



Hidden World of Parabolas

Team 3

eTwinning collaborative presentation

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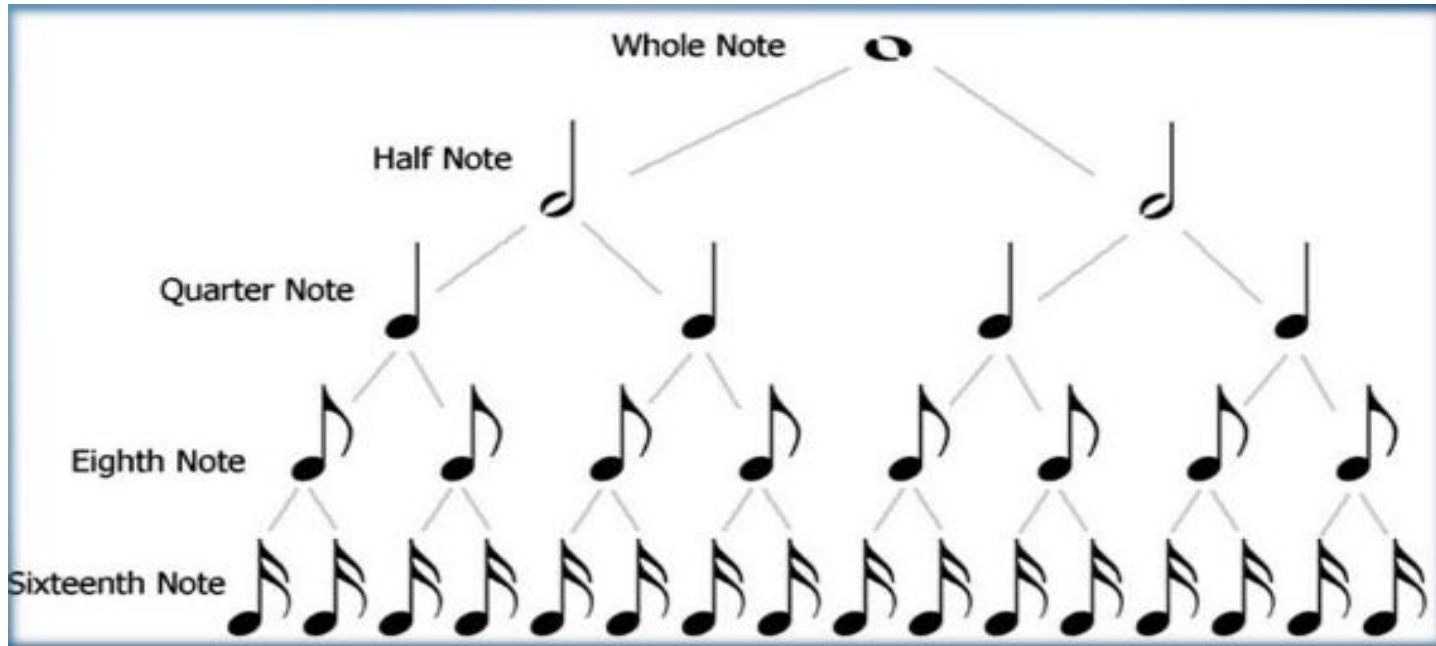


There is geometry in the humming of the strings, there is music in the spacing of the spheres.

Pythagoras

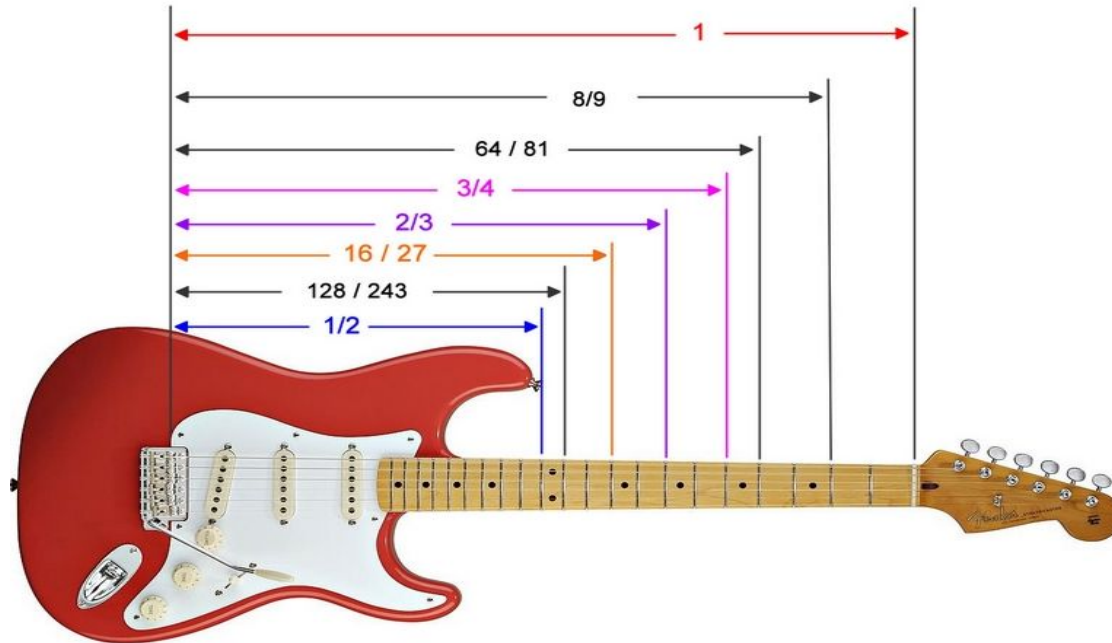
Maths in Music

Notes has an existing relationship with one another. Below is the illustration of the relationship among notes based on their values.



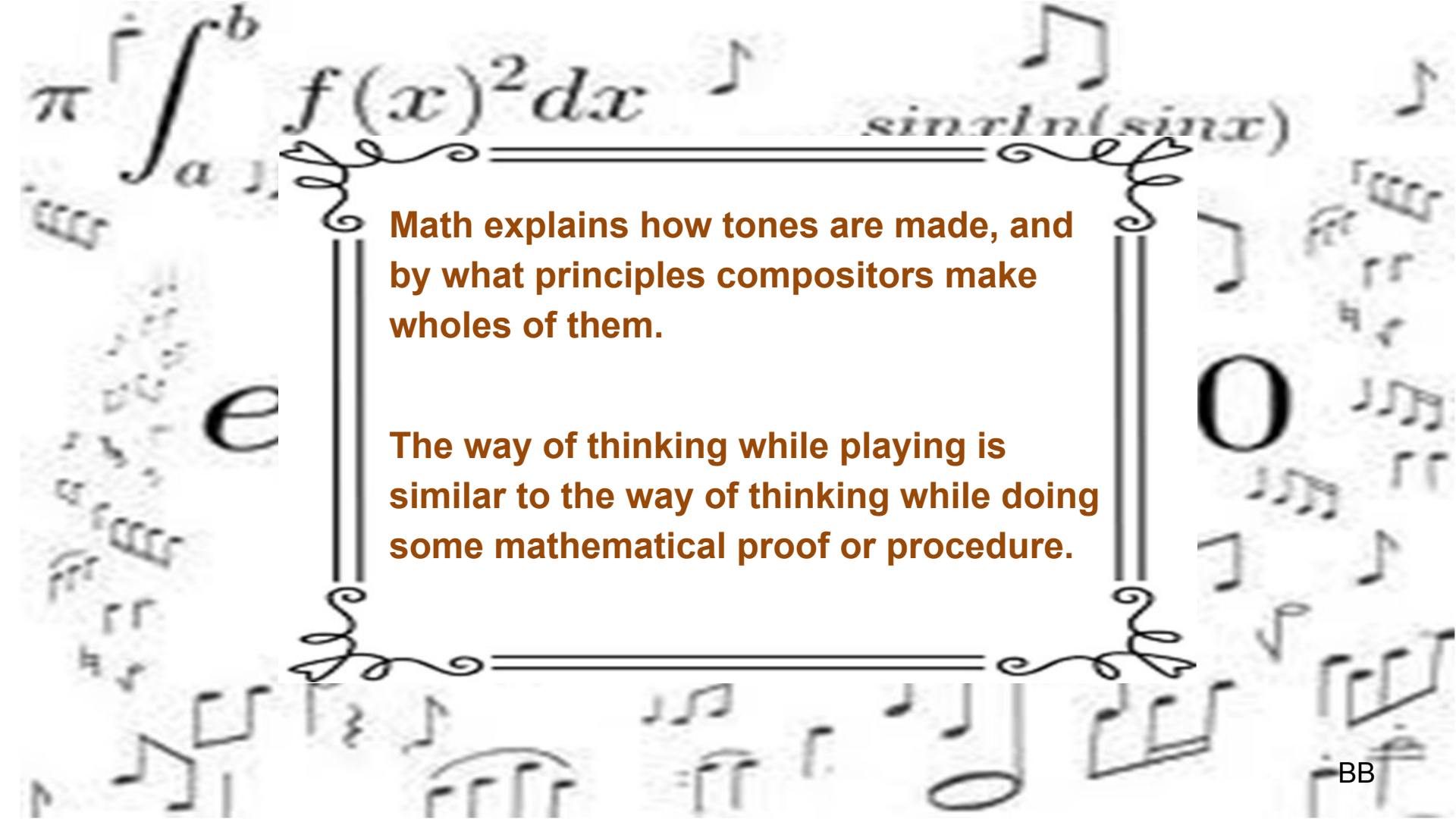
Pressing down at the 12th fret makes the string half of its full length, which produces an “Octave” or “High 8th” note.

Pythagoras Ratios for Guitar Frets



If we start with the string of certain thickness, then the pitch depends of her length: the shorter the wire is, the pitch rises. if we shorten the wire into its half (ratio 2:1), the tone will rise by an octave; if we shorten the wire for one third (ratio 3:2), the tone will rise for the fourth; if we shorten the wire for one fourth (ratio 4:3), the tone rise for the fifth.



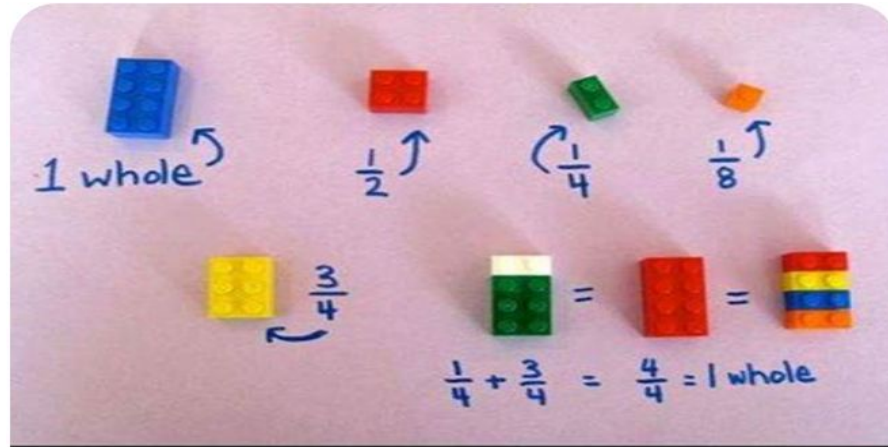
A decorative border surrounds the central text. It features mathematical symbols like pi, an integral sign with limits a and b, and the expression f(x)^2 dx. It also includes musical notes, a treble clef, and a large letter O. The background is a collage of these symbols and notes.
$$\int_a^b f(x)^2 dx$$

$$\sin r \ln(\sin x)$$

Math explains how tones are made, and by what principles composers make wholes of them.

The way of thinking while playing is similar to the way of thinking while doing some mathematical proof or procedure.

- Whole note has two halves, four quarters, eight-eighths. One half has 2 quarters, four-eighths, etc. It reminds us of a fraction which is really what it is.
- For example, if we would take sixteenths instead of eighths, we would be having more notes to play, because of what the melody would sound faster.

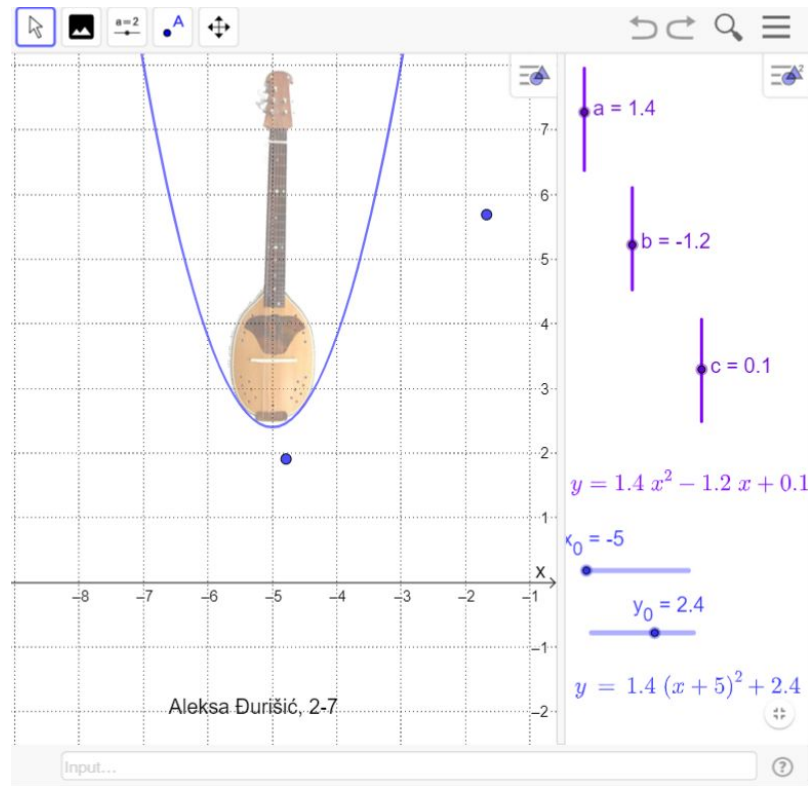
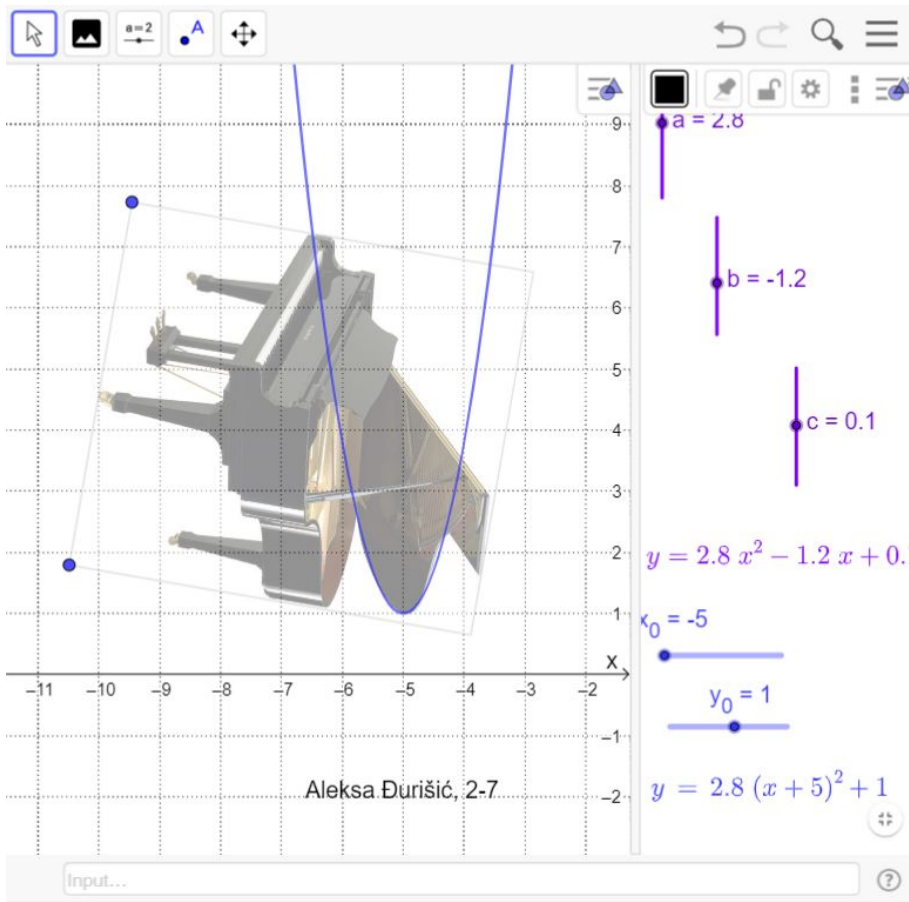


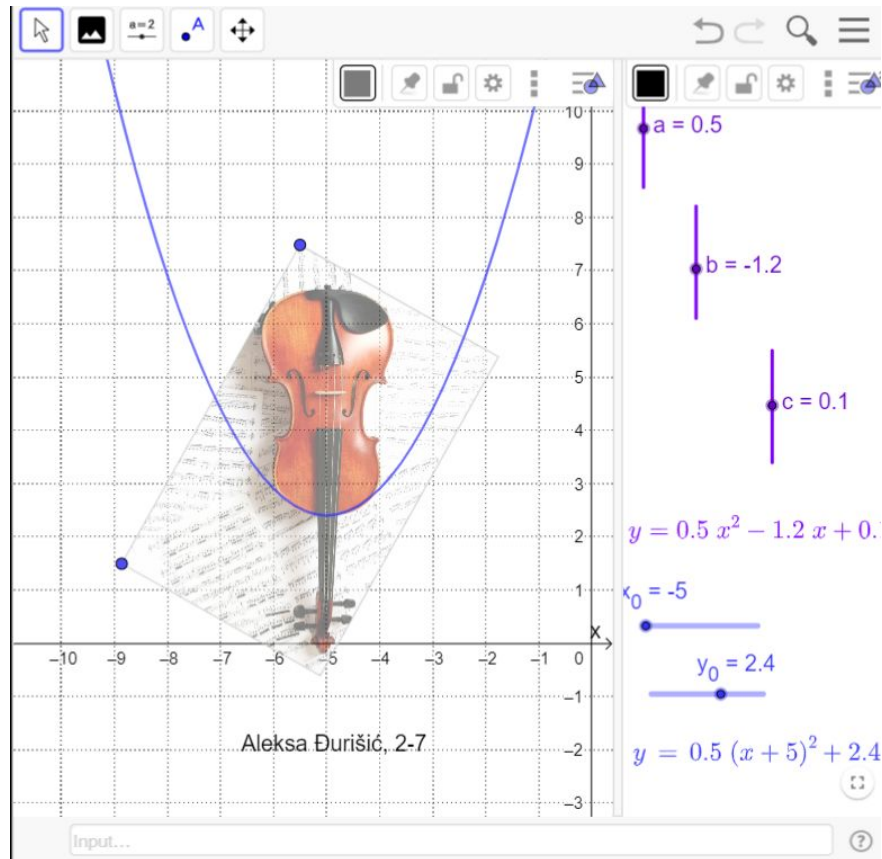
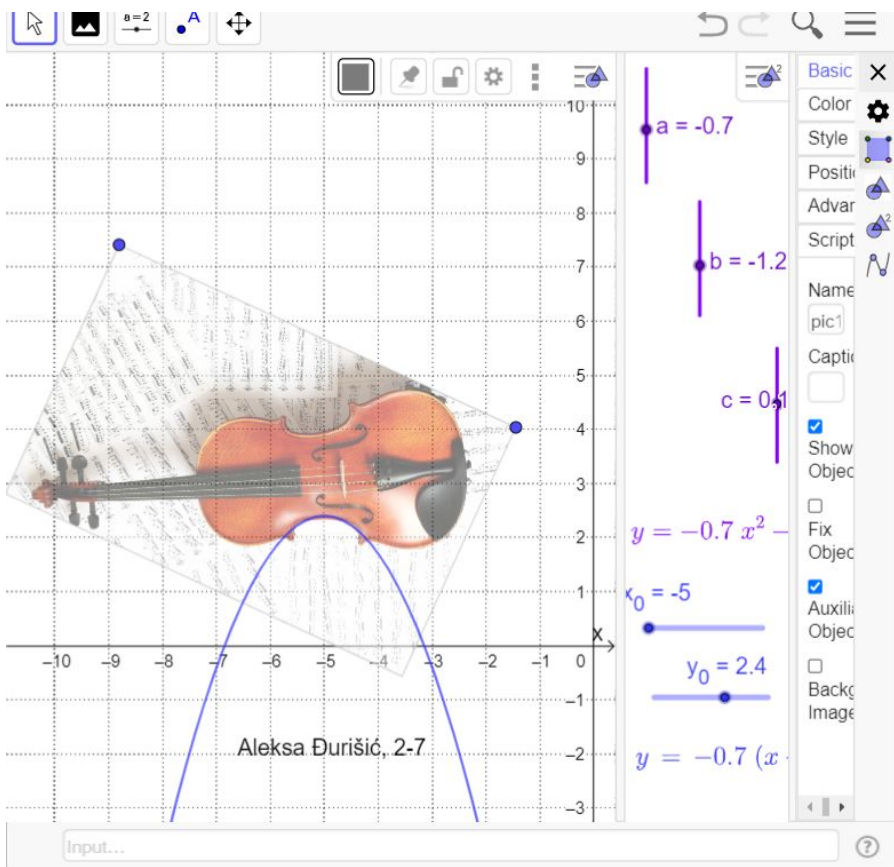
Easy way to teach fractions using Legos to children.

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Parabola on musical instruments

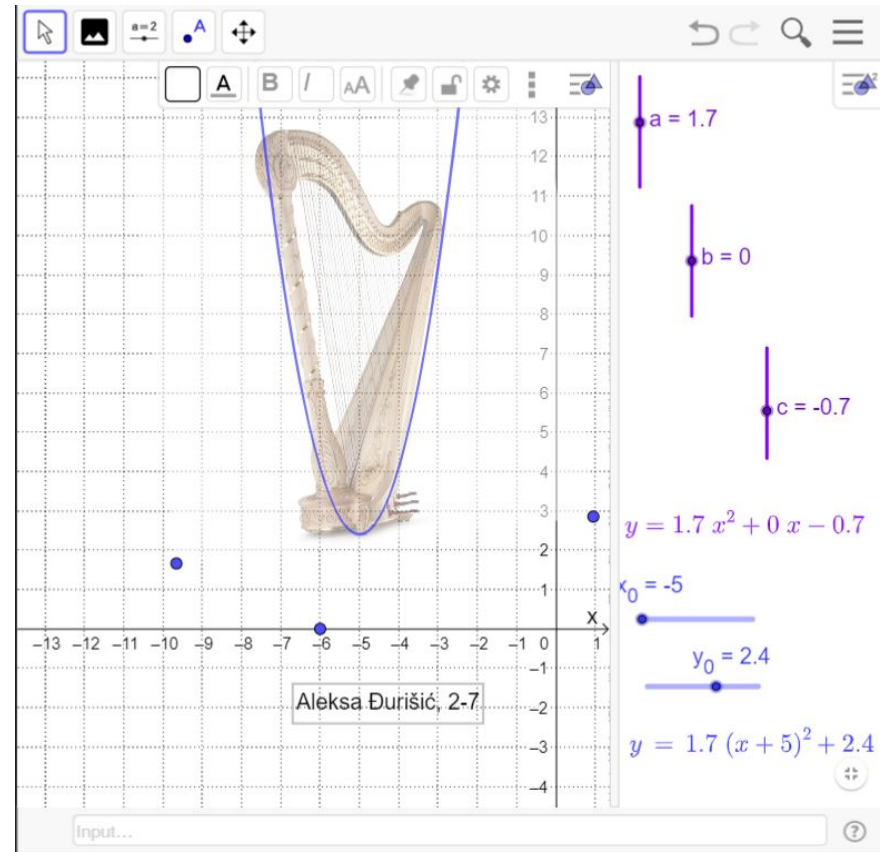
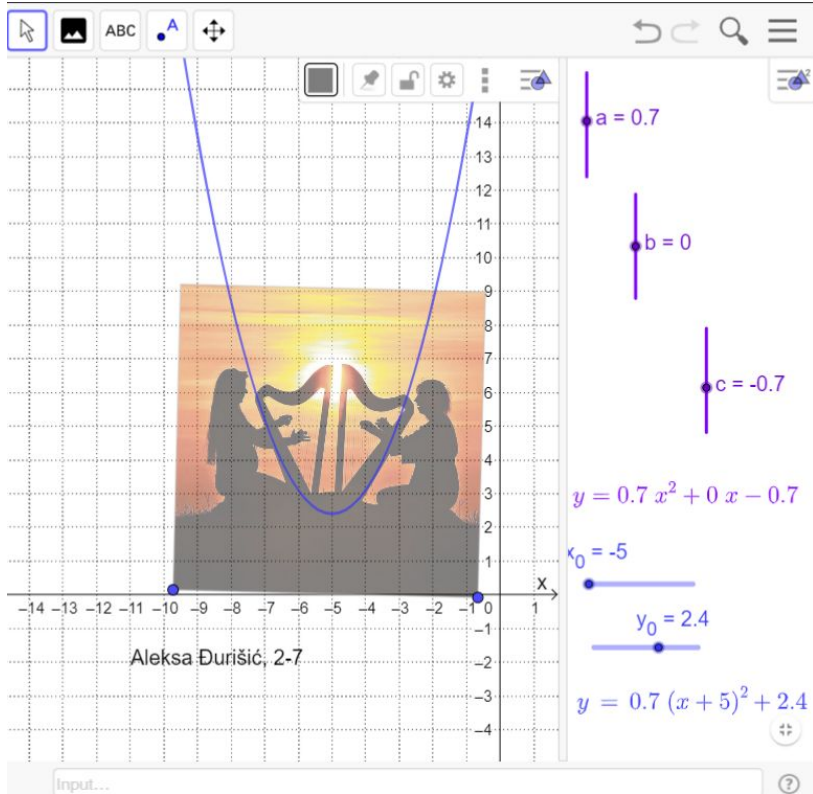
Learning to play a musical instrument relies on understanding concepts, such as fractions and ratios, that are important for mathematical achievement.





- Mathematically speaking, the modifications to the strings have the effect of dividing an exponential function by some kind of polynomial.
- We can find a polynomial that fits the exponential well, and gives us strings of the same length.

- Exponential growth is initially slow, so that (starting at the right of the harp), growth in string length is slower than the linear shift provided, which means that the top of the harp curves down.
- After a few octaves, growth in string length speeds up, and so the top of the harp curves up again.



Dear team partners,

Thank you!