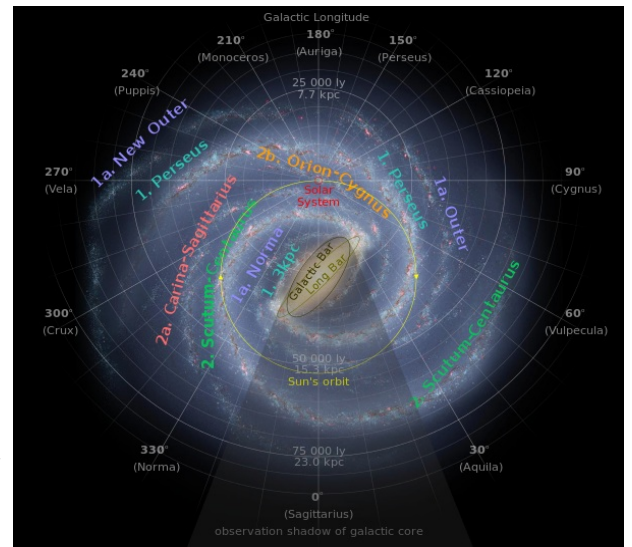


## GALACTIC YEAR

The galactic year, also known as a cosmic year, is the duration of time required for the Solar System to orbit once around the centre of the Milky Way Galaxy. Estimates of the length of one orbit range from 225 to 250 million terrestrial years. The Solar System is travelling at an average speed of 828,000 km/h within its trajectory around the galactic centre, a speed at which an object could circumnavigate the Earth's equator in about 3 minutes; that speed corresponds to approximately one 1300<sup>th</sup> of the speed of light.

The galactic year provides a conveniently usable unit for depicting cosmic and geological time periods together. By contrast, a "billion-year" scale does not allow for useful discrimination between geologic events, and a "million-year" scale requires some rather large numbers.



Milky Way Arms and approximate orbit of the Sun (yellow circle) around the Galactic Centre

## TIMELINE OF THE UNIVERSE AND EARTH'S HISTORY IN GALACTIC YEARS

Assuming that 1 galactic year is 225 million years.

61.32	galactic years ago	Big Bang (that is, if the Universe started to expand from a singularity)
54	galactic years ago	Birth of the Milky Way
20.44	galactic years ago	Birth of the Sun
17–18	galactic years ago	Oceans appear on Earth
16.889	galactic years ago	Life begins on Earth
15.555	galactic years ago	Prokaryotes appear
12	galactic years ago	Bacteria appear
10	galactic years ago	Stable continents appear
6.666	galactic years ago	Eukaryotes appear
6.8	galactic years ago	Multicellular organisms appear
2.4	galactic years ago	Cambrian explosion occurs
2	galactic years ago	The first brain structure appeared in worms
1.11	galactic year ago	Permian–Triassic extinction event
0.2935	galactic years ago	Cretaceous–Paleogene extinction event
0.001	galactic years ago	Appearance of modern humans

## THE PRESENT DAY

1	galactic year from now	All the continents on Earth fuse into a super-continent. Arrangements of this have been dubbed Amasia, Novopangaea, and Pangaea Ultima
2–3	galactic years from now	Tidal acceleration moves the Moon far enough from Earth that total solar eclipses are no longer possible
4	galactic years from now	Carbon dioxide levels fall to the point at which photosynthesis is no longer possible. Life dies out
12	galactic years from now	The Earth's magnetic field shuts down and Solar Wind gradually depletes the atmosphere
15	galactic years from now	Earth becomes like Venus is today
22	galactic years from now	Milky Way and Andromeda Galaxy begin to collide
25	galactic years from now	The Sun becomes a white dwarf
30	galactic years from now	The Milky Way and Andromeda complete the merger, suggested names are Milkomeda or Milkdromeda
500	galactic years from now	Universal expansion causes all galaxies to disappear beyond the cosmic light horizon
2000	galactic years from now	The Local Group of 47 galaxies will coalesce into a single large galaxy.