

# GEOLOGICAL TIMELINE

In this pack you will find information and activities to help your class grasp the concept of geological time, just how old our planet is, and just how young we, as a species, are.

Planet Earth is 4,600 million years old. We all know this is very old indeed, but big numbers like this are always difficult to get your head around. The activities in this pack will help your class to make visual representations of the age of the Earth to help them get to grips with the timescales involved.

## IMPORTANT EVENTS IN THE EARTH'S HISTORY



- 4600 mya (million years ago) – Planet Earth formed.** Dust left over from the birth of the sun clumped together to form planet Earth. The other planets in our solar system were also formed in this way at about the same time.
- 4500 mya – Earth's core and crust formed.** Dense metals sank to the centre of the Earth and formed the core, while the outside layer cooled and solidified to form the Earth's crust.
- 4400 mya – The Earth's first oceans formed.** Water vapour was released into the Earth's atmosphere by volcanism. It then cooled, fell back down as rain, and formed the Earth's first oceans. Some water may also have been brought to Earth by comets and asteroids.
- 3850 mya – The first life appeared on Earth.** It was very simple single-celled organisms. Exactly how life first arose is a mystery.
- 1500 mya – Oxygen began to accumulate in the Earth's atmosphere.** Oxygen is made by cyanobacteria (blue-green algae) as a product of photosynthesis. For 2,200 million years this oxygen was removed from the atmosphere as it reacted with iron, sank to the bottom of the sea and became trapped in rock layers. 1,500 million years ago the free iron ran out and oxygen began to be released into the atmosphere.
- 700 mya – The first animals evolved.** These were simple single-celled animals.
- 530 mya – The first vertebrates (fish) evolved.**
- 400 mya – The first land plants evolved.** Oxygen in the atmosphere reacted to form ozone, which formed a layer. This served as a protective barrier to the harmful rays coming from space and which allowed plants to colonise the land.
- 350 mya – The first land vertebrates evolved.** With plants present on the land to provide a food source, animals rapidly followed. The first to venture onto the land were primitive amphibians, and reptiles evolved soon afterwards.
- 225 mya – The first dinosaurs evolved from lizards.**
- 65 mya – The dinosaurs went extinct.** The dinosaurs, and many other species with them, were wiped out by the after-effects of a meteorite impact, or perhaps several impacts. The impact(s) set off chains of earthquakes, tsunamis and volcanic eruptions, which threw lots of dust and acid into the atmosphere, creating an impact winter. The dust blocked out the sunlight so plants could no longer photosynthesise, and food chains collapsed. After the extinction of the dinosaurs, mammals evolved rapidly and filled the evolutionary niches they left behind.
- 130,000 years ago (0.13 mya) – Modern humans evolved.** *Homo sapiens* evolved in Africa from earlier humans. They left Africa around 35,000 years ago and spread around the globe. Human evolution is still pretty mysterious, due to gaps in the fossil record.

