

Timelines of Science

(Ancient Greek Civilization)

In about 1200 to 1000 BCE, some men and women who spoke Greek voyaged across the Aegean and established colonies on the western coast of Anatolia (where modern day Turkey is). They could not penetrate deep but they found cities and controlled the coastal area. They called the new colonies Ionia. The largest and most prosperous city of Ionia was Miletus. People of Miletus used to travel to capital of Egypt. The capital of Egypt is about one hour flight now from where Miletus used to be. In those days there was no transportation; hence the travel was of weeks by land or by sea. Therefore people from Miletus interact with Egypt, traded, exchange the ideas and brought back Egyptian gold and their products. Egyptians were advanced as compared to Ionian people.

Egyptians had discovered (long ago) Papyrus plant and they used to grow such plant along the river Nile. They found the way to make smooth, thin and tough enough material that would last a long time and which they could write on.

When ancient Greeks from Miletus traded with Egypt, they brought back Papyrus and by 800 BCE, Papyrus was produced in Miletus and spreading out to all Ionia. Therefore Miletus, which had a commercial power, also became a source of ideas and inventions.

- 580 BCE Thales of Miletus put forward the idea that the water is the basic material of the universe. Thales (625 to 541 BCE) is first known person in the history of civilization who tried to explain things logically and paved foundation for “atomization”. He can be called as world first Philosopher and Scientist (or Father of Philosophy and Science).
- 550 BCE Anaximander of Miletus put forward early theory of evolution. He suggested that
- Human is developed from a type of fish.
 - The prime material of universe is “apeiron” and not water. Apeiron was believed to be a substance that preceded air, fire and water.
- 530 BCE Pythagoras developed right angle triangle theorem. He promoted the mystical power of numbers. Pythagoras was born in 571 BCE in Samos (Greece) – a city of Ionia. He was philosopher and mathematician (can be called world’s first mathematician) and is credited to start a movement called Pythagoreanism.
- 500-428 BCE Anaxagoras tried to explain for the first time (in Athens) the phases of moon and eclipses. He also promoted the idea that earth and other heavenly bodies are made of same material. As a result, he was forced to move out of Athens because his ideas were against Ionian’s religious beliefs.
- 500 BCE Heraclitus of Miletus proposed that the universe is in a constant state of flux.
- 500-400 BCE First known example written dates, found in Mexico (No relation to ancient Greeks yet).
- 470-399 BCE Socrates of Athens (A well-known philosopher and sophist) got famous in Ionia. He knew how to discuss and how to ask hard questions. Socrates is called “Father of Western Philosophy” and is well known as writer. Unfortunately none of his original books survived. We know him through his student Plato from “Socrates dialogue with Plato”. His exact date of birth is unknown.
- 450 BCE Empedocles proposed theory of four elements – earth, air, fire, and water. Empedocles (495-430 BCE) was born in Agrigento (Now in Italy) which was a Greek city. He was pre-Socratic philosopher.
- 420 BCE Democritus (460-370 BCE) of Abdera proposed first “Atomic Theory”. Also a pre-Socratic philosopher.
- 387 BCE Plato founded the academy school of Athens.
- 390-350 BCE Plato proposed his famous theory of ideal forms.
- 375 BCE Eudoxus proposed his theory of motion of celestial spheres called “Geometrical model of heaven”--- 27 concentric spheres. He estimated length of a year to be 365.25 days. Eudoxus (a classical Greek philosopher) was born in Cnidus, which is in Turkey now. He travelled to Athens, attended lectures of Plato, disagreed with him and travelled to Egypt where he learned astronomy. When he came back to Athens, he had his own group of students. It is believed he taught Aristotle also. His exact dates of birth and death are unknown. He died in Cnidus, his birth place.
- 350 BCE Heraclides of Pontus (Greek philosopher born in area now in Turkey) claimed that earth rotates on an axis and hence explained changing seasons.

- 350-322 BCE Aristotle refined theory of motion of spheres and came up with 55 concentric spheres. He also refined theory of four elements and added fifth element "Aether or Ether". He started studying dynamic (First Greek who studied motion logically based upon observations). He came up with the idea that
Speed proportional to weight, applied force and density of medium in which body moves.
- 344 BCE Aristotle found the Lyceum School of Athens.
- 322 BCE Alexander the Great conquered the Egypt and kept on going up to Southern Asia (Afghanistan, Pakistan).
- 300 BCE Strata of Lampsacus (when he was director of Lyceum School of Athens) developed theory of vacuum.
- 300 BCE Euclid of Alexandria (city of Egypt founded by Alexander the Great when he occupied Egypt in 322 BCE) in his work called "Elements" developed Geometrical Theory. It contained"
- A set of 5 Geometrical postulates.
 - Nine common notions (or axioms).
 - Proof of Pythagoras theorem.
 - Also included pioneer work on number theory and an algorithm to find greatest common divisor.
- Euclid is called "Father of Geometry". He was Greek mathematician and philosopher was active in Alexandria. His birth place and exact dates of birth and death are unknown.
- 260 BCE Archimedes work on calculating circumference and area of circle, and method of calculation volume of solids became famous.
Archimedes(287-212 BCE) was the founder of hydrostatics – buoyancy
He refined cylindrical pump which was later named as Archimedes screw.
He helped Greek king against Roman attack in 214 BCE. He was killed by a Roman soldier.
- 250 BCE Aristarchus of Samos (Greece) developed heliocentric theory claiming that earth rotates in orbit around sun. He estimated size of sun and earth to be 20:1 and distance between sun and earth to be 499 times of the radius of earth.
Aristarchus was born in Samos in 310 BCE and was a student of Aristotle. His idea was complete deviation from Aristotelian view point.
- 242 BCE Roman occupied Sicily in first Punic war.
- 212 BCE Archimedes was killed by a roman soldier during siege of Syracuse in second Punic war and by 210 Romans occupied important cities of Sicily and Syracuse.