



FROM TEACHERS FOR TEACHERS

STEM WITH ARTS

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The music of equations

Pythagoras established his school of the wisdom, based on two subjects - Music and Mathematics.

Our project brings together students from different countries who are interested in the development of mathematical and logical thinking, linking mathematics with music. At the same time expanding and deepening the knowledge of solving equations. The given project is aimed at teachers of Mathematics, IT, Music, foreign languages as well as all interested members.



Aims:

- enhance students' interest in Mathematics and develop mathematical thinking, to deepen their knowledge on the topic "Equations"
- improve students' English language skills and use of communication technologies (ICT), make connections with the peers in other countries who are interested in maths and music
- enhance students' interest in folk songs and music, as well as to develop creative and communication skills.
- create an e-book of equations with the solutions and video album with folk songs.

Work process:

During the project, students make up interesting equations as well as word problems that can be solved using equations. The roots of equations must necessarily be natural numbers from 1 to 7. Each number means a name of the notes: **Do - 1, re - 2, mi - 3, fa - 4, salt - 5, la - 6, si - 7**. Project participants exchange the collected material for further decision. At the same time, each team sends an encrypted melody of a folk song of their country, with a volume of 8 measures. Each team needs to make a video of the musical playback of the melody of their team and the melodies of the teams of partners.



The place for the root (answer) of the seventh equation.

The place for the root (answer) of the fifth equation.

The place for the root (answer) of the first equation.

The place for the root (answer) of the fourth equation.

The place for the root (answer) of the second equation.

The place for the root (answer) of the sixth equation.

The place for the root (answer) of the third equation.

The place for the root (answer) of the first equation.

The place for the root (answer) of the second equation.

The place for the root (answer) of the third equation.

The place for the root (answer) of the fourth equation.

The place for the root (answer) of the fifth equation.

The place for the root (answer) of the sixth equation.

The place for the root (answer) of the seventh equation.

Encrypted folk song of the Latvian team



The place for the root (answer) of the seventh equation.

The place for the root (answer) of the sixth equation.

The place for the root (answer) of the seventh equation.

The place for the root (answer) of the second equation.

The place for the root (answer) of the fourth equation.

The place for the root (answer) of the first equation.

The place for the root (answer) of the fifth equation.

The place for the root (answer) of the sixth equation.

The place for the root (answer) of the seventh equation.

The music of equations

For example

Task 5

Solve the equation $\log_x 81 = 4$

Solution:

$$\begin{cases} x > 0 \\ x \neq 1 \end{cases}$$

$$x \in (0; 1) \cup (1; +\infty)$$

$$x^4 = 81$$

$$x^4 = 3^4$$

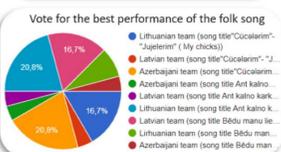
$$x = 3$$

Answer: 3



Why was this project worthwhile?

- Promoted students' interest in mathematics, folk songs and music,
- Developed mathematical thinking and solving skills,
- Gained in-depth knowledge of the topic "Equations",
- Created electronic book with equations and their solutions



Latvian folk songs "Bėdu manu lielo bėdu"

The music of equations
Part II (tasks and their solutions)

The music of equations
Part III (folk songs)

Music is mathematical and mathematics is musical.

Dina Kirnarska Doctor of Arts

Expected results: Creating video album with folk songs and a website with a tutorial, interactive e-book that helps to understand and consolidate the knowledge on the topic "Equations," to acquaint students with the folk songs of other countries.