for the robot on the ground. Start the program and measure the distance which the robot does. Write down the pair of values (the distance and the time).

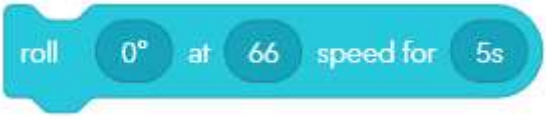


Repeat the measurement for these timings 0,5s – 1s – 1,5s – 2s.

Deduce the conversion constant from these measurements. Divide the time (s) by the distance (cm). You should get the result of this sort: 0,035 *(not this particular result)*. Save the constant for the later use.

MISSION: The Independent Race

The assignment: This time, you have to prepare a code for your robot. The robot has to run through the maze without your intervention.



1) Measure each part of the maze path
2) Use several times the "roll" block
3) Use the speed you used in the mission "Get the Distance Constant". The time calculate from the measured distance and the deduced conversion constant.

MISSION: The Prime Numbers

You will see numbers painted on the ground. There is the same distance between each number.

The assignment: Your robot will go along the row of numbers. If the particular number is a prime number the robot will flash the light.

You can use different way to signalize the prime number such as the sound, robot spinning or complicated light flashing. The originality can be marked by a higher mark.

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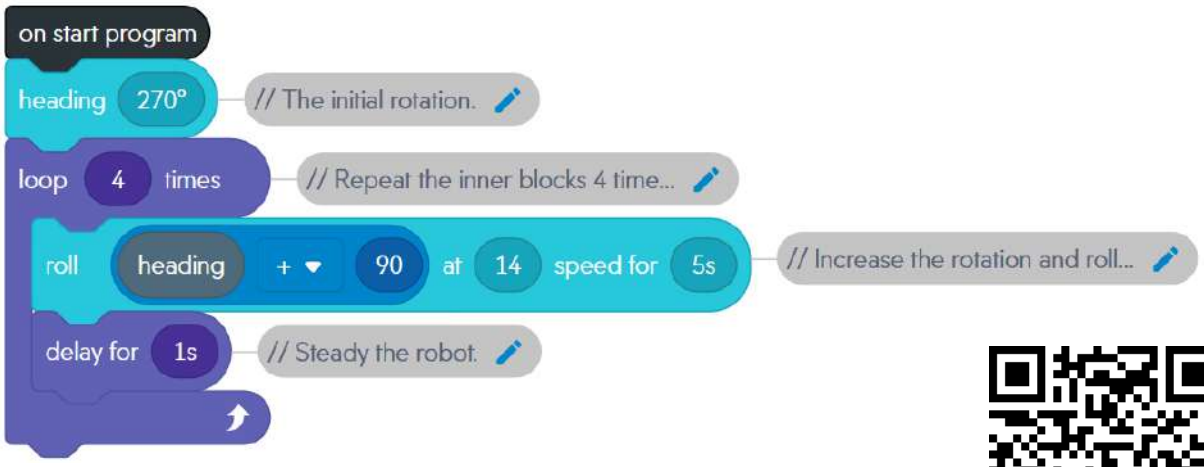
MISSION: The Square

This is an example with comments for you. The robot will move along a square shape. You can see the movement in the screen of your mobile phone.

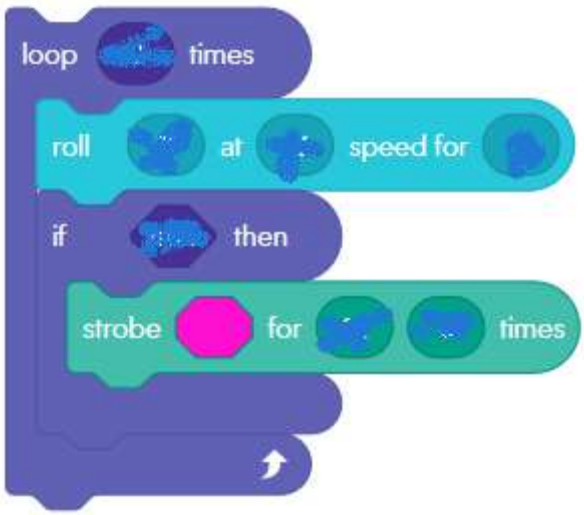


Is it too difficult for you? See the video on the YouTube channel:
https://www.youtube.com/watch?v=H3aNnypuMiI

It is esential for the next mission you to understand the block “loop”.

MISSION: The Even Numbers

The assignment: Make a similar code as in the mission “The Prime Number”. This time you should use the block “**loop**” to shorten the code. The robot will signalize the even number using the block “**If – then**”. In the condition use the function “**mod**”.



If you are not familiar with the block “If – then” se the video on the You tube channel:

https://www.youtube.com/watch?v=ESaR5dYu2Ew

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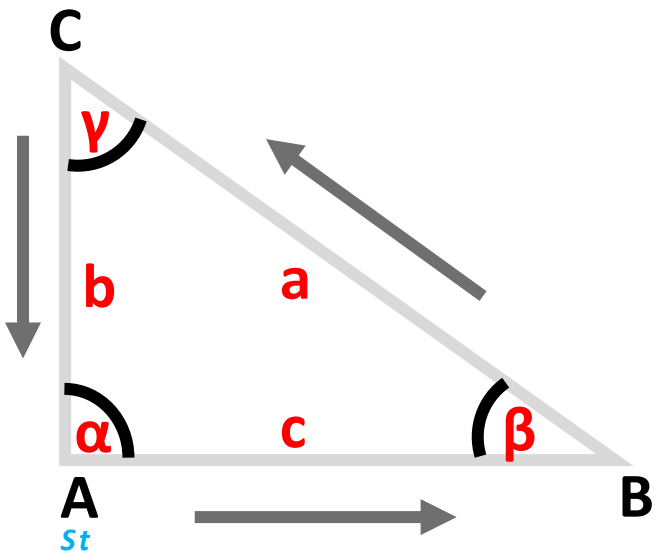
MISSION: The Triangle

The assignment: Your robot will run along the triangle shape. You have these values:

α = 90°, **β** = 36,86°

b= 30 cm, **c** = 40 cm

The circumference = 120 cm



Improvements

You can implement other effects to your code such as light changings, sounds or a spinning in each vertex of the triangle.

Results

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PHOTO – FAREWELL DINNER

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With the support of the Erasmus+ Programme of the European Union

2ND WORKSHOP (RO- IASI)

Program

Luni, 24 mai
Deschiderea evenimentelor.
Prezentarea proiectului, echipe, activități, finalități.

Marți, 25 mai
Geometrie –
Minecraft Education / Podul lui da Vinci

Miercuri, 26 mai
Fractali

Joi, 27 mai
Astronomie

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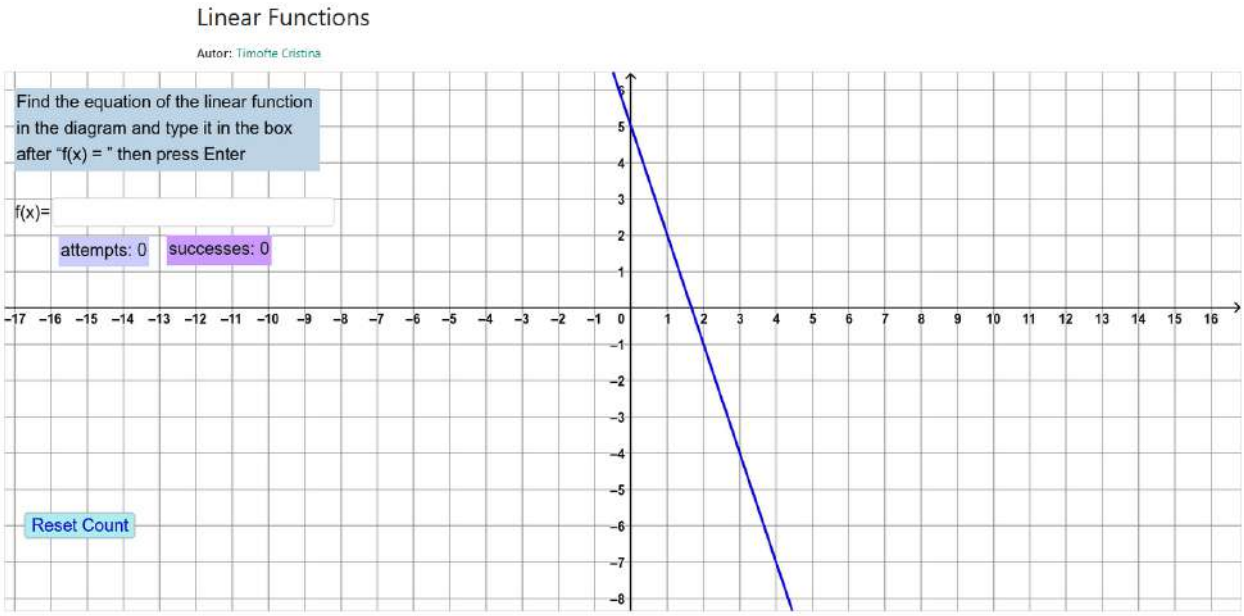
Pre-activities

LINEAR FUNCTION

Have and go at Linear Functions!

It is a Geogebra app designed to help student find the equation of a linear function, given its graph. Hope you enjoy! (RO)

Example of result (CZ):



MATH AND ART

Dear friends!

Covid 19 has had a major impact not only on the human interaction, but also on the way we organise the activities for all projects. The teachers and the students, however, are very creative and therefore we will continue with the challenges for all project teams.

We have started a new stage – Maths and Art.

Mrs. Ana Munteanu, Arts teacher in our highschool, periodically introduces us all to a new representative painter and a theme. The students in our school produce and present their personal works related to the proposed theme.

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The first artist and theme that have been presented to the students was Victor Vasarely and the op-art concept. Some highlights of his activity, as well as some student creations connected to the main theme proposed by the teacher are being presented next.

Here are the challenges for each team:

1. Create artworks in accordance with the painter's theme.

2. Choose another representative of the visual arts; make a brief presentation of his/her activity, which you will post on the platform.

3. Each group will create works which fit the artist's theme.

We are convinced that your time will be spent in a very pleasant way, with relevant mathematical significance.

We wish you good luck and good health!

Romanian Team

FOOD FOR THOUGHTS – VICTOR VASARELY'S PAINTS

Erasmus+

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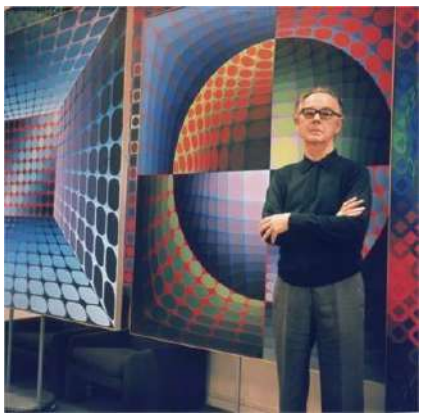

The OP – ART

Op-art, or optical art, represents a new direction in the modern visual arts. It is based on the strong contrasts between black and white, flat and spatial geometric shapes, but most of all on optical illusions.

Op-art transformed the perception into an underlying principle in the existence of creation. The basic method is the use of abstract geometric shapes and of colored surfaces in order to generate in the eye of the beholder an illusion of movement or vibration, through the technique of optical illusions. The optical illusion is initially generated within our visual perception: the image exists not only on paper, but also in the reality, in the eyes and in the brains of the people who watch it.

The term „op-art" was initially coined in the Time Magazine in October, 1964, but one of the first manifestations which announced the new movement and its main representatives, Victor Vasarely and Jesus-Rafael Soto – was the 1995 exposition from the Denise René Art Gallery in Paris.

Read more…

LIIS – RO STUDENTS PAINTS

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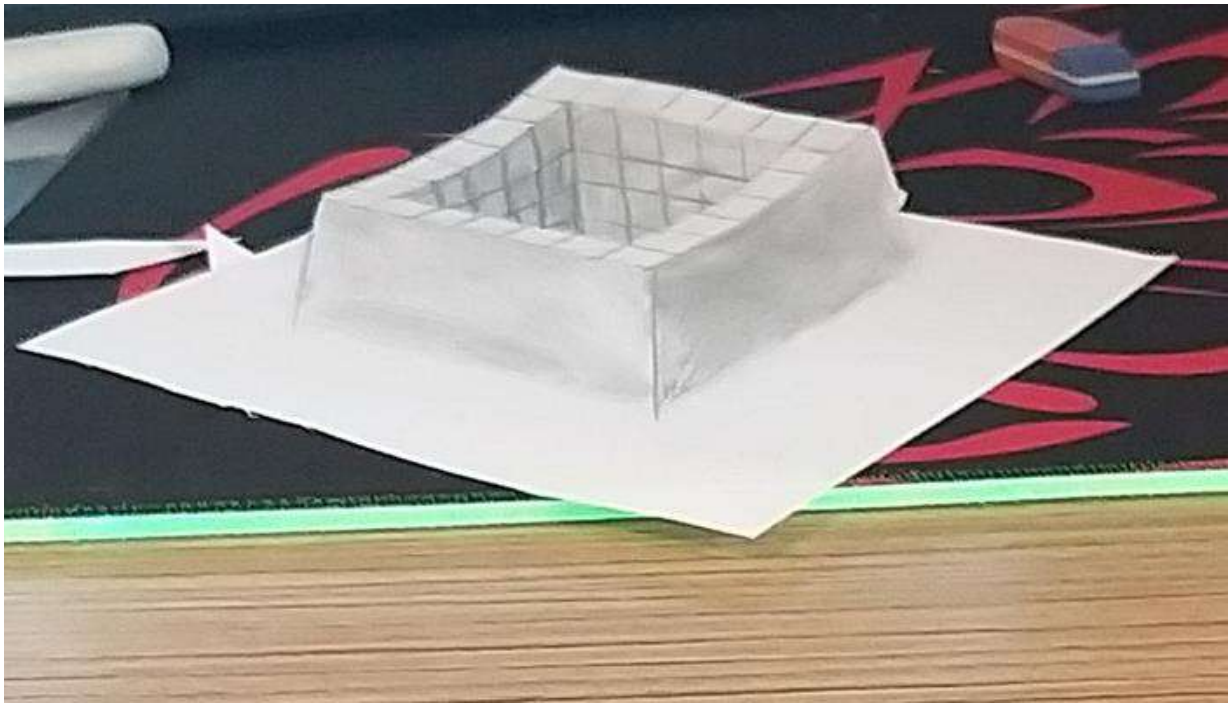
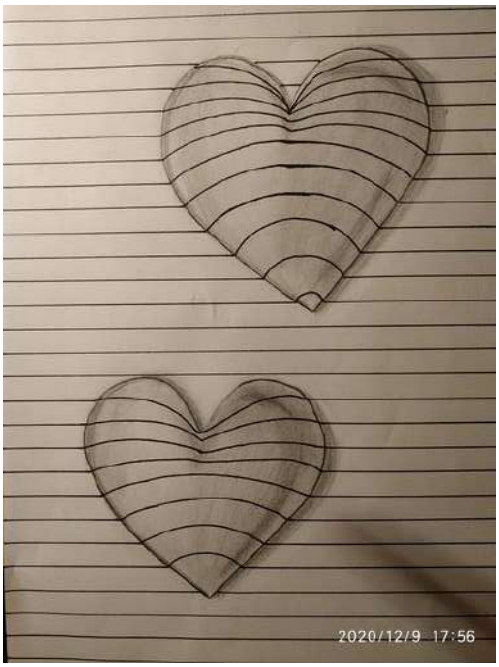
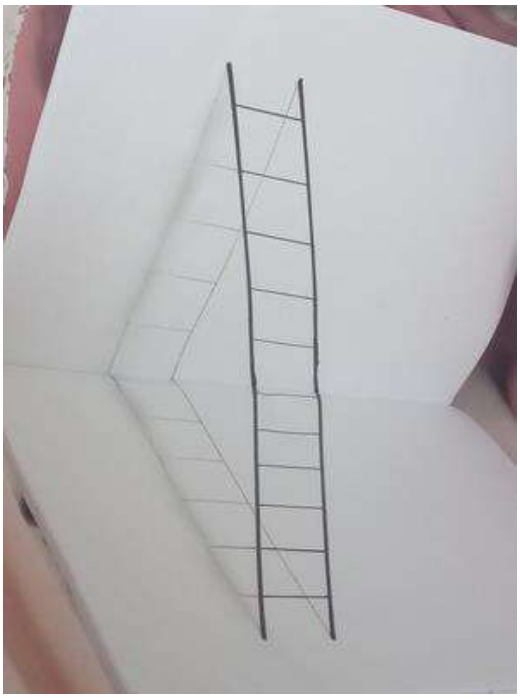
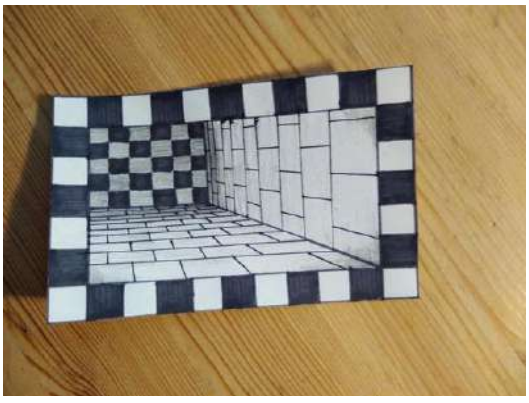


ZS HORNICKA (CZ) - STUDENTS' PAINTS







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SCHEDULE

THE INTERNATIONAL PUPILS MATH WORKSHOP
Virtual Meeting
Iași, 25 – 27 may 2021

Co-funded by the Erasmus+ Programme of the European Union

Erasmus+

PROGRAM MEETING

Nr. crt.	Activity	Short description	Coordinators	Resources	Products of the project
	Monday, 24th of May 2021, @ 12.00 - ZOOM				
1	**Welcome!**	1. Introduction – prof. Cristina TIMOFTE 2. Welcome speech – school manager, prof.dr. Adina Mihaela ROMANESCU 3. Presentation of the participating teams: a) Czech Republic – prof. Barbara GLACOVA b) Greece – prof. Elpis MPOULITSAKI Prof. Tasos RAOS Prof Panogiotis KORAKOVOUNIS c) Romania: prof. Lăcrămioara POPA prof. Ana Maria Andrei Clasa 9B – prof. Ines CREȚU Clasa 9E – prof. Rodica LEONTIEȘ Clasa 9F – prof. Cristina TIMOFTE		Photos of the teams participating in the project. Work materials proposed by the teams (prepared and posted on eTwinning).	Tables with the names of the participants
2.	**Computer Science High**	Virtual visit through our school	Victor TCACIUC Andrei BĂLĂȘESCU	Presentation film	

Read more …

2ND WORKSHOPS - "REVIEW" FROM GREECE

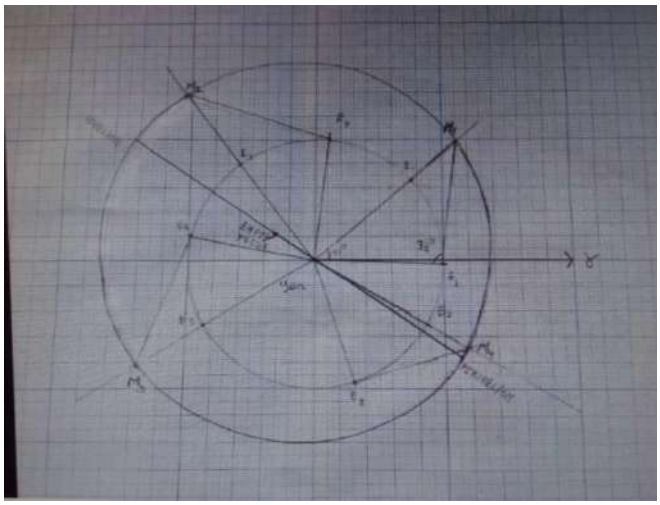
Virtual meetings

MEETING IN ROMANIA

Elpida is helping Evangelia – construct Leonardo's bridge

Lefteris, Korina, Ioanna, Despoina and Anastasia are participating in Minecraft Education crafts.

Trying to construct Leonardo's bridge



Discover Kepler's laws. We designed the orbit of planet Mars

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MEETING IN GREECE

Matthew, Korina, Evangelia and Stavros are measuring the height of our school by two different trigonometric approaches

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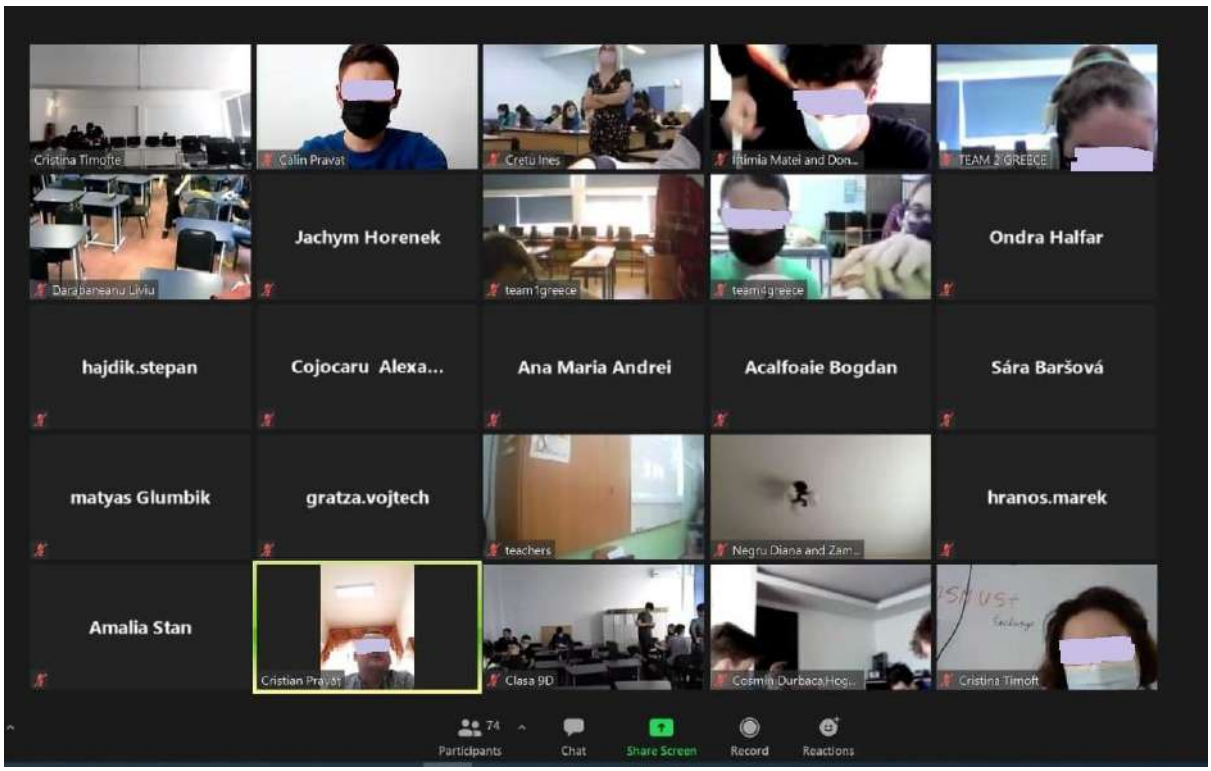
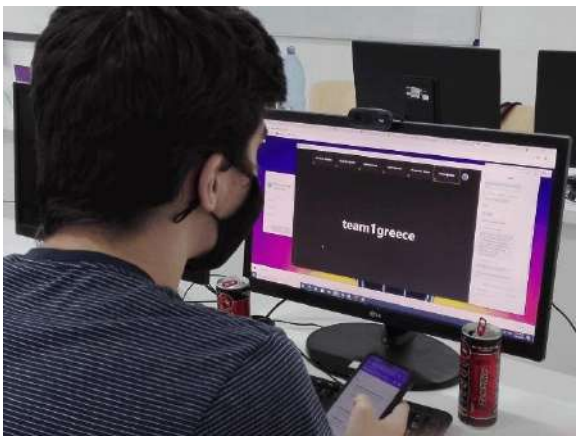
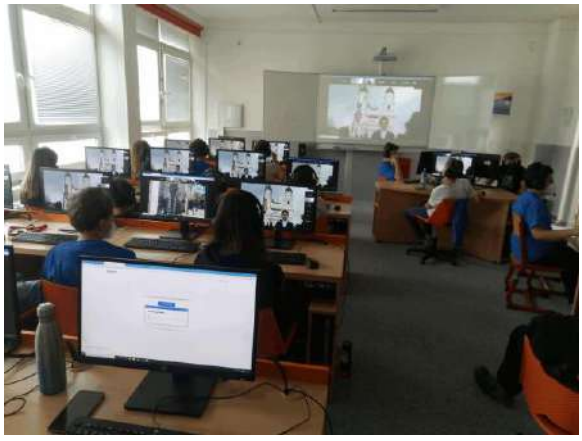
DAY 1

PHOTO – ONLINE COMMUNICATION







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DAY 2

LEONARDO DA VINCI BRIDGE – PREPARATION

The materials and applications required for the activities will be posted here

proposed.

Installation links:

WIN-RAR

OBS

Also, please watch this tutorial to see how to install Minecraft Education

Minecraft Education - tutorial.pdf

Please install those applications before we start the activities.Thank you!

Also, you will need a set of 20 pencil (Normal Size), cutted in this way:

he cuts at the ends are made from 2 cm away at the edge.

The second tipe of cut is made at the middle of the pencil.

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Materials presented at Minecraft Education:

Read more …

LEONARDO DA VINCI BRIDGE – ROMANIAN PUPILS' WORK

With the support of the Erasmus+ Programme of the European Union

Read more …

LEONARDO DA VINCI BRIDGE – CZECH PUPILS' WORK

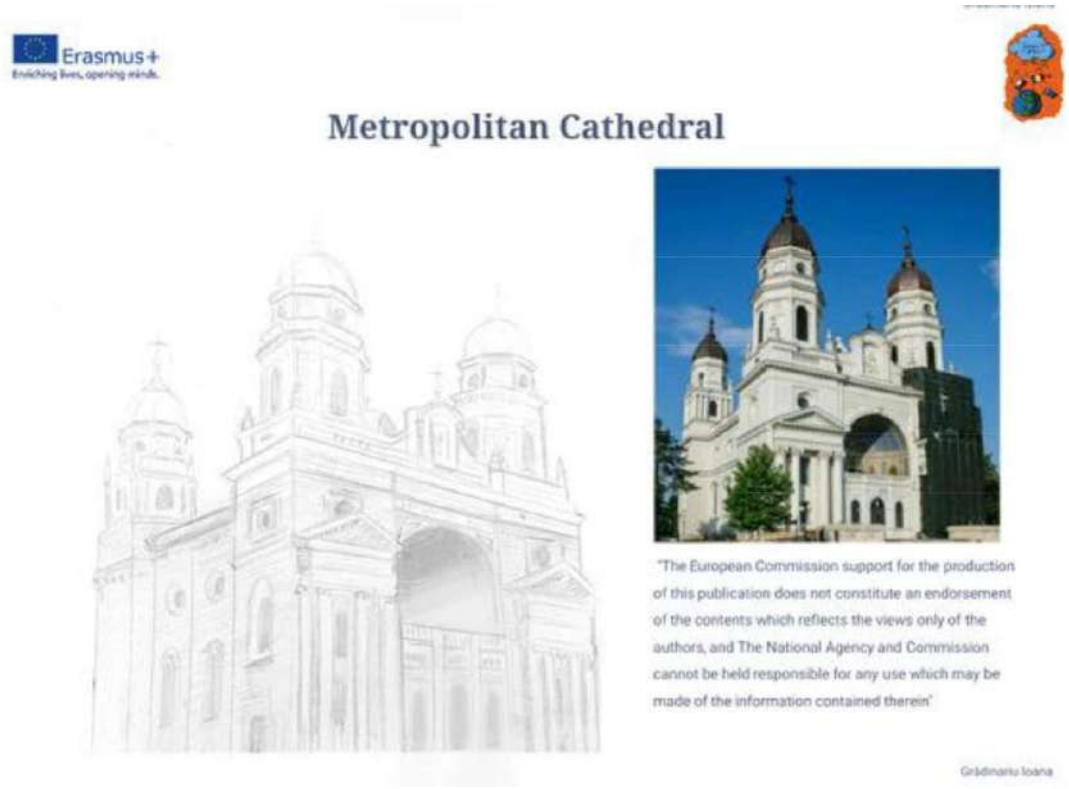
Read more …

With the support of the Erasmus+ Programme of the European Union

LEONARDO DA VINCI BRIDGE – GREEK PUPILS' WORK

Read more …

MINECRAFT CONSTRUCTIONS – MATHEMATICAL TASK



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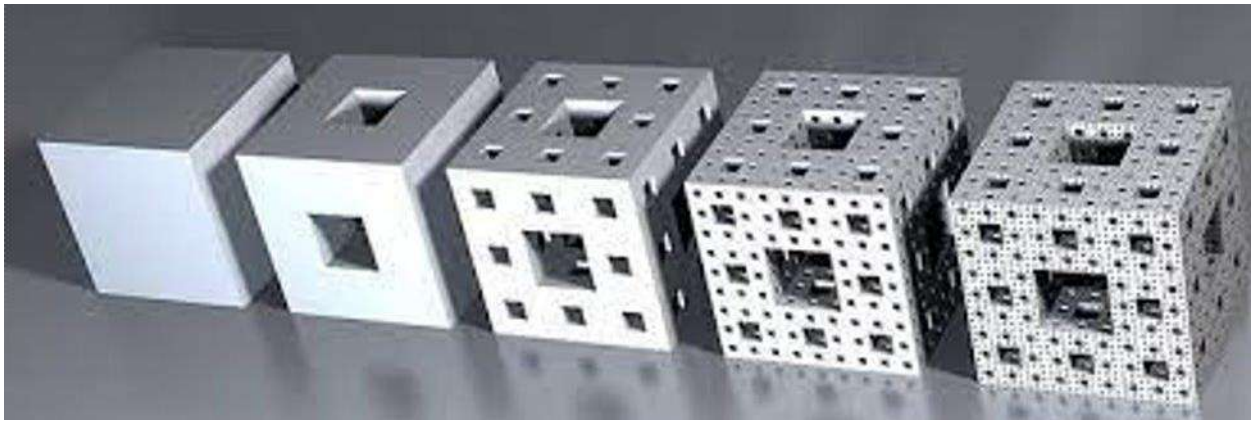
Read more …

DAY 3

FRACTALS – INTRODUCTION



Read more …

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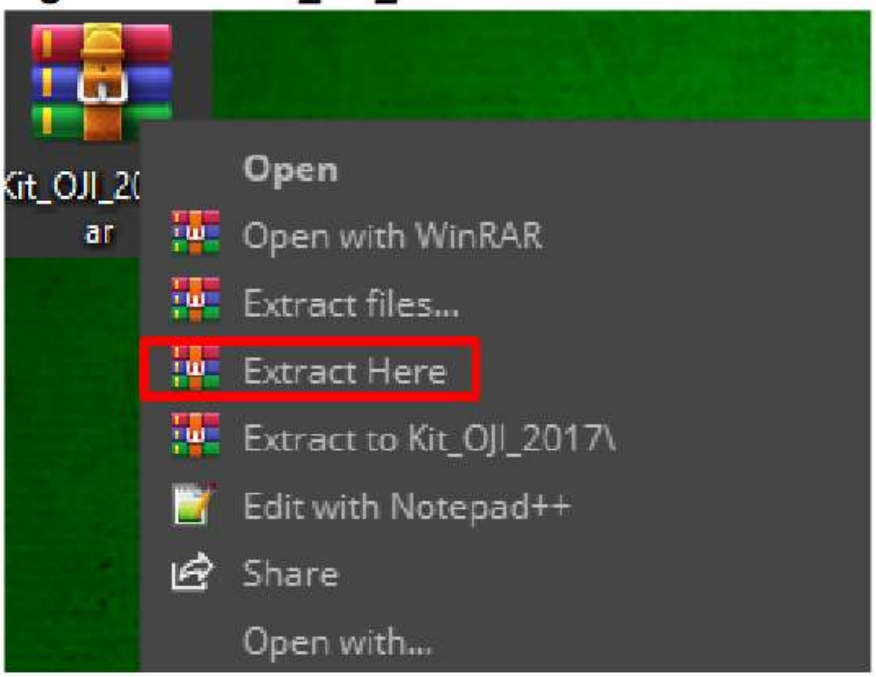
Create your own fractal

1. Install Winrar
2. Installing ***Code::Blocks***
   - Download this
   - **Right click** on ***Kit_OJI_2017.rar***



   - Open the folder created
   - Run **OJIKIT_2017.exe**

Copy the code assigned on your team and paste it in main.cpp

- Team 1
- Team 2
- Team 3
- Team 4
- Team 5

Explore the code and CHANGE only the lines with "///"

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```
if(L > 10) ///Change the number "10" to change the level of the fractal
{
    delay(20);

    p.x = p.x - L / 2;
    p.y = p.y - L / 2;
    u.x = p.x + L;
    u.y = p.y + L;

    rectangle(p.x, p.y, u.x, u.y);

    setcolor(BLUE); ///<--- Change color here
    u.x = p.x;      u.y = p.y;      squareGrid(u, L / 2);

    setcolor(GREEN); ///<--- Change color here
    u.x = p.x + L;  u.y = p.y;      squareGrid(u, L / 2);

    setcolor(YELLOW); ///<--- Change color here
    u.x = p.x + L;  u.y = p.y + L;  squareGrid(u, L / 2);

    setcolor(WHITE); ///<--- Change color here
    u.x = p.x;      u.y = p.y + L;  squareGrid(u, L / 2);
}
```

The colors that you can fill there are: BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN,LIGHTGRAY, DARKGRAY, LIGHTBLUE, LIGHTGREEN, LIGHTCYAN, LIGHTRED, LIGHTMAGENTA,YELLOW, WHITE

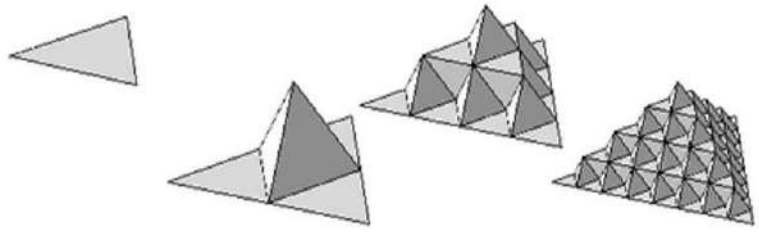
Read more...

FRACTALS – INTRODUCTION (PRESENTED BY STUDENTS FROM ROMANIA)

Suprafaţa lui Koch în 3D

Read more…

- Procedeul de generare folosit la fulgul lui Koch poate fi extins în mod natural şi în spaţiul 3D. Modelul obţinut se numeşte suprafaţa lui Koch şi are **dimensiunea fractală log(6)/log(2) = 2.5849**



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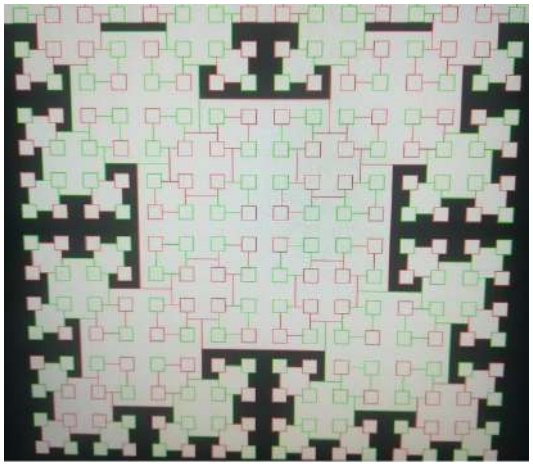
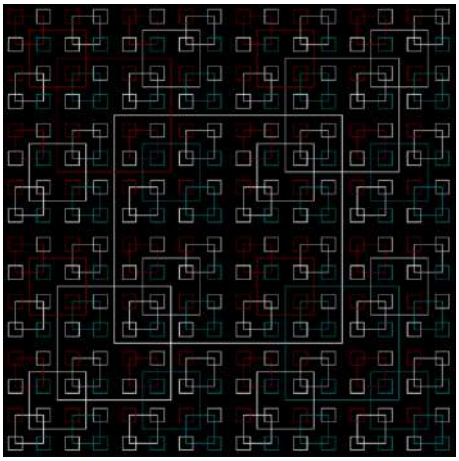
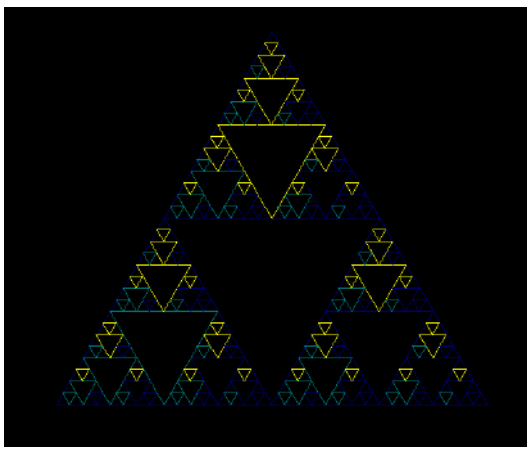
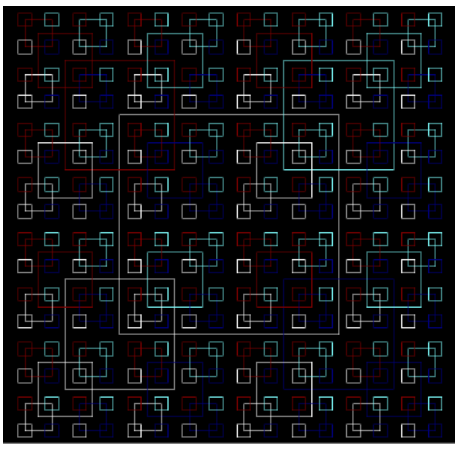
FRACTALS – PUPILS' RESULTS









Read more …

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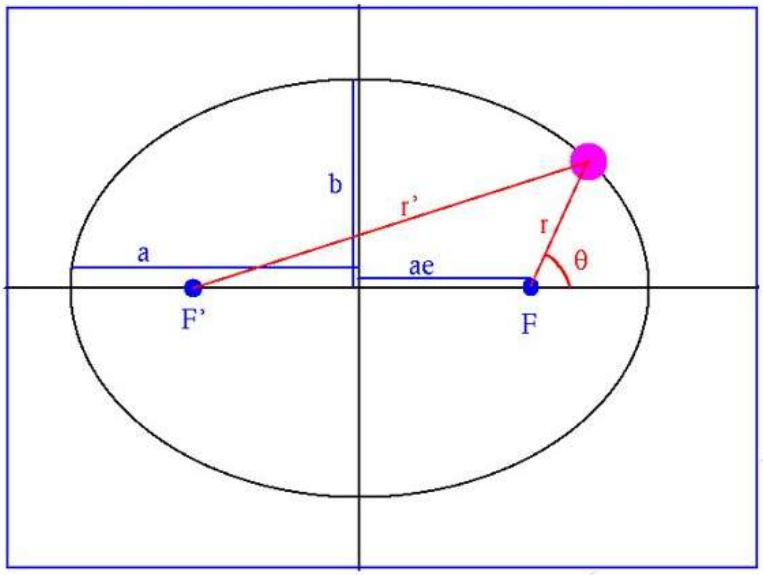
THE LAWS OF PLANETARY MOTION – MATHEMATICAL TASK

The first law

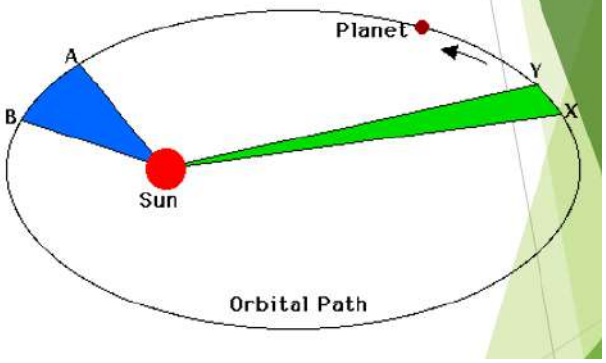
- The orbit of every planet is an ellipse with the Sun at one of the two foci.

An ellipse is a curve surrounding two fixed points called foci, such that for all points on the curve, the sum of the two distances to the focal points is a constant.



The second law

The straight line that unites the planet with the sun ("the vector ray of the planet") sweeps equal areas in equal periods of time or formulated equivalent to the areolar speed of the vector beam is constant.



Read more …

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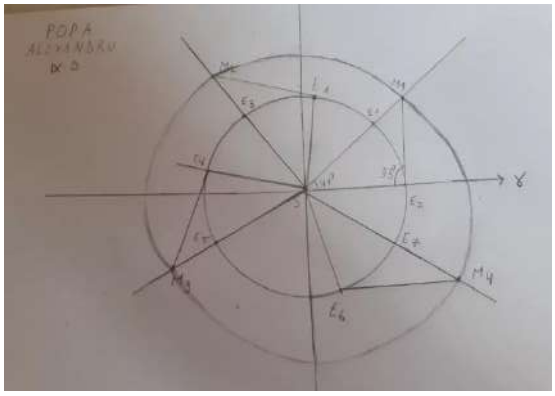
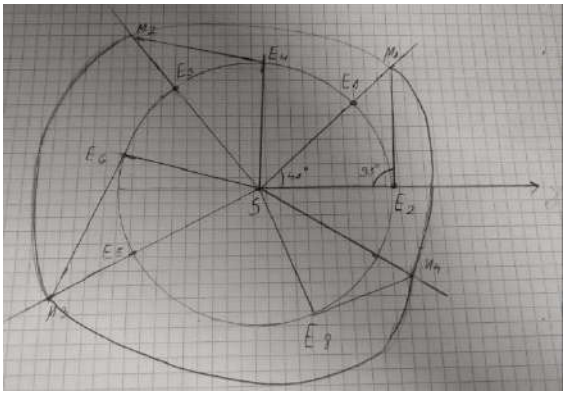
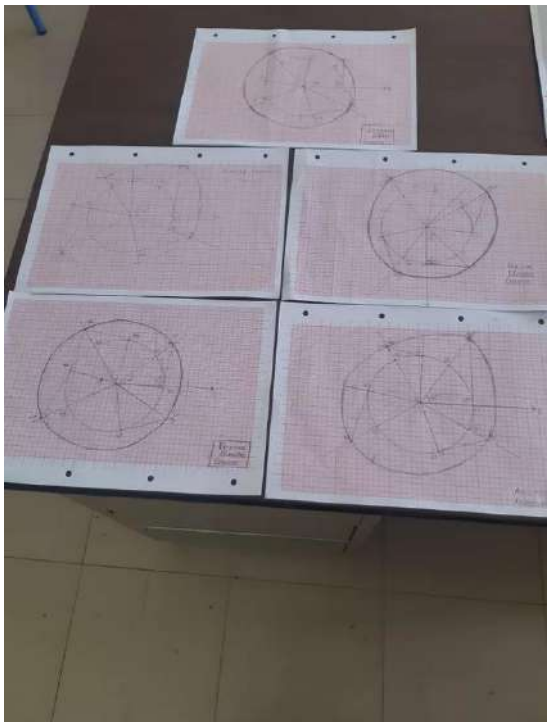
ASTRONOMY – ROMANIAN PUPILS' RESULTS





Read more …

ASTRONOMY – GREEK PUPILS' RESULTS



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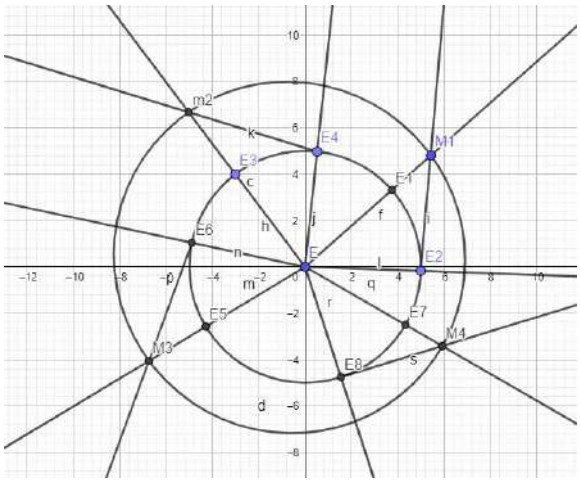
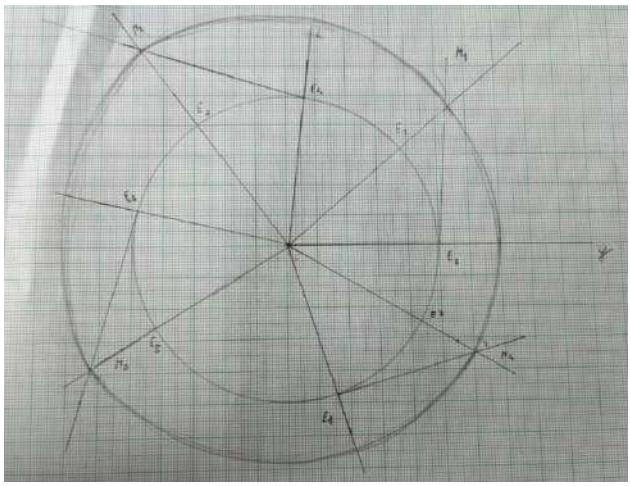
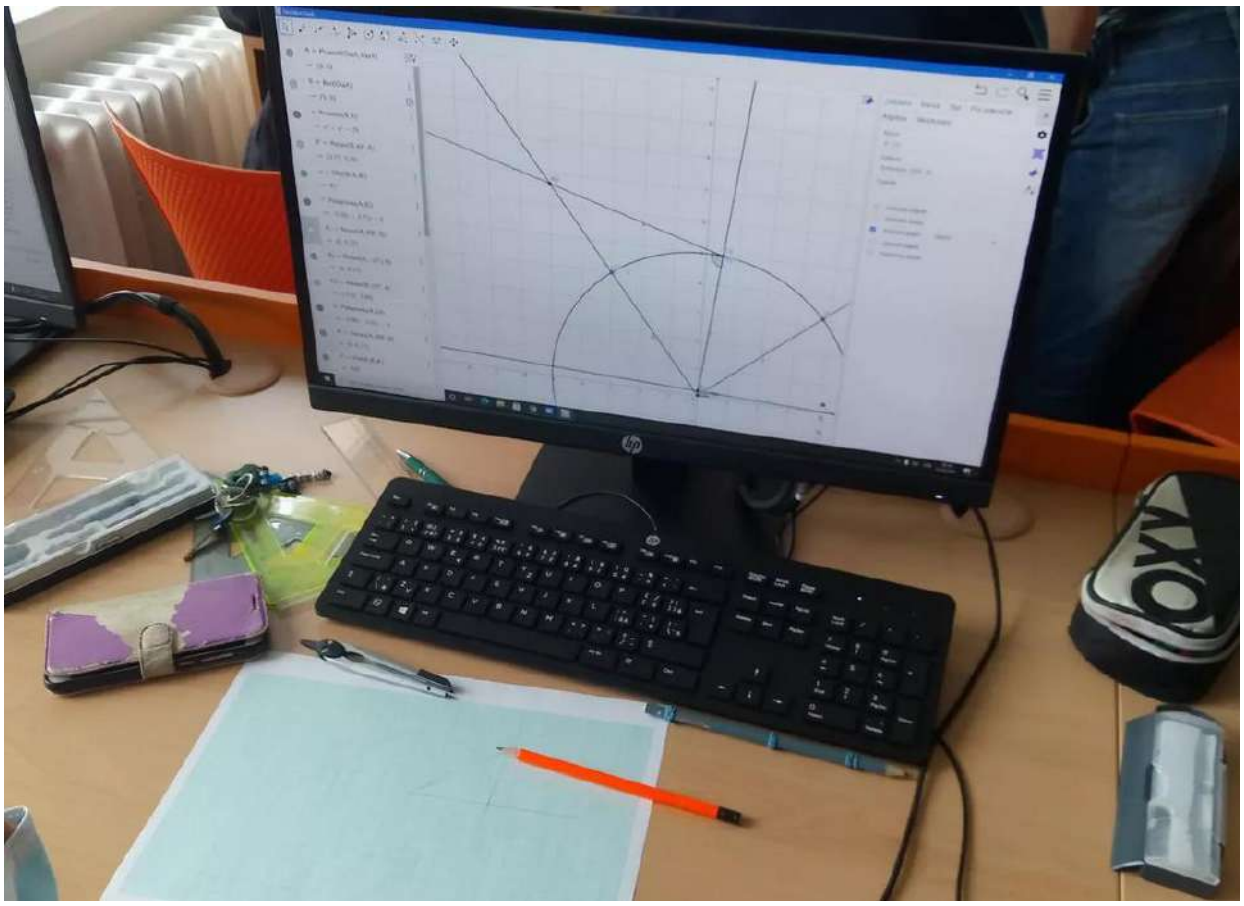
ASTRONOMY – CZECH PUPILS' RESULT







[Read more …]

[Feedback]

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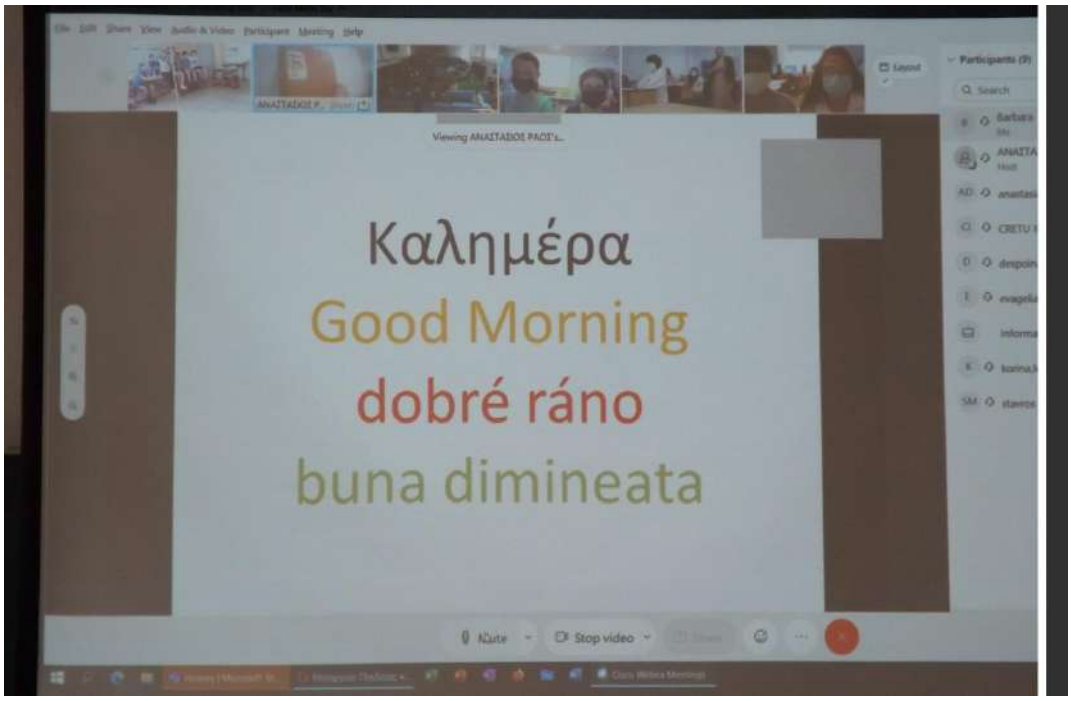
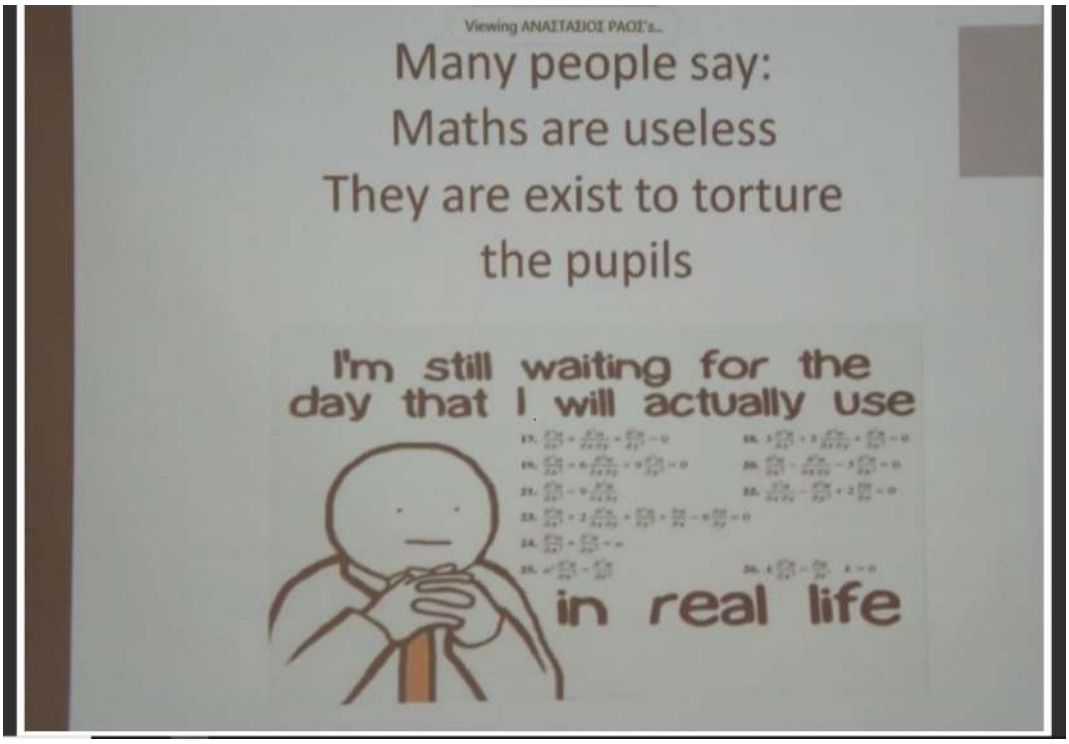
3RD WORKSHOP (GR - CHANIA)





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SCHEDULE

Activity	Short description	Resources	Product of the project
Monday 7 June 2021 12:00			
Welcome!	1. Introduction Prof. Raos Anastasios 2. Welcome speech from our principal Mr. Korakovounis Panagiotis 3.Presentation of the participants a) Czech team prof. Barbara Glacova b) Romanian team prof. Lacramioara Popa c) Greek team prof. Mpoulitsaki Elpida		
Introduction of our school and the city of Chania.	We shall see the activities that take place in our school. Also we will see the highlights of Chania one of the four big cities of the island Crete .	Videos and photos	

Read more …

REVIEW FORM GREECE

Matthew, Korina, Evangelia and Stavros are measuring the height of our school by two different trigonometric approaches

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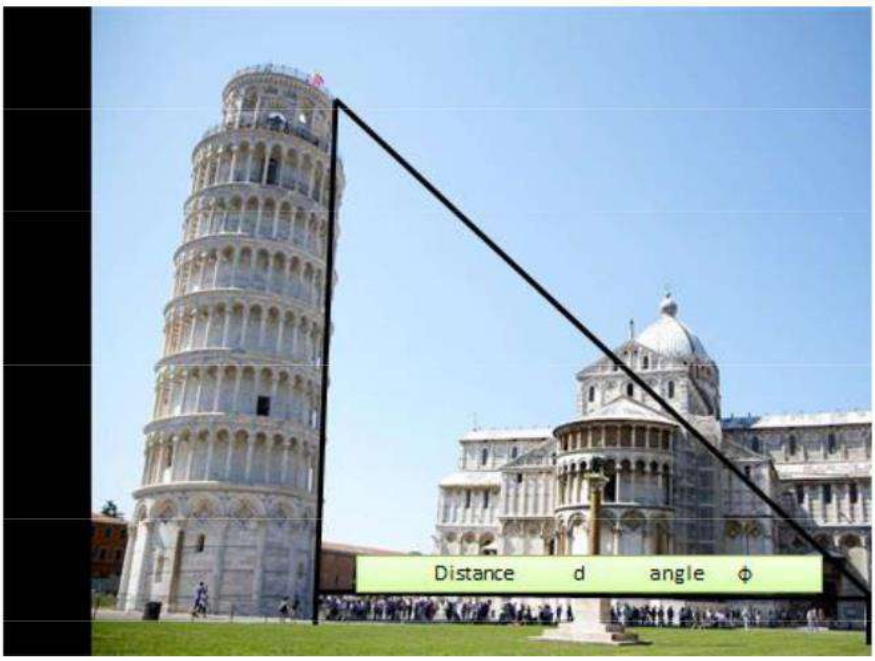
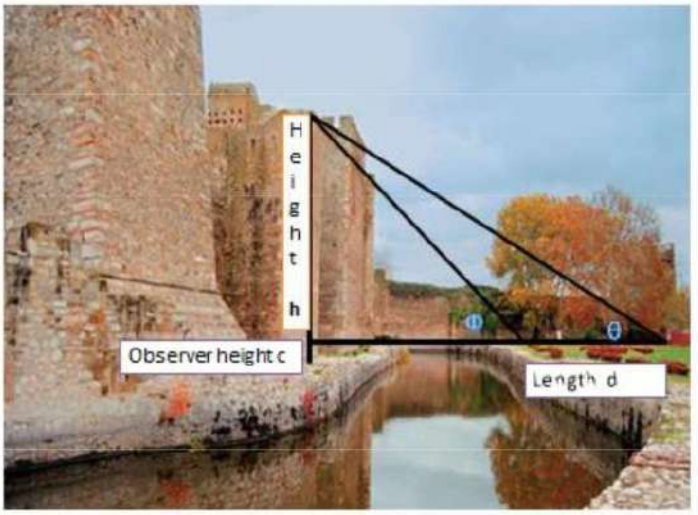
First way:



from the equation: $tan\varphi = \frac{height\ h}{distance\ d} \rightarrow h = d \cdot tan\varphi$

Second way:



Calculating height h from two points of observation from unknown distance

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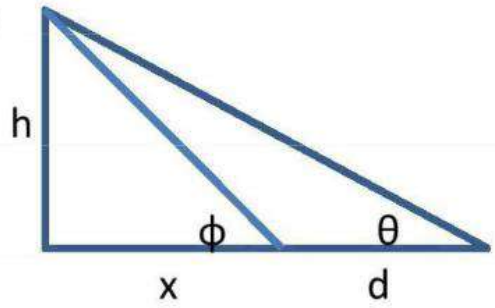
Solution

From the right triangles we have

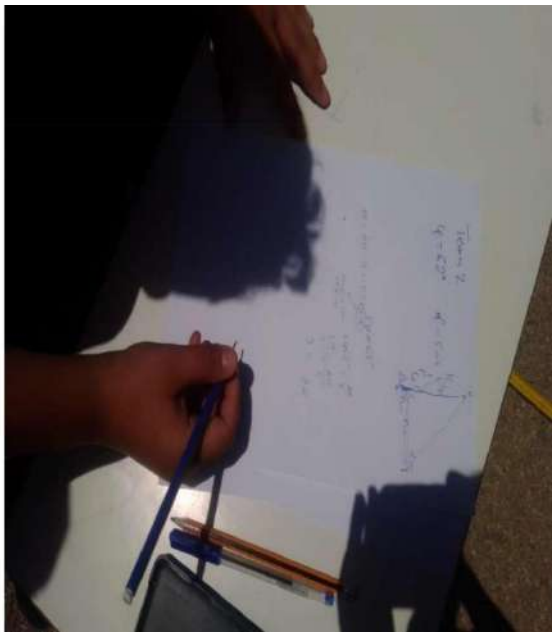


$$\begin{cases} tan\varphi = \frac{h}{x} \\ tan\vartheta = \frac{h}{x+d} \end{cases} \Rightarrow \begin{cases} \frac{1}{tan\varphi} = \frac{x}{h} \\ \frac{1}{tan\vartheta} = \frac{x+d}{h} \end{cases} \Rightarrow \begin{cases} \frac{1}{tan\varphi} = \frac{x}{h} \\ \frac{1}{tan\vartheta} = \frac{1}{tan\varphi} + \frac{d}{h} \end{cases} \Rightarrow$$

$$\frac{1}{tan\vartheta} - \frac{1}{tan\varphi} = \frac{d}{h} \Rightarrow \frac{tan\varphi - tan\vartheta}{tan\vartheta \cdot tan\varphi} = \frac{d}{h} \Rightarrow \boldsymbol{h = d\frac{tan\vartheta \cdot tan\varphi}{tan\varphi - tan\vartheta}}$$

Of course , at the end we must not forget to add the height of the observer **c** . So

Height of the tower = h + c



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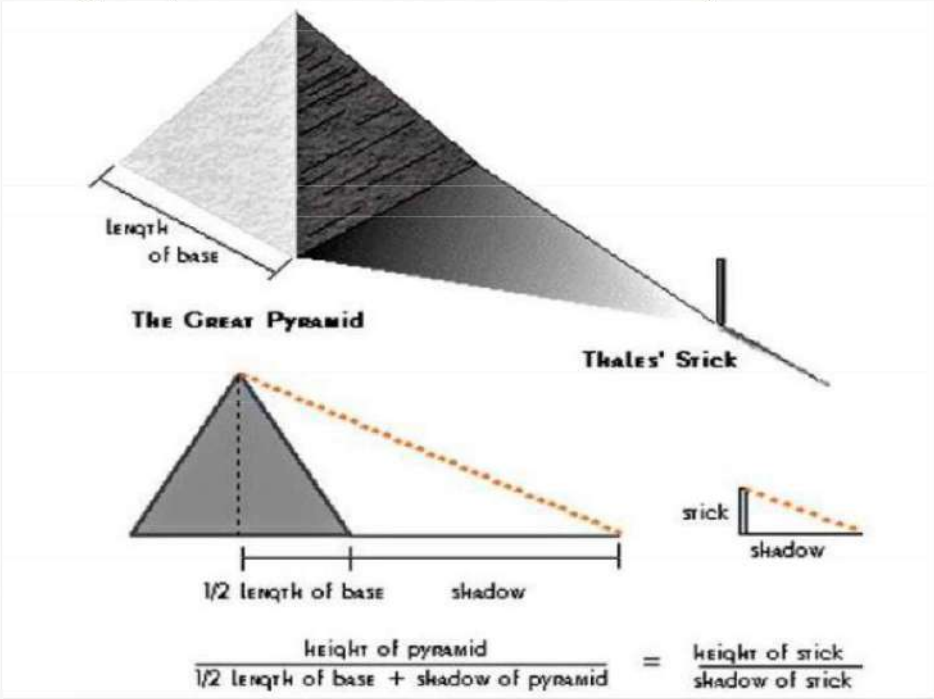
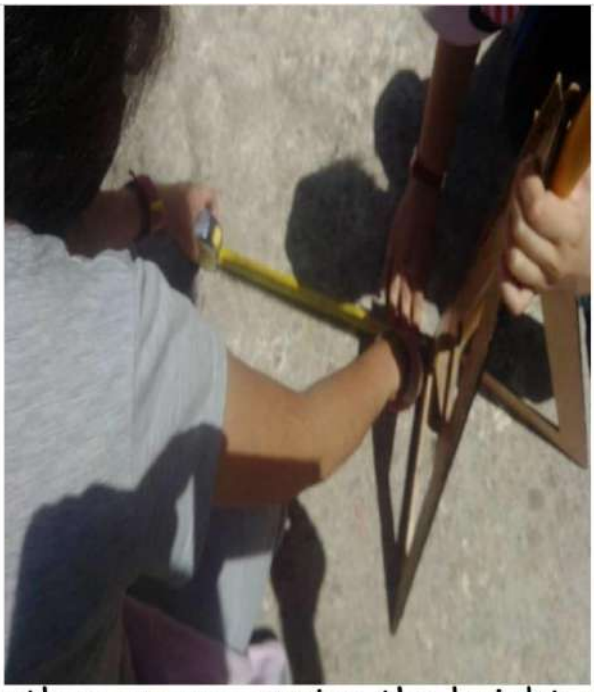
Third way: Thales way
Using only a vertical stick and similarity





Anastasia, Evangelia and Dorothea are measuring the height of our school, as Thales did

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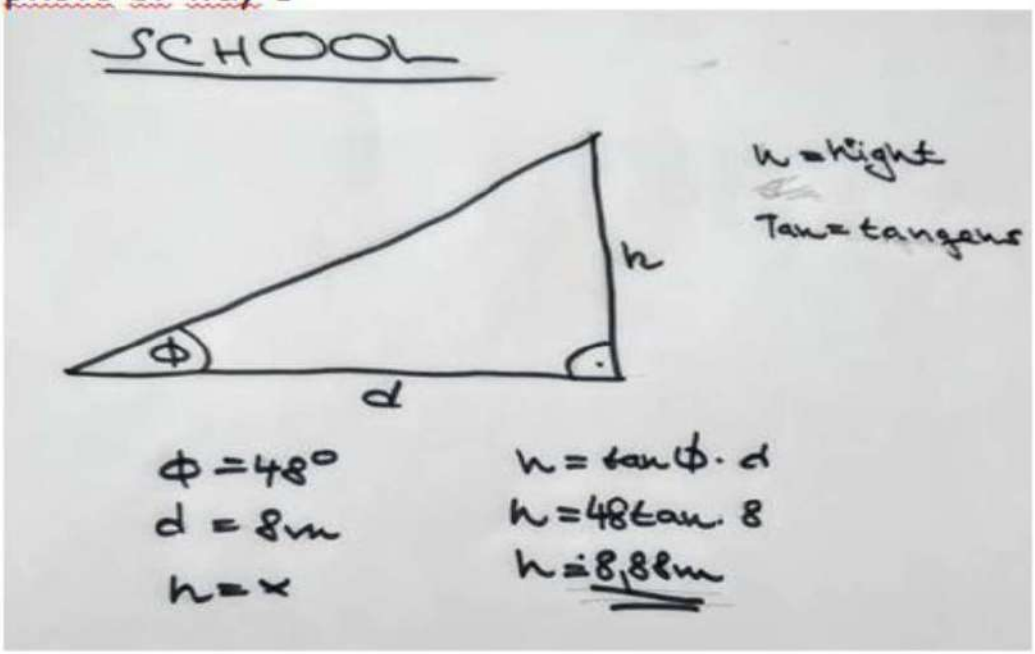
of the European Union

Country: Czech Republic

Names: Tereza Hubertová, Petr Sobol, Karolína Schullová, Zuzana Glacová

photo of way 1



First way
mathematic formula to find the height

angle φ = 48 °
distance d = 8m
height of the building = 8,8m

Read more …

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DAY 1

PRESENTATION OF 6TH GYMNASION CHANION

6 GYMNASIO CHANION

Our school consists of 16 classes of 20 to 23 students of age 12 to 15 years old. It is run by principal Mr Korakovounis and two vice principals. It is located in a nice and quiet neighbourhood 5 km away from the city centre. The teaching staff comprises 30 permanent teachers and a number of substitute teachers for special needs education.

THE SIGN LANGUAGE GLOVE

During the school year 2019-2020 three of our students, Joan, Zoe and Alexia being led and inspired by their Science teacher Mr. Smyrnakis ,
won 1st prize in the nationwide competition "Generation Next".

They devised a "Sign Language Glove", a smart device that identifies the sign language alphabet, thereby facilitating communication
among people unaware of the sign language as well as people with a hearing impairment.

This "smart" glove equipped with special sensors, identifies the finger movements of sign language speakers and "translates" them into letters of the latin alphabet that appear via bluetooth on the screen of their mobile phone.

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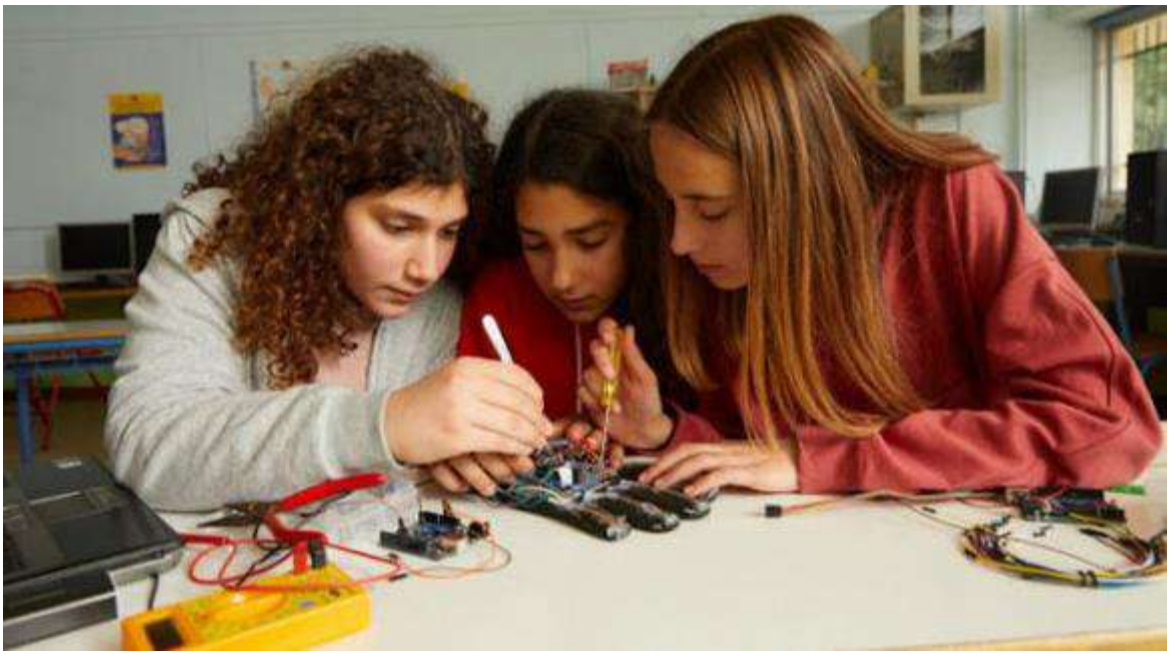
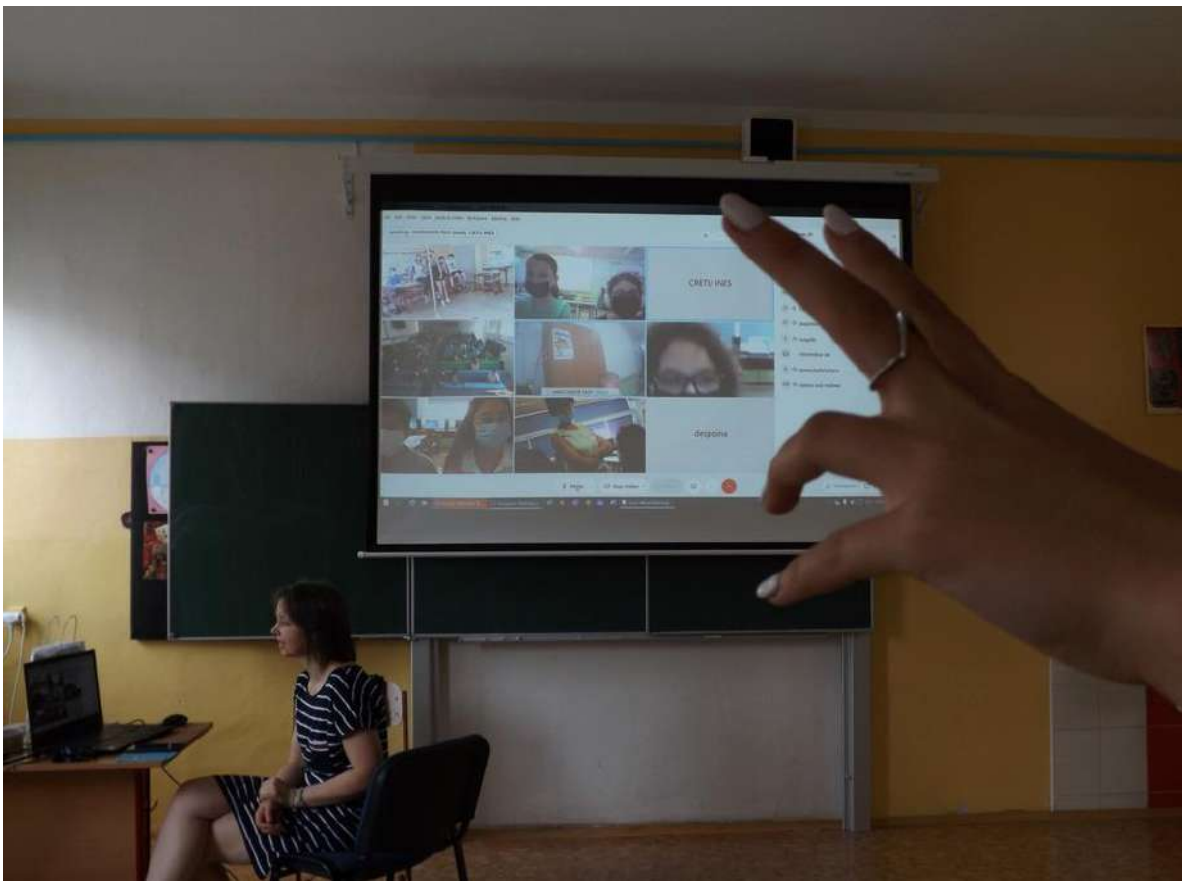


«Generation Next» program in the 6th Gymnasium of Chania

The main goal of this program is to enable students to bridge natural sciences, technology, engineering and math to everyday life and to interpret this connection as an amusing activity as well as a tool for understanding and solving real life problems. "Generation Next" motivates the students to track local or social problems and to imagine and design possible solutions, which can be realized with the support of their teachers, specialists and local agents,

Read more …

Quiz "Greece"



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DAY 2

PREPARATION

We shall calculate the height of a building in three ways which we shall see in the demonstration.

Teachers must decide before the meeting the building in which the participants calculate its height. It is better to know its height

To do the activities we need (for each team) :

a) Tape measure ten meters will be good

b) geometry school instruments such as compasses triangle and protractor

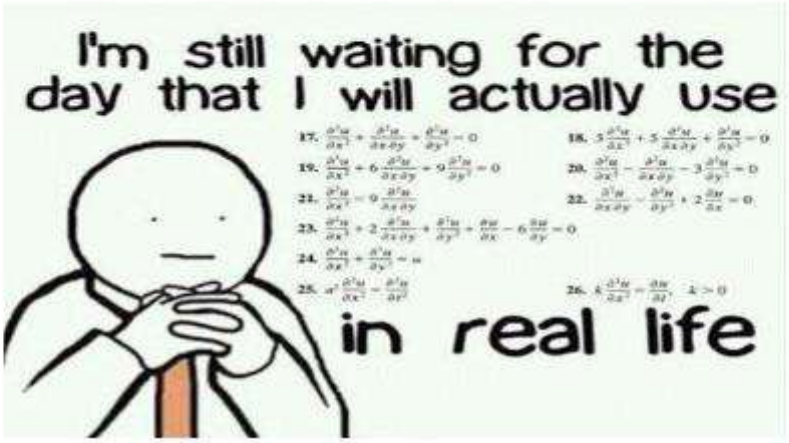
c) The measurements can take it from the ground . If you don't want your students to get dirty it is better to have a desk (from a class).

d) A stick vertically placed on the ground.

d) Of course it is necessary to have pens , papers, calculators (maybe the mobile phone is enough) . Just make sure you have the function **tanx** in your calculator otherwise you will need trigonometric tables.

CALCULATING OF THE HEIGHT OF A BUILDING - MATHEMATICAL TASK

Many people say:
Maths are useless
They are exist to torture
the pupils



Read more …

CALCULATING OF THE HEIGHT OF A BUILDING – WORKSHEET TEMPLATE

Country .....

Names: .....

.....

photo of way 1 or 2

photo of way 3

photos here

First way
mathematic formula to find the height =

angle φ=
distance d=
height of the building=

Second way
mathematic formula to find the height=

angle φ=
angle θ=
length d=
height of the building=

Third way

Mathematical formula height=

height of the stick = , shadow of the stick =
shadow of the building = , finally the height is =

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CALCULATING OF THE HEIGHT OF A BUILDING – PUPILS' WORK AND RESULTS

Country: Romania

Names: Afrasiloaie Octavian, Corduneanu Alin George, Cluci Andrei Florentin, Mihalache Cristian,Pascal Dragos,Minia Bogdan

photo of way 1

photo of way 2

First way
mathematic formula to find the height = 14.75m (using tangent) triangle)

angle φ= 70
distance d= 5 m
height of the building= 14.75m

Second way
mathematic formula to find the height = 13.2m(45 deg

angle φ= 45
angle θ= 32
length d= 12.2m
height of the building= 13.23m

Third way

Mathematical formula height= Thales (of Miletus)

height of the stick = 1.03 m shadow of the stick = 90 cm
shadow of the building = 13.01 m, finally the height is = 13m

Read more …

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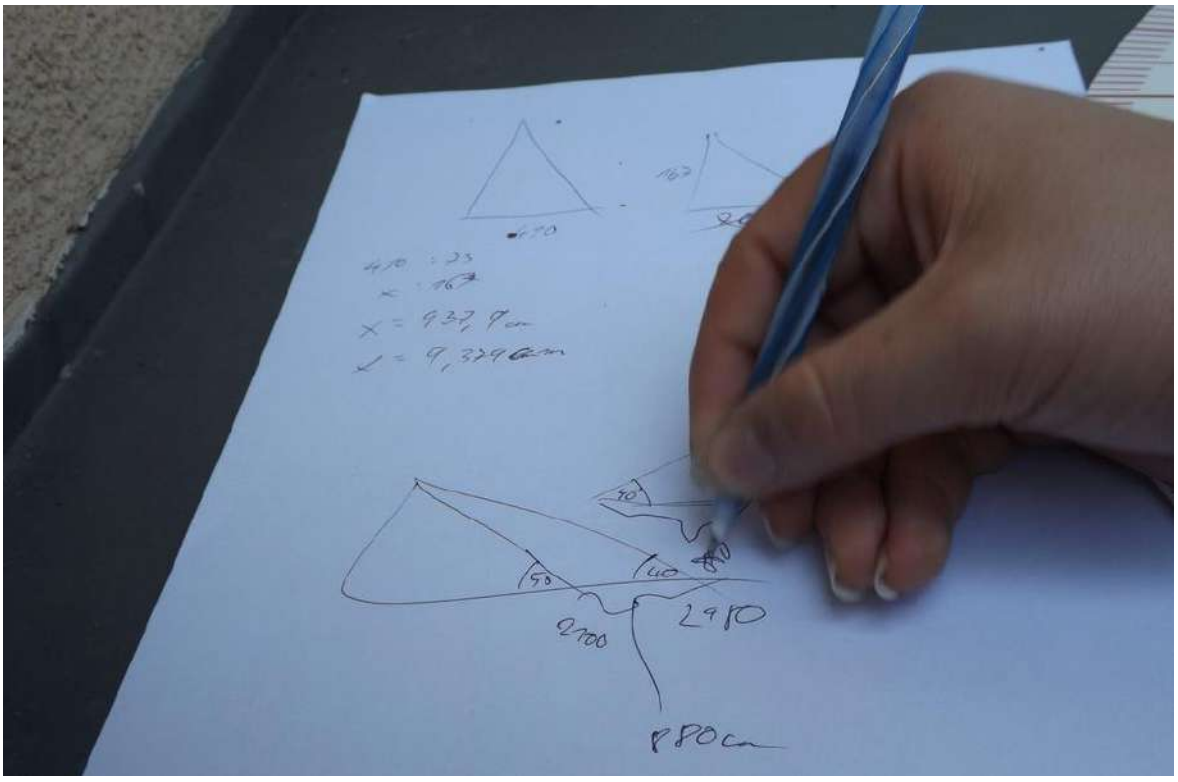
PHOTOS



Read more …

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DAY 3

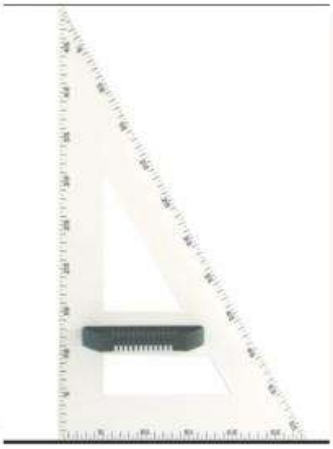
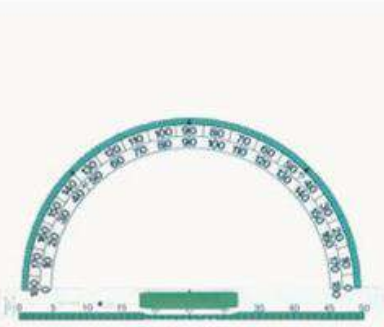
PREPARATION

We shall calculate the circumference of the earth.

To do this activity we need (for each team) :

a) Tape measure

b) geometry school instruments such as compasses triangle and protractor

d) A stick vertically placed on the ground.

d) Of course it is necessary to have pens , papers, calculators (maybe the mobile phone is enough) . Just make sure you have the function $tan^{-1}(x) = \arctan(x)$ in your calculator otherwise you will need trigonometric tables.

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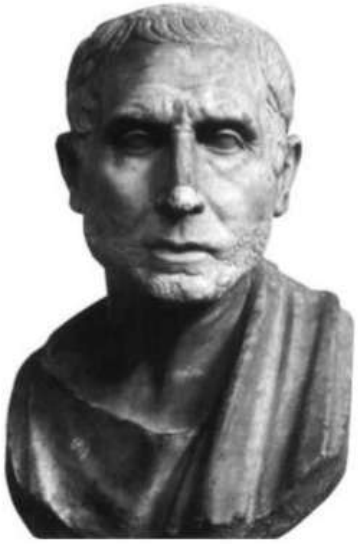
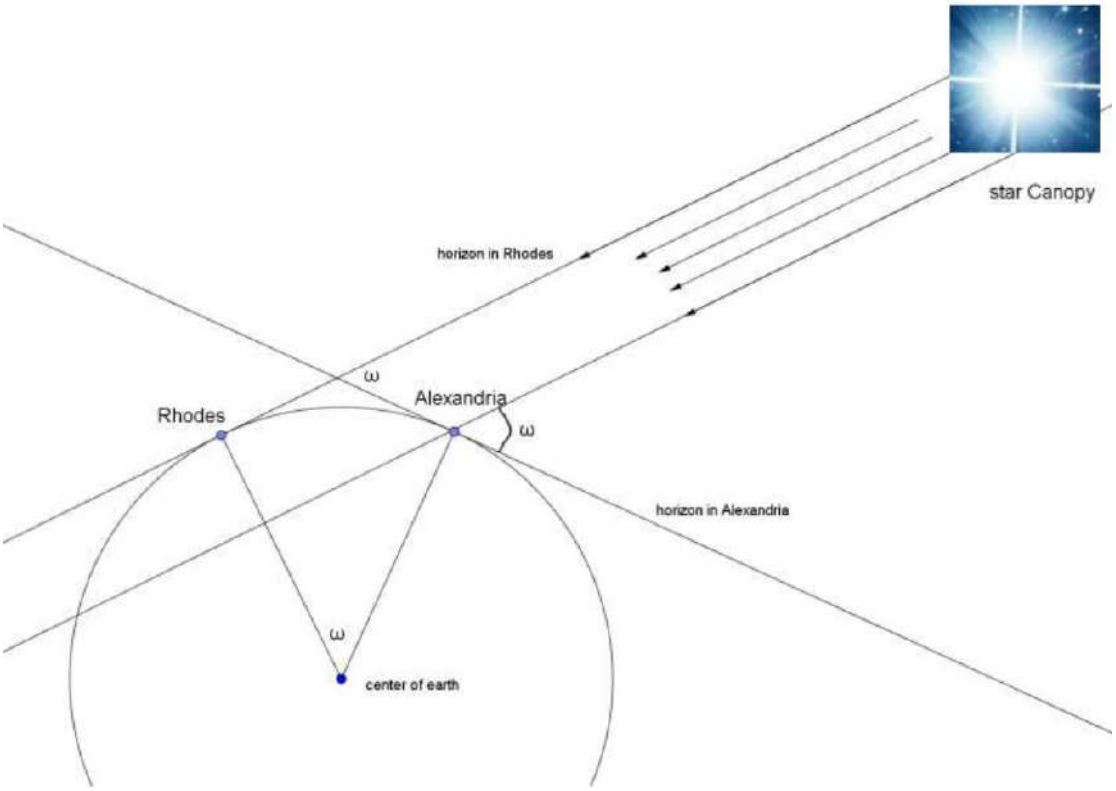
A VARIATION OF ERATOSTHENES' EXPERIMENT – MATHEMATICAL TASK

In ancient times people believe that earth is flat . But many astronomers about 200 b.C noticed that earth must have spherical shape. One try to find out the earth's circumference was from Posidonios of Apamia (135- 51 b.C.)



Posidonios was a philosopher geographer , astronomer and principal of school of Rodos School of Rodos was a university of ancient times.



Read more …

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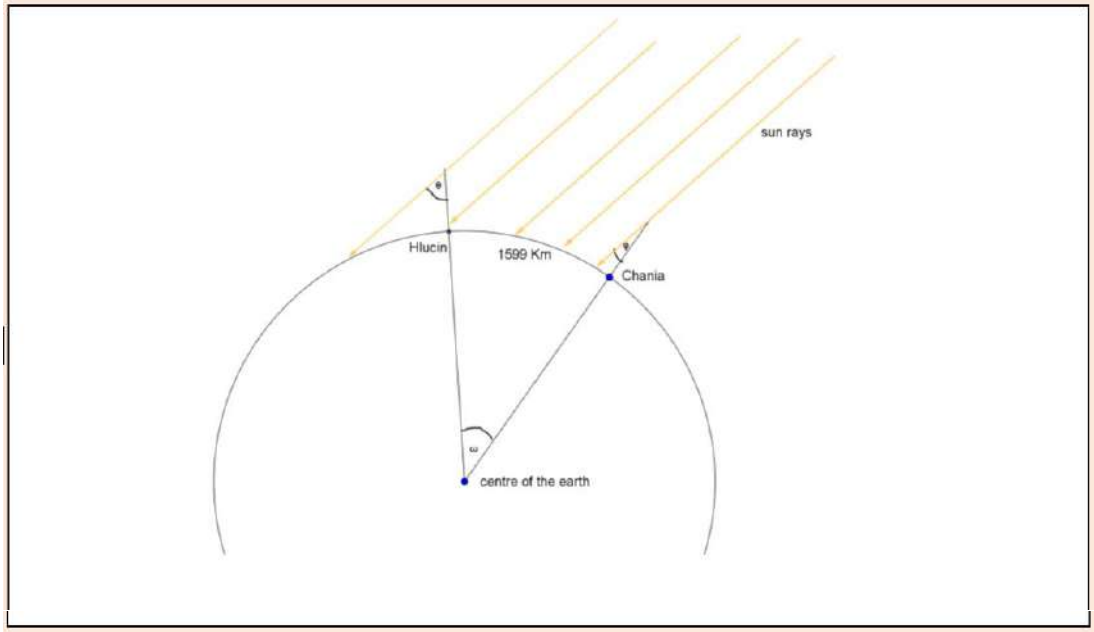
A VARIATION OF ERATOSTHENES' EXPERIMENT – PUPILS' WORK AND RESULTS

Country: Greece - Czech

Names: Ilianna, Dorothea, Evagelia, Lefteris, Mathiew, Korina, Ioanna, Despoina, Stavros

Place here the geometric figure



Place here two photos:

central angle ω =25,5- 11,9= 13,6 , distance between the two cities = 1599 km

result: The circumference of earth is = 42.326 Km

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Read more …

Read more …

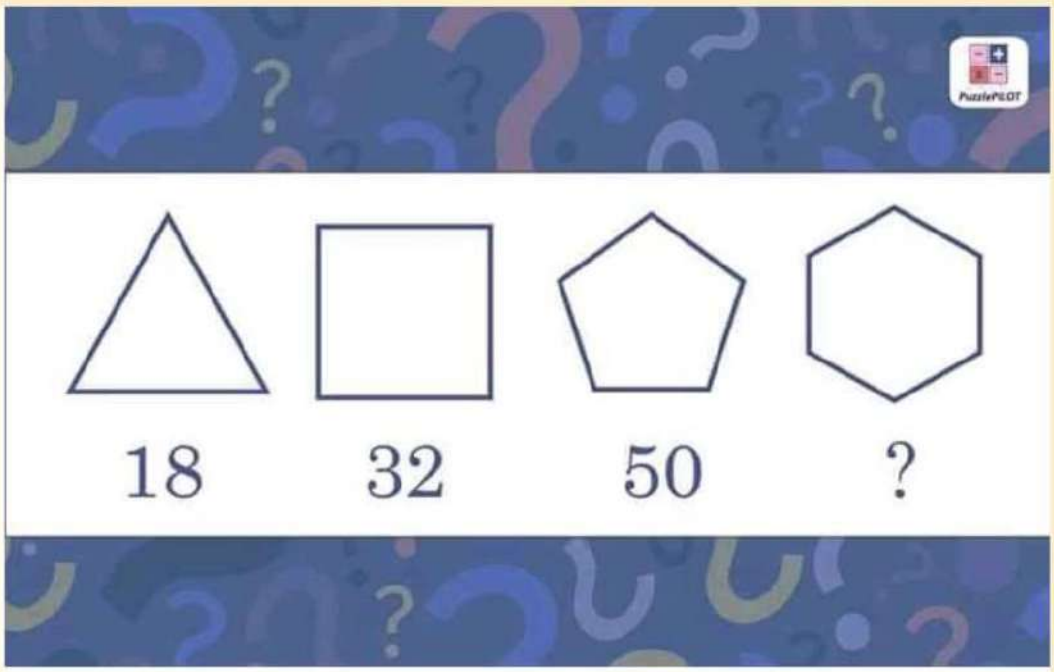
DAY 4

MIND TRAINING MATH PUZZLES – MATHEMATICAL TASKS

1) The missing number

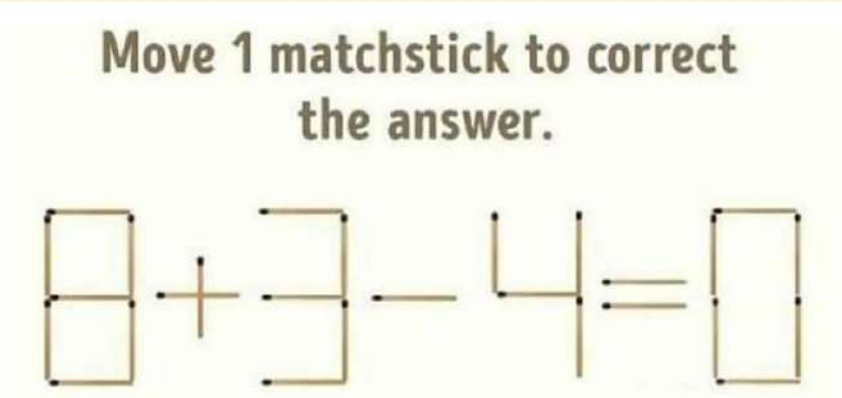
Difficulty: easy

Find the number corresponding to the hexagon



2) Correct the equality

Difficulty: easy



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3) Can you find the light ball?

Difficulty : easy

We have 9 same balls . But one of them is more light (just few grammars) from the others. We have only the scale you see in the picture. Can you find the light ball only by two weighing?

the scale

O O O
O O O
O O O

the balls

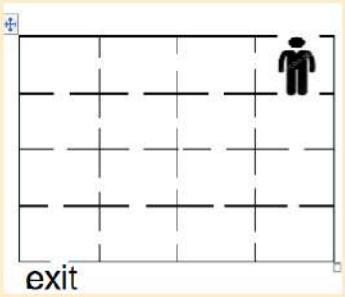
4) The escape of the prisoner

Difficulty : easy

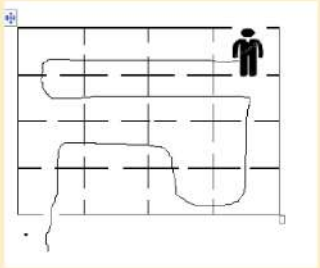
There is a small prison with only 16 cells. There is only one prisoner in any cell. The prisoner we see in the picture has the keys and a knife and he will try to escape. To succeed he must:

a) He must walk through all the cells
b) When he enters in a cell he kills the prisoner who lives in.
c) He can't enter again in the cell where is a dead. He will faint (he is very sensitive!).

Can you help him to find the right path for the freedom?



Example:



a path it can take is this in the figure but it is not the right one because it does not go through a cell Can you find the right one?

Read more …

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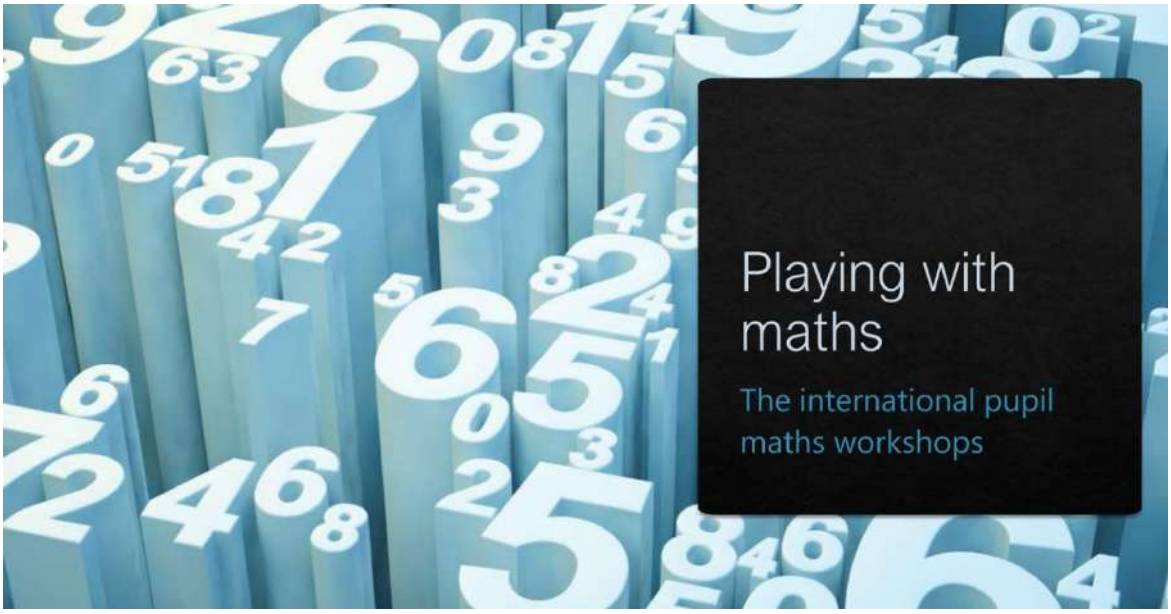
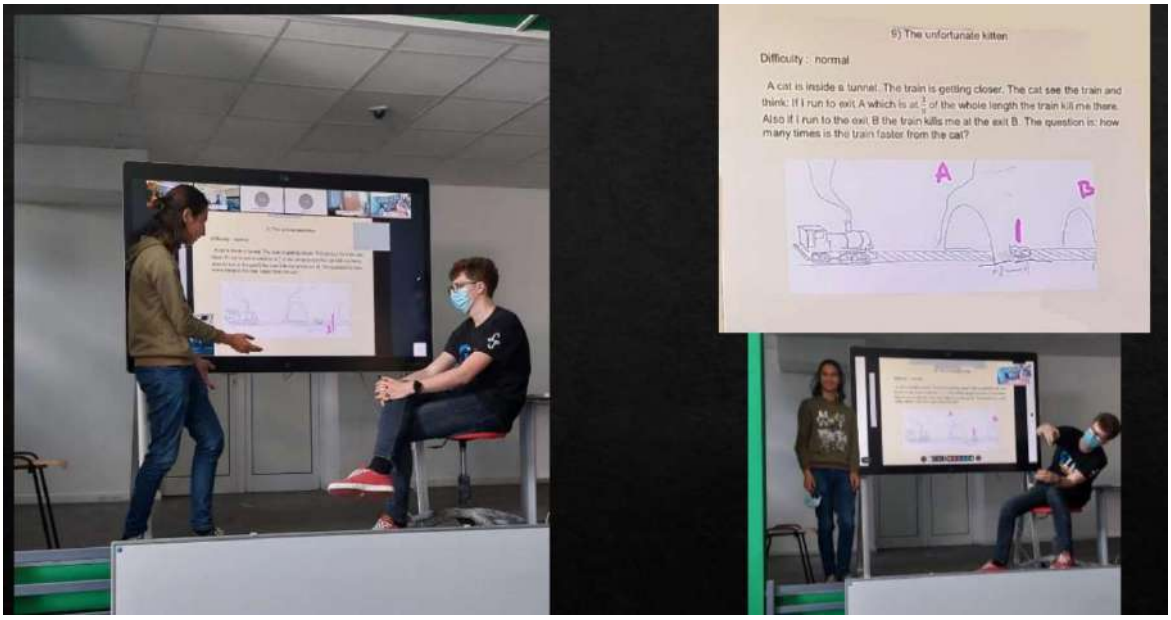
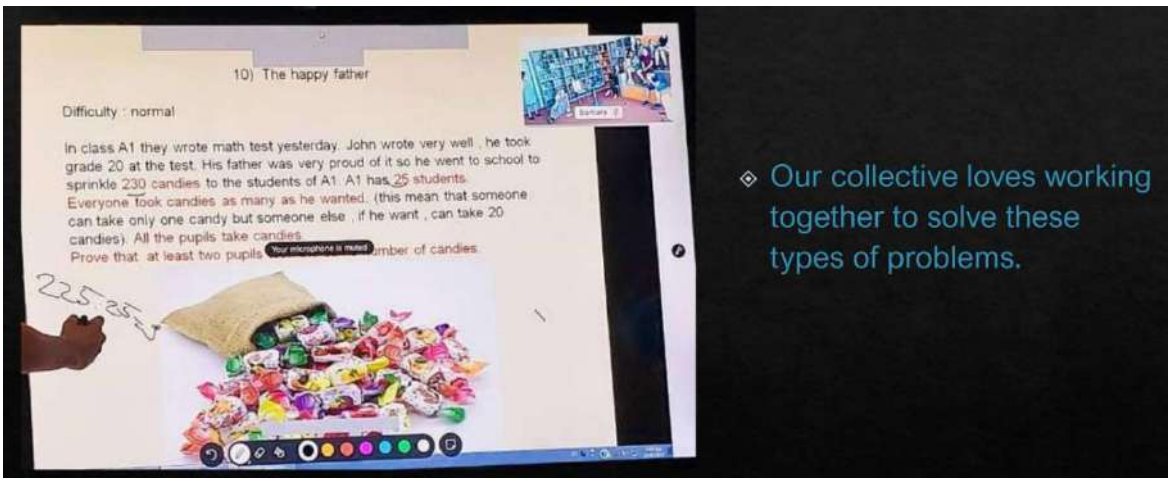
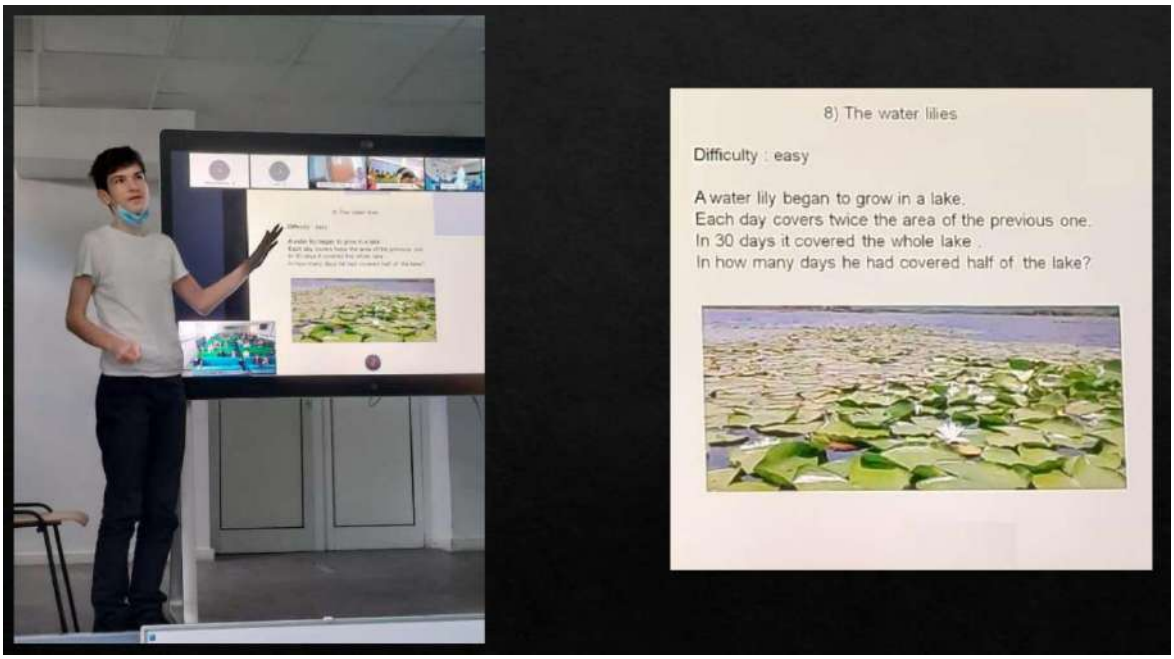
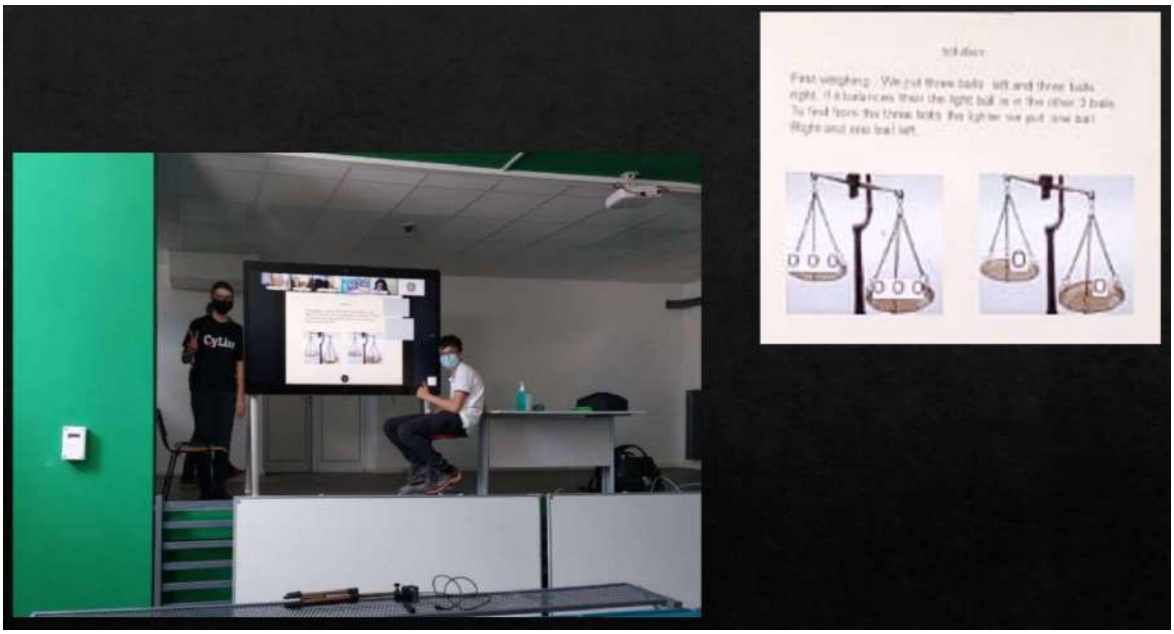
MIND TRAINING MATH PUZZLE – ROMANIAN PUPILS' WORK











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"GOODBYE, MY FRIEND..." - GREEK TRADITIONAL DANCE – PHOTO

With the support of the Erasmus+ Programme of the European Union

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Τα παιδιά και των τριών χωρών γρήγορα δέθηκαν μεταξύ τους. Σε αυτό φυσικά βοήθησε το πολύ καλό κλίμα που ανέπτυξαν οι οικοδεσπότες μας. Στο σχολείο τους κάθε μέρα τα πρωινά γίνονταν δραστηριότητες μαθηματικού ενδιαφέροντος, εκτός της ημέρας που επισκεφτήκαμε όλοι μαζί το Τεχνολογικό Πανεπιστήμιο της Οστράβα και εκεί τα παιδιά χωρισμένα σε μεικτές ομάδες κατασκεύασαν σε εργαστήριο τα δικά τους προγραμματιζόμενα ρομπότ. Επιπλέον επισκεφτήκαμε το μουσείο φυσικών επιστημών της Οστράβα χτισμένο στην περιοχή που άλλοτε ήταν η χαλυβουργική της Οστράβα, εμπειρίες πολύ ενδιαφέρουσες για όλους. Μεγάλη εντύπωση έκανε σε όλους μας ότι το σχολείο ήταν σε άριστη κτηριακή κατάσταση , πεντακάθαρο , (οι ντόπιοι μαθητές και καθηγητές μόλις μπαίνανε μέσα σε ειδικά δωμάτια έβγαζαν τα παπούτσια και φοράγανε παντοφλάκια) . Υπήρχε εστιατόριο όπου σιτίζονταν όλοι οι μαθητές και καθηγητές κάθε μέρα. Οι καθηγητές ανά τρεις ή τέσσερις είχαν δικό τους γραφείο με βιβλιοθήκη και φυσικά υπήρχε μεγάλη αίθουσα συνεδριάσεων του συλλόγου διδασκόντων. Ενδιαφέρον είχε το λογισμικό του

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Το πρόγραμμα ξεκίνησε το Σεπτέμβριο του 2019 κι αρχικά υπήρχε συνεργασία των σχολείων μέσω της πλατφόρμας e-Twinning όπου σε εβδομαδιαία βάση καλούνταν να επιλύσουν οι μαθητές κάποια μαθηματικά προβλήματα σε περιβάλλον Geogebra. Από το σχολείο μας συμμετείχαν 16 μαθητές της Γ΄ Γυμνασίου. Το Νοέμβριο του 2019 πραγματοποιήθηκε η πρώτη κινητικότητα με επίσκεψη στο σχολείο της Τσεχίας 8 μαθητών του προγράμματος με συνοδούς τους κ Κορακοβούνη Παναγιώτη (Διευθυντής) την κ. Μπουλιτσάκη και τον κ. Ράο.

Read more …

PUBLISHED IN LOCAL MEDIA

Liceul Teoretic de Informatică „Grigore Moisil" din Iași, gazdă online pentru cea de-a doua mobilitate din cadrul proiectului Erasmus+

Read more …

Mezinárodní projekt Erasmus+ na ZŠ Hornická

V rámci vzdělávacího programu Evropské unie Erasmus+ naše škola jako hlavní koordinátor projektu s názvem „The International pupil Math Workshop" přivítala na pět dní na naší škole své partnery projektu, a to 12 studentů z rumunské školy Liceul Teoretic de Informatică "Grigore Moisil" a 8 studentů z řecké školy 6th gymnasium of Chania. Hlavním cílem projektu je učení se novým matematickým dovednostem s pomocí IT nástrojů, přičemž jednotlivé mobility jsou zaměřeny na konkrétní matematická témata, především v oblasti geometrie. Společné sdílení poznatků a spolupráce probíhá v anglickém jazyce v online prostředí virtuální třídy Twinspace a samozřejmě k nim dochází během jednotlivých návštěv v partnerských zemích.

První den mobility proběhl ve znamení seznamování, prohlídky školy, vytvoření žákovských mezinárodních týmů, které odpoledne uvítal na radnici pan starosta. V podvečeru si všichni s nadšením zahráli společně bowling. Následující den vytvořené týmy vypracovaly geometrické příklady v programu Geogebra a odpoledne jsme navštívili Svět vědy a techniky v Dolní oblasti Vítkovic. Všem zúčastněným se také velmi líbila návštěva VŠB, kde jsme za použití anglického jazyka sestrojovali roboty a absolvovali zajímavé soutěže. Poslední den se zahraniční žáci zapojili do výuky angličtiny ve třídách a kromě toho si vyzkoušeli práci s roboty. Poslední den proběhlo v odpoledních hodinách společné rozloučení v jídelně naší školy, kde naše paní kuchařky přichystaly bohaté občerstvení. Pan ředitel předal všem zúčastněným certifikáty o účasti v projektu, zahraniční hosté ocenili výbornou přípravu naší školy a vřelou pohostinnost. Všichni hosté nadšeně komunikovali anglicky, luštili hlavolamy, zahráli si stolní tenis a dokonce došlo i na tanec. Český žákovský tým komentuje poslední večer takto: „Nakonec došlo k smutnému loučení. Samá objetí, slova na rozloučenou a upadlo i pár slz. Nikomu se nechtělo odjíždět, ale utěšovali jsme se tím, že se zase setkáme

na škole v Rumunsku nebo Řecku." Hosté z Rumunska hodnotili návštěvu tyto slovy: „We loved working and meeting the kids from Greece and the Czech Republic." Žáci z Řecka se podělili o své dojmy: „We are looking forwad to meeting you again, we had a great time, thank you!"

Všichni žáci se již těší na měsíc březen a květen, kdy navštíví své partnerské školy v Rumunsku a v Řecku. Jsme velmi rádi, že tento projekt pomáhá nejen k odbourávání jazykových bariér mezi žáky, ale díky němu také dochází k navázání nových mezinárodních přátelství. Velké díky si zaslouží Mgr. Barbara Glacová za realizaci tohoto projektu.

Martin Franek
ředitel školy

Spolufinancováno z programu Evropské unie Erasmus+

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