

# Europeana Learning Scenario

## Title

From Music Notes to Math

## Author(s)

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## Summary

The aim of this learning scenario is to establish interdisciplinary approaches between mathematics and music. Mathematics topics such as fractions, patterns and basic processes and music topics such as harmony and balance between music are explained.

### Table of summary

<b>Subject</b>	This Learning Scenario combines music and mathematics lessons
<b>Topic</b>	Harmony between mathematics and music
<b>Age of students</b>	9-14
<b>Preparation time</b>	30 minutes
<b>Teaching time</b>	40 minutes
<b>Online teaching material</b>	<p>Kahoot, QR code, table of note values</p> <p><a href="https://create.kahoot.it/share/from-music-notes-to-math/3970f10c-2950-4774-9eff-9024bcbac369">https://create.kahoot.it/share/from-music-notes-to-math/3970f10c-2950-4774-9eff-9024bcbac369</a></p> <p><a href="https://drive.google.com/open?id=1kZKagJrG7NumzSTw2reKFMwXxGxPYC2l">https://drive.google.com/open?id=1kZKagJrG7NumzSTw2reKFMwXxGxPYC2l</a></p> <p><a href="https://drive.google.com/open?id=1_Z0Tt_G0zBYD1hBUw2_r1R5f-m12mAEh">https://drive.google.com/open?id=1_Z0Tt_G0zBYD1hBUw2_r1R5f-m12mAEh</a></p>
<b>Offline teaching material</b>	<p>Note value table, QR code printed on paper</p> 
<b>Europeana resources used</b>	<p>Figure 1:</p> <p><a href="https://www.europeana.eu/portal/en/record/916108/smm_mm_object_MM14567.html?q=notes">https://www.europeana.eu/portal/en/record/916108/smm_mm_object_MM14567.html?q=notes</a></p>

Figure 2:  
[https://www.europeana.eu/portal/en/record/9200387/BibliographicResource\\_3000117277136.html?q=music+notes](https://www.europeana.eu/portal/en/record/9200387/BibliographicResource_3000117277136.html?q=music+notes)  
 Figure 3:  
[http://www.europeana.eu/portal/en/record/2059209/data\\_sounds\\_R\\_M\\_20\\_d12.html?q=music+notes](http://www.europeana.eu/portal/en/record/2059209/data_sounds_R_M_20_d12.html?q=music+notes)

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### Integration into the curriculum

The learning scenario was applied in the music lesson, in the music note values unit, to 10 year-old students in primary school. They have learned that music is enjoyable with mathematics. And they will see in the European documents that note symbols have changed over the centuries. The course offers a rich perspective for the use of Europeana resources.

### Aim of the lesson

The aim is to establish interdisciplinary approaches between mathematics and music. Mathematics topics such as fractions, patterns and basic processes and music topics such as harmony and balance between music are explained. Students learn that symbols have changed over the centuries.

### Trends

Interactive and collaborative learning, game based learning, flipped classroom

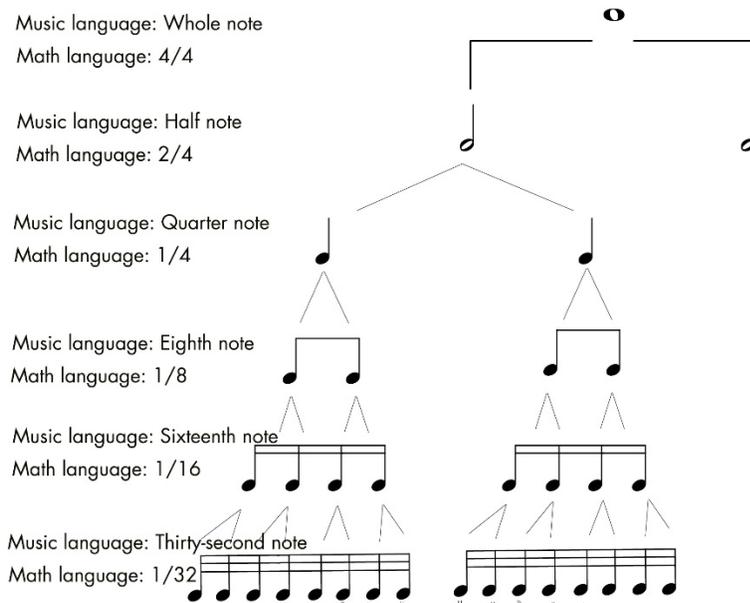
### 21<sup>st</sup> century skills

Interdisciplinary connection, cooperative learning

### Activities

Name of activity	Procedure	Time
<b>Introduction</b>	(Students are told that the connection between music and mathematics will be covered. As a preparation for the course, they are asked to listen to the pieces of music they want and to accompany them rhythmically.) Students are asked whether they listen to the rhythm while listening to music. If they want, some of the students can sing the song they like when they beat the rhythm with their hands.	5 min.
<b>Description of Problem Activity</b>	The teacher asks the students to explain the pattern they feel while doing the rhythm. In this way, students begin to think interdisciplinarily. The teacher shows figure 1, 2 and 3 Europeana resources to students. The teacher explains that these are music time values, these symbols have changed in history and reached today's state. Next the teacher says that music symbols and	20 min.

mathematics symbols are interconnected. Then the table of music values is shown.



[https://drive.google.com/open?id=1\\_Z0Tt\\_G0zBYD1hBUw2\\_r1R5f-m12mAEh](https://drive.google.com/open?id=1_Z0Tt_G0zBYD1hBUw2_r1R5f-m12mAEh)

With the questions asked, students develop cross-curricular thinking skills.

Example questions:

- 1- How do you feel the rhythmic values when listening to music?
- 2- Is there math in the background of music?
- 3- Why are musical note values expressed by fractions?
- 4- What do you think of symbols in music and math?
- 5- Balance in music and rhythm depends on the harmony between measurements. How is this compliance achieved?
- 6- Do you remember the connection between music and math symbols?
- 7- Do you know that you will find a large number of archives related to mathematics and music in the European digital archives?

The teacher talks about the note values table and reminding mathematical fractions structures. Then, students play a Kahoot game by reading the QR code.



<b>Solving the problem</b>	The time to solve the problem may vary according to the students' level and age.	5 min.
<b>Evaluation</b>	In the evaluation process, not only the answers to the traditional questions, but also the ability to make interdisciplinary connections is evaluated. Students are expected to reflect on the information they have learned with the Kahoot activity. Team work can be done to discuss questions.	10 min.

### Assessment

1. The teacher can ask open-ended questions, for example, "Do you think there is a connection between mathematics and music? What do you think about the connection between fractional values and musical values in mathematics?"
2. The teacher can use the Kahoot quiz to evaluate students.

\*\*\*\*\* AFTER IMPLEMENTATION \*\*\*\*\*

### Student feedback

It is a very different experience for the students to make connections between the information they learn and different courses. Their self-confidence, their vision, and their ability to make connections between the curricula are developing. Fun and permanent learning is possible with gamification methods such as Kahoot.

### Teacher's remarks

The learning scenario was applied to 10-year-old students in primary school. They have learned that music is as enjoyable in harmony with mathematics. The course offers a rich perspective for the use of Europeana resources.

Students have learned that they can listen to many musical works that they have never heard until now and they can reach many musical pictures. They have also learned that they can access many books and photos related to mathematics topics. However, they understand that the data in the digital environment is protected and may contain copyright.

Students have learned, when using the tablet and computer in the course, learning maths can be fun and enjoyable.

### About the Europeana DSI-4 project

[Europeana](http://Europeana) is Europe's digital platform for cultural heritage, providing free online access to over 53 million digitised items drawn from Europe's museums, archives, libraries and galleries. The Europeana DSI-4 project continues the work of the previous three Europeana Digital Service Infrastructures (DSIs). It is the fourth iteration with a proven record of accomplishment in creating access, interoperability, visibility and use of European cultural heritage in the five target markets outlined: European Citizens, Education, Research, Creative Industries and Cultural Heritage Institutions.

[European Schoolnet](#) (EUN) is the network of 34 European Ministries of Education, based in Brussels. As a not-for-profit organisation, EUN aims to bring innovation in teaching and learning to its key stakeholders: Ministries of Education, schools, teachers, researchers, and industry partners. European Schoolnet's task in the Europeana DSI-4 project is to continue and expand the Europeana Education Community.