

# Scenario Script

**Title:** *The Women Behind Maths*

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This scenario works best, if it is performed in a computer lab, or in a class where there is a whiteboard, internet connection and each group of student has a portable device, such as a tablet or a mobile phone, either their own or provided by the school. It can also be taught in online learning. However, we provide printed worksheets as well, and give alternatives for the teacher, in case none of the above prerequisites is available (eg in a school without technological equipment, or if the internet does not work in the particular day). We also try to provide the teacher with alternatives so that the scenario becomes more accessible (for people with visual problems, or with learning difficulties).

## **Preparation (before the 1<sup>st</sup> teaching period)**

### ***1st Activity: Mathematicians you know***

**Time:** 5' Presentation (in the previous lesson) & asynchronous activity

**Type of activity:** Creation of a word cloud online and a small text

**Class organisation:** Whole class and individually

**Actions/Tasks:** In the last 5' of the previous lesson the students watch a presentation in [mentimeter](#). Then the teacher asks them to research about people who have been important in the field of mathematics and use the voting link provided, in order to write 3 names (for security reasons the link expires after 7 days). As soon as the students have voted, [mentimeter](#) creates a word-cloud in which the people who have been voted more times appear with bigger letters. If the students do not have internet connection at home they can vote from a computer at school, if there is no internet at school, the teacher can print the wordcloud or take a screenshot in advance.

## **1<sup>st</sup> teaching period**

### ***1st Activity: What do you notice?***

**Time:** 7'

**Type of activity:** Think – pair - share

**Class organisation:** Individually – pair - group

**Actions/Tasks:** At the beginning of the 1<sup>st</sup> teaching period, the teacher shows the students, the [wordcloud](#), as it will appear in mentimeter. At first the students are asked to look at the interactive whiteboard (or at a printed version of it, in case the class does not have an interactive whiteboard, or there is no internet connection) for one minute. Then they have 2 minutes to discuss their observations with their partner and finally, the whole class engages in a discussion and draws conclusions. What we expect to happen is that the most common names will be the ones of ancient Greek male mathematicians and that it will be quite easy for the students to observe these facts. In case however, the students do not notice it the teacher can help them by asking these additional questions:

*How many of them are women?*

*Why do you think this happens?*

*What is their nationality?*

*When did they live?*

Which field of mathematics did they study mostly? (The answer is probably going to be geometry)

### **2<sup>nd</sup> Activity: Emmy Noether and her life**

**Time:** 18'

**Type of activity:** Reading to locate information

**Class organisation:** Pairwork

**Actions/Tasks:** The teacher presents the students with a [text](#) about the famous German mathematician Emmy Noether (online or in printed form). The students read the text and fill in a table on their worksheet with some information about her. (*Full name, nationality, date of birth, major achievements, major obstacles, factors that helped her succeed (internal or external), date of her death*). There is a glossary created with [quizlet](#) and its printed version in pdf, to help the students who have difficulties with the vocabulary. If the students cannot find the information in the text, they may ask the teacher to help them.

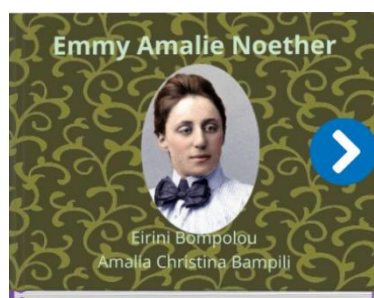
### **3<sup>rd</sup> Activity: Let's make a book**

**Time:** 15'

**Type of activity:** Flipbook creation

**Class organisation:** Plenary

**Actions/Tasks:** After the students have located all the relevant information, the teacher directs the students to [storyjumper](#) (there is one already prepared).



### **4<sup>th</sup> Activity: Homework**

**Time:** 5' (for the instructions)

**Type of activity:** Jigsaw reading and flipbook creation

**Class organisation:** Ss are divided in two groups and each group focuses on a different female mathematician

**Actions/Tasks:** The divides the students in two groups (which may contain more subgroups to facilitate cooperation). The students are instructed to read some other texts, for which the links are provided by the teacher in the following table, but they are also free to look for other resources. In the links that are provided by the teacher, some texts in the students native language could be provided (some of the links in our list are in Greek), there are also audio texts (podcasts) and videos in order to facilitate the access of the students who are visually impaired (if any) or who have different learning styles. Then they follow the same procedure, as the one demonstrated in the classroom (they first locate the information and fill in the same table as they did with the text about Emmy Noether, and then they make a flipbook or a poster).

HYPATIA	KAREN UHLENBECK
<ul style="list-style-type: none"> <li>• <a href="https://www.worldhistory.org/video/2639/hypatia-of-alexandria-the-female-mathematician-ast/">https://www.worldhistory.org/video/2639/hypatia-of-alexandria-the-female-mathematician-ast/</a></li> <li>• <a href="https://open.spotify.com/episode/3RtNfprdYwHmaxYnCzli8y?si=7FBYa7HrQWOw3WZaM9NrrA">https://open.spotify.com/episode/3RtNfprdYwHmaxYnCzli8y?si=7FBYa7HrQWOw3WZaM9NrrA</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="https://www.symmetrymagazine.org/article/crossing-fields-karen-uhlenbeck">https://www.symmetrymagazine.org/article/crossing-fields-karen-uhlenbeck</a></li> <li>• <a href="https://en.wikipedia.org/wiki/Karen_Uhlenbeck">https://en.wikipedia.org/wiki/Karen_Uhlenbeck</a></li> <li>• <a href="https://en.wikipedia.org/wiki/Karen_Uhlenbeck">https://en.wikipedia.org/wiki/Karen_Uhlenbeck</a></li> </ul>

## **2nd teaching period**

### ***1<sup>st</sup> Activity: Homework presentation***

**Time:** 10'

**Type of activity:** Presentation

**Class organisation:** Groups present to their classmates

**Actions/Tasks:** The students present their flipbooks or posters to their classmates.

### ***2<sup>nd</sup> Activity: One thing that impressed you most***

**Time:** 2'

**Type of activity:** One minute paper

**Class organisation:** Individually

**Actions/Tasks:** After having watched all the presentations they have one minute to write anonymously on a piece of paper the one thing they have learnt by them or the one thing that has impressed them most. Then they put the papers in a box, so that the teacher can look at them after the lesson.

### ***3<sup>rd</sup> Activity: Questionnaire creation***

**Time:** 25'

**Type of activity:** Evaluation of factors and creation of a questionnaire

**Class organisation:** Groupwork and plenary

**Actions/Tasks:** The students, working in the same groups as before are told to brainstorm which factors encourage girls and women to occupy themselves with mathematics, especially with higher level mathematics, and which factors prevent or discourage them and to fill in a table. When they have made up their lists they discuss them with the whole class.

Then the teacher gives them some questions that could be included in a questionnaire to be distributed to the students of the other classes and finally, they add more questions to be included in the questionnaire. When they have decided they create a questionnaire using google forms.

### ***4<sup>th</sup> Activity: Providing solutions***

**Time:** 8'

**Type of activity:** Creation of a text accompanying the questionnaire

**Class organisation:** Plenary

**Actions/Tasks:** The students discuss a phrase presenting the problem and try to explain it. Then they try to think of how to explain the issue to students who have not taken part in the lessons of this scenario. The ultimate aim is to create a text to accompany the questionnaire, so that their classmates' answers will be more accurate.

***Extension***

In the following lessons, the questionnaires created by the groups will be further processed and the final one will be distributed to the other students of the school to be answered. Then the data will be analysed.