

Visual Mathematics in Practice



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Name and address of the school:	Primary school „Stevan Dukić”, Danteova 52, Belgrade
Theme of the lesson:	Pythagorean theorem - Pythagoras tree
Place in curriculum: (type of school, grade)	Primary school, 7th grade
Age of the students/pupils:	12-13 years
Title of the lesson:	How the tree grows?

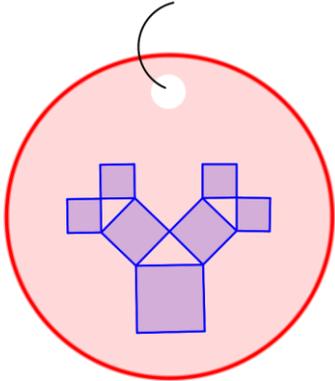
Description of the lesson

This is description of school project „How the tree grows?” I have developed with my 7th grade pupils. Some of presented activities we have already done, others will be done in future. Here, I will describe one of the classes we shall have soon.

The most interesting part of our project is yet to be realized. We call it Big Tree Day and it has intention to be a small version of Family Day. Participants are 7th grade pupils, their parents, math teachers, colleagues who took part in project and school janitor. On that day we will make big Pythagoras tree from wood or copper wire, we are not sure yet what is better material for our tree. It will be about 1,5 metres tall.

We hope that our Big tree will help next generations to learn and understand Pythagorean theorem in easier way. Also, it can be used like a model of cube and triangular prism, which are 8th grade lessons.

Time	Exercises, matters, parts of the lesson	Methods and forms of student activities	Developable competencies
5 min	Pupils are divided in groups at previous class. The teacher gives each group material for work and explains what is their assignment. In groups pupils work individually, but they can help each other.		listening planning creativity

<p>30 min</p>	<p>Pupils draw 2D models of Pythagoras trees and make decorations for Big tree, wallpapers and mathematical „curtains” for windows.</p> <p>The first group</p> <p>Assignment: Make decoration for Big tree! Material: cardboard coasters (pads) for glasses, ruler, divider, scissors, glue, adhesive color paper, string.</p> <p>Pupils cover coasters with adhesive color paper. On adhesive paper in some other color they draw Pythagoras tree, cut it with scissors and glue on one side of coaster. On the other side pupils write their name and class. Then, they make a small gap near the edge of coaster and pull string through it. Later, coasters will be hang on Big tree.</p>  <p>The second group</p> <p>Assignment: Make wallpaper for classroom! Material: A4 paper in different colors, ruler, divider.</p> <p>Pupils draw Pythagoras tree on A4 paper in different colors. After</p>	<p>groups work</p> <p>individual work</p> <p>groups work</p> <p>individual work</p> <p>groups work</p> <p>individual work</p>	<p>systematization</p> <p>logical conclusion</p> <p>flexibility of thinking</p> <p>originality</p> <p>creativity</p> <p>image creating skills</p> <p>planning</p> <p>relation vocabulary</p> <p>attention keeping</p> <p>measuring</p> <p>calculating skills</p> <p>analogical thinking</p>
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	<p>finish, they put drawings on part of a wall, one to another, making mutual wallpaper.</p> <p>The third group</p> <p>Assignment: Decorate windows in classroom! Material: A4 paper, transparent folders, ruler, divider, markers, colors for painting, adhesive tape</p> <p>Pupils draw Pythagoras tree on transparent folders using sketches on A4 paper. Then they paint Pythagoras tree on the inner side. After finish, they put folders with adhesive tape on windows, making some kind of „mathematical curtain”.</p>	<p>groups work</p> <p>individual work</p>	<p>transferring</p> <p>whole – partial perception</p> <p>looking for connections</p> <p>reasoning</p>
Note	<p>At some of previous classes, we talked about how Pythagoras had connected math and music. Some pupils had assignment to explore this topic, make drawings and present to others what they found out.</p> <p>One of those pupils is very good at playing guitar, so we will kindly ask him to bring his guitar to this class and plays while the others are working.</p>	<p>individual work</p>	
10 min	<p>Pupils present their work to each other and discuss about class – did they like and enjoy it ...</p>	<p>exhibition</p>	<p>presentation</p> <p>communication skills</p>
Note	<p>Inspiration for this class came from:</p> <ul style="list-style-type: none"> • Robert Fathauer, Bridges: Mathematical Connections in Art, Music and Science 		

	<ul style="list-style-type: none"> • Kristóf Fenyvesi, The Experience Workshop MathArt Movement: Experience-centered Education of Mathematics through Arts, Sciences and Playful Activities 		
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Summary

Pupils are delighted with this project. They are very interested in Pythagorean theorem, they work diligently, making beautiful Pythagoras trees.

Pupils brought out some great ideas for editing interior of our classroom, which all are in connection with Pythagorean theorem.

I am very satisfied how this project is implemented. For me, the most important thing is that pupils enjoy in these lessons and can't wait for the next class.

Supplements

Used materials:	Material for decoration for Big tree: cardboard coasters (pads) for glasses, ruler, divider, scissors, glue, adhesive color paper, string. Material for wallpapers: A4 paper in different colors, ruler, divider. Material for mathematical curtains: A4 paper, transparent folders, ruler, divider, markers, colors for painting, adhesive tape.
Photos:	In progress.