



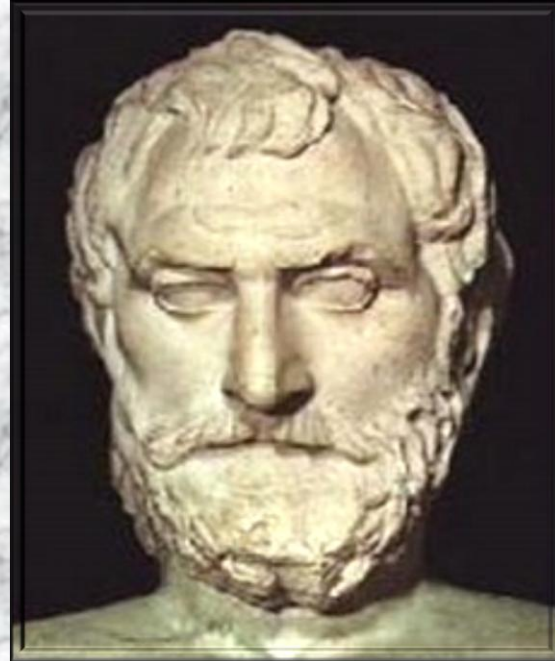
Education and Culture  
Lifelong learning programme  
COMENIUS



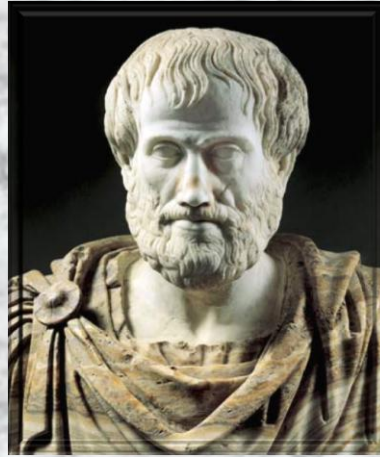
# European multilateral Comenius project 2011-13 “The Time Machine, now & then”

December 2011: A participation  
of the 11<sup>th</sup> High School of Acharnes  
Comenius team in the Mathematics contest  
suggested by our partner IES Antoni Maura

# Thales of Miletus, 624 – 546 B.C.



The ancient Greek philosopher Thales was born in Miletus in Greek Ionia and died of sunstroke at the age of 78 in Ancient Olympia while watching the games.



Aristotle,

the major source for Thales's philosophy and science, identified Thales as the first person to investigate the basic principles, the question of the originating substances of matter and, therefore, as the founder of the school of natural philosophy.

Thales was a multiple mind and he was interested in almost everything, investigating almost all areas of knowledge, philosophy, history, science, mathematics, engineering, geography, and politics.



He proposed theories to explain many of the events of nature, the primary substance, the support of the earth, and the cause of change, as well as astronomy.

Thales' hypotheses were new and bold, and in freeing phenomena (like attraction, electricity, magnetism etc.) from godly intervention, he paved the way towards scientific endeavor and theoretical search for the causes.

He founded the Milesian school of natural philosophy, developed the scientific method, and initiated the first western enlightenment.

A number of anecdotes is closely connected to Thales' investigations of the cosmos (a result of his great capacity to observe). For example, during his visit to Egypt he managed to measure the height of the Pyramids using their shadow at a certain time of the day and his walking stick as a tool (565 BC).

Thales's reputation for wisdom is further enhanced in a story which was related by Aristotle. (*Politics*, 1259 a 6-23).

Somehow, through observation of the heavenly bodies, Thales concluded that there would be a bumper crop of olives. He raised the money to put a deposit on the olive presses of Miletus and Chios, so that when the harvest was ready, he was able to let them out at a rate which brought him considerable profit. In this way, Thales answered those who reproached him for his poverty.

As Aristotle points out, the scheme has universal application, being nothing more than a monopoly.

Thales was highly respected for his ethics, prudence and integrity at such an extent that the Milesian citizens wrote on his tomb: “the space of your tomb is small while your glory expands as far as the sky”.

# Mathematics

## Geometry

- A diameter of the circle is a straight line drawn through the centre and terminated in both directions by the circumference of the circle; and such a straight line also bisects the circle.
- In isosceles triangles the angles at the base are equal; and if the equal straight lines are produced further, the angles under the base will be equal.
- 'If two straight lines cut one another, they make the vertical angles equal to one another'.



- ‘If two triangles have the two angles equal to two angles respectively, and one side equal to one side, namely, either the side adjoining the equal angles, or that subtending one of the equal angles, they will also have the remaining sides equal to the remaining sides and the remaining angle equal to the remaining angle’.

(According to this theorem Thales could measure the height of the Pyramids).

- The angle in a semicircle is a right angle.

## Astronomy

- The Eclipse of Thales (Thales is acclaimed for having predicted an eclipse of the sun which occurred on 28 May 585 BC).
- Setting the Solstices (June 21 or 22 and December 21 or 22).
- Thales's Discovery of the Seasons.
- Thales is said to have discovered the seasons of the year and divided it into 365 days.
- Thales's Determination of the Diameters of the Sun and the Moon.
- Ursa Minor

Sources: Our schoolbooks of Mathematics & Internet Encyclopedia of Philosophy  
(<http://www.iep.utm.edu/thales/#H14>)

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PROGRAMME

“THE TIME MACHINE,  
now & then”



“THALES OF MILETUS”

THE GREEK COMENIUS TEAM

UNDER

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