

Water supply and sanitation in Ancient Rome

General information			
Respective blueprint	Aqueduct		
Description	Students will learn about the inventions of Ancient Rome as inventions used today. They will examine an aqueduct in detail and understand why it was needed. And while creating their own aqueduct, they will practice their mathematical knowledge and skills.		
Learning objectives	<ul style="list-style-type: none"> To practise the mathematical concepts of angle measurement and units of length. To gain knowledge of the history of Ancient Rome. To gain knowledge and skills in making an aqueduct. 		
Related curricular subjects	<p>History: History of Ancient Rome</p> <p>Mathematics: angle measurement, units of measure, textual problems</p> <p>Engineering: the path of water - making an aqueduct</p> <p>Art: modelling and using the Papier Mache technique</p>		
Duration	100 min		
Level of difficulty	Basic	Medium	Advanced
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Inclusivity guidelines			
How to integrate students with SLD	<ul style="list-style-type: none"> Formulate short, simple instructions that only require one action at a time. If you give oral instructions, make sure you keep track of them in the form of pictograms or written on the board. When you give instructions (oral or written), make sure to highlight the word of action so pupils know what they are expected to do. When it's possible, you can show the expected result of the manipulation. When creating groups, try to place students who are having difficulties with students who are generally more advanced so that they can help each other (for example, a dyspraxic student will have a lot of difficulty with cutting tasks). 		
How to integrate students who work faster	Some of the more advanced pupils can take on the role of chief architect, overseeing the assembly and covering of the aqueduct and the movement of water along it.		

Step-by-step description of the lesson

Step 1: Inventions of Ancient Rome

Estimated time: 20 min

Inventions of Ancient Rome that we use today:

- **Roman numerals** - The first use of these symbols in Ancient Rome was between 900 and 800 BC. e. In the modern world, Roman numerals are used to represent time periods in history, the order numbers of monarchs, in astronomy to represent the moons, and in chemistry to represent groups in the periodic table.
- **The first surgical instruments.** Basic surgical instruments were invented in ancient Egypt. In fact, it was the Romans who developed the prototypes for most modern instruments, which have influenced the appearance of many of today's surgical instruments.
- **Concrete** - more than a thousand years after the Western Pima Empire collapsed, its concrete structures still stand. The recipe, described by the Roman engineer Mark Vitruvius in 30 BCE, involved preparing a mixture of volcanic ash, lime and water from the sea.
- **The Aqueduct**

Step 2: Historical facts about the aqueduct

Estimated time: 20 min

Introduction to historical facts about water supply and sanitation in Ancient Rome.

Aqueducts supplied fresh water to many of the major cities in the Roman Empire and set a high standard in building excellence unsurpassed for more than a thousand years. Aqueducts brought water from the Albanian mountains. Such structures are a testament to the high technical knowledge of Roman builders. Roman citizens used vast quantities of water - in the thermae, for the fountains that decorated the squares and streets for hygienic needs.

The Romans built numerous aqueducts in all corners of the Roman Empire, from Germany to Africa. In Rome itself, water was supplied by 11 aqueducts, which were built over 500 years and had a total length of almost 350 km. However, only 47 km of these were above ground: most were driven underground (e.g., the Eifel aqueduct in Germany is very well preserved). The longest Roman aqueduct was built in the 2nd century to supply water to Carthage and was 141 km long.

Step 3: Making an aqueduct

Estimated time: 60 min

Let the students be divided into teams of 5. This way, each team will make one aqueduct and they can help and support each other in making it together.

They follow the directions for the job, and each student chooses their role. Making a model of an aqueduct, following the instructions from the blueprint.

Assessment activities

Activity 1: Mind map

Each student is given a sheet of paper with the word "water" or a picture of a drop of water in the centre. Students have to write or draw on the sheet everything they associate with water.

When they are finished, they share their guesses.

Comment:

- where does water come from? •
- what is it used for? •
- how do we protect it.

Attachments

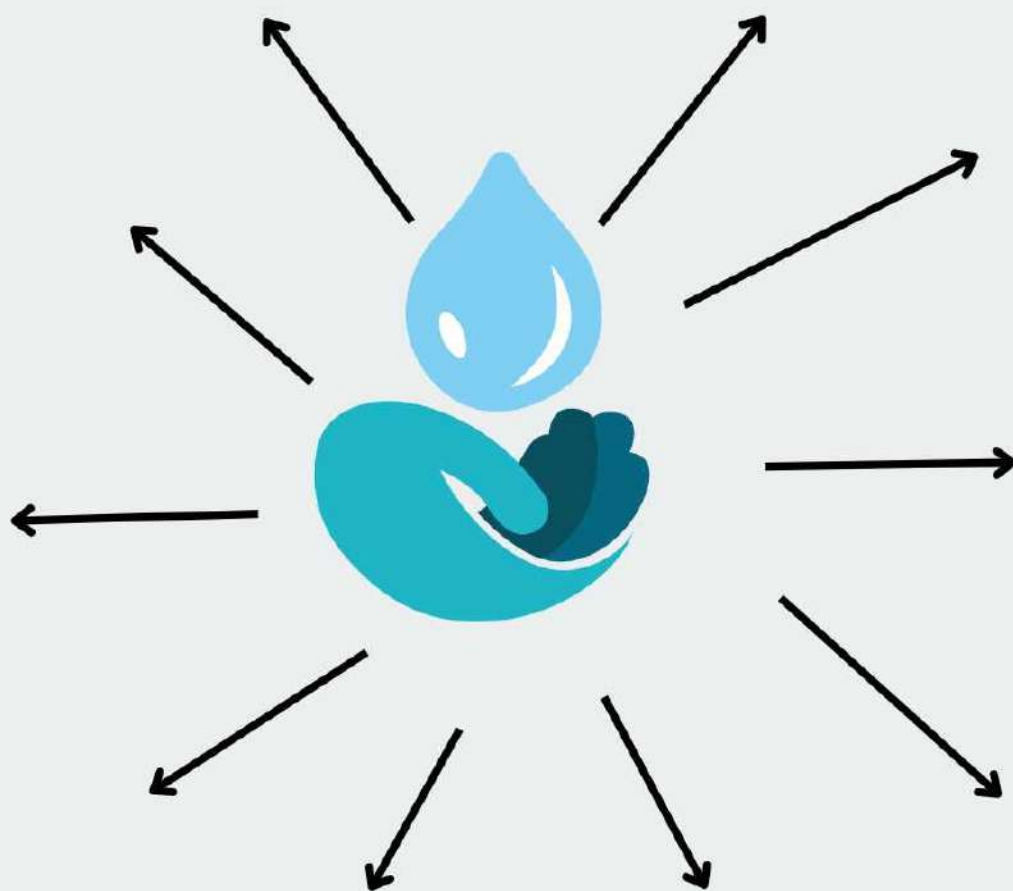
Worksheet for mind map brainstorming activity

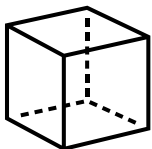
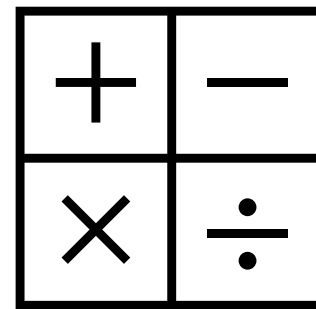
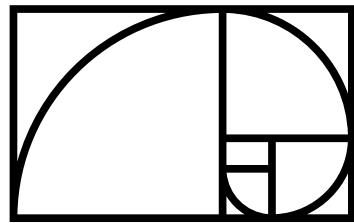
References

<https://money.bg/travel/7-izobreteniya-na-dreven-rim-koito-izpolzvame-i-dnes.html>

https://en.wikipedia.org/wiki/Roman_aqueduct

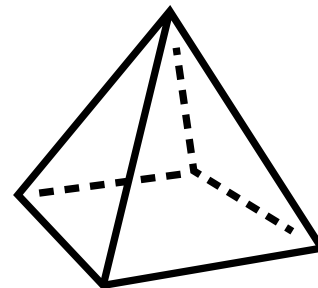
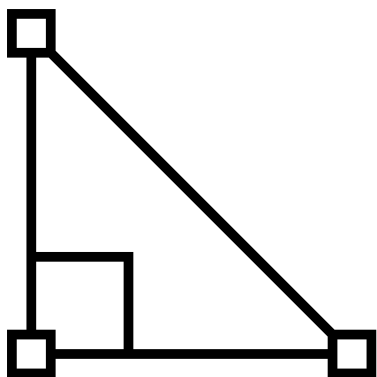
<https://www.jw.org/bg/%D0%B1%D0%B8%D0%B1%D0%BB%D0%B8%D0%BE%D1%82%D0%B5%D0%BA%D0%B0/%D1%81%D0%BF%D0%B8%D1%81%D0%B0%D0%BD%D0%B8%D1%8F/q201411/%D1%80%D0%B8%D0%BC%D1%81%D0%BA%D0%B8-%D0%B0%D0%BA%D0%B2%D0%B5%D0%B4%D1%83%D0%BA%D1%82%D0%B8/>





Aqueduc

Inventions of Ancient Rome



Съфинансиран от програма „Еразъм+“ на Европейския съюз

Roman numerals



Десятилетие = 10 ГОДИНИ

Столетие (век) = 100 ГОДИН

Хилядолетие (ера) = 1000 ГО

11 XI

12 XII

13 XIII

14 XIV

15 XV

16 XVI

17 XVII

18 XVIII

30 XXX

40 XL

50 L

60 LX

70 LXX

80 LXXX

90 XC

100 C



First surgical instruments

Concrete





The Aqueduct

Sources:

- <https://money.bg/travel/7-izobreteniya-na-dreven-rim-koito-izpolzvame-i-dnes.html>
- https://en.wikipedia.org/wiki/Roman_aqueduct

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