

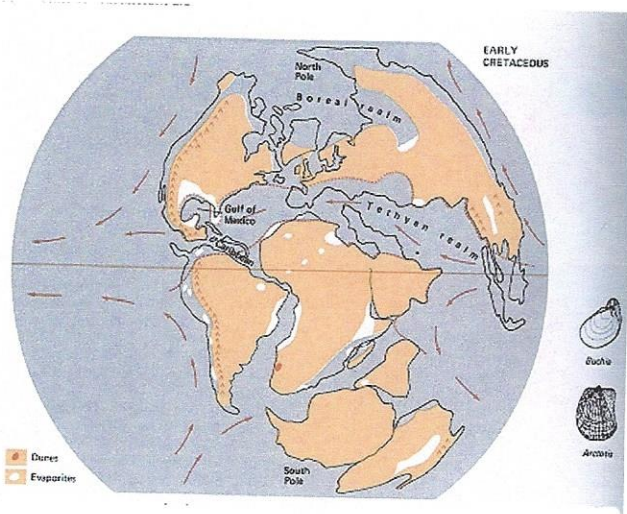
China Population Growth from 2 - 2000 A.D. The nation reached one billion in 1982

Perhaps the best way to approach a 'billion' is to apply the number to something we can understand. For example, if you are over the age of 30 (31.7 to be exact), you have lived for a billion seconds. A billion seconds ago (1978) no one had ever seen a cell phone, personal computer, CD, DVD, or iPod, and the Internet was in its nascent stage as the ARPANET, restricted to a few clusters of scientists and military personnel. China lifted a ban on works by Aristotle, Shakespeare and Charles Dickens, *Annie Hall* won best picture at the Academy Awards, and 918 followers of Jim Jones took part in a mass suicide.

A billion minutes equals approximately 1,902 years. A billion minutes ago, paper making was refined in China and would remain a secret for the next 500 years. The great mathematician and astronomer Ptolemy was formulating his works on astronomy and astrology. John The Apostle had recently died, Ignatius of Antioch is recorded as the first person to use the term 'Christianity', and the Greek historian Plutarch published *Private Lives*.

A billion hours is approximately 114,000 years. A billion hours ago, both Homo sapiens and Neanderthals shared the late Stone Age with the likes of woolly mammoths and saber-tooth cats. The Eemian interglacial period was coming to an end, giving way to the next ice age. During the Eemian, sea levels rose 10 - 20 feet higher than today, turning the Scandinavian Peninsula into an island.

A billion days is 2.7 million years. A billion days ago in the early Stone Age, Australopithecus, an ape like creature related to an ancestor of modern humans roamed the African Savannas. It is the Pliocene Epoch, plate tectonics push North American and South America towards each other, closing the gap between them and creating the Isthmus of Panama. This alters ocean circulation and that combined with a slight change in the tilt of the Earth's axis, triggers the formation of ice sheets on the Arctic Ocean. These ice sheets grow to cover large portions of the northern hemisphere as glaciers



The continents during the early Cretaceous Period

A billion months is 82 million years. A billion months ago is the late Cretaceous Period. Dinosaurs roam the planet and species of small marsupials appear. The supercontinent Gondwana splits apart, forming Australia, Antarctica and New Zealand, and all continents will soon have a modern day look. Birds begin to diversify in large numbers, flowering plants and insects can be found everywhere. Marine life is recovering after the Cenomanian - Turonian extinction around 92 million years ago that wiped out 27% of marine genera. The central part of North America is covered by a large inland sea and other continents also have areas inundated by seas.

A billion years ago the 'year' had about 516 days, divided into about 40 months and a day was 17-18 hours long. The moon orbited the Earth in around 23 days and the Sun's luminosity was 8% lower than its present level. Life consists of the first multi-cellular organisms – blue/green algae that begin producing enough oxygen to create the early ozone layer that will protect life on land from damaging levels of ultraviolet radiation. The planet has a new supercontinent – Rodinia – that will last for approximately 250 million years.



North America during the Cretaceous

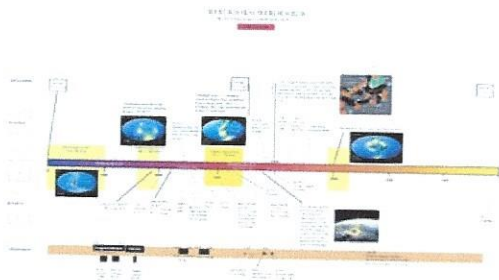
### Billion Trivia

Besides using time, we can try to visualize a 'billion' in other ways:

- June, 2008 – Personal computers in use surpasses one billion
- August, 2009 – Africa's population reaches one billion
- November, 2008 – Twitter passed one billion tweets
- January, 2009 – It is estimated there are over one billion Internet Users
- January, 2009 – It is estimated that there are one billion motorized vehicles in the world
- March, 2010 – Lady Gaga becomes the first artist with one billion online video views

A billion centimeters is the distance from Chicago, IL to Tokyo, Japan; it takes light three seconds to travel a billion meters; and a billion pennies stacked on each other would be 1,000 miles high. Oddly enough, the US mint *STILL* mints ten billion pennies annually –just in case there's an outbreak of penny stacking.

If you ever find yourself looking for something to do, try counting to a billion. At the rate of one number per second, it will take you 31 years, 251 days, 7 hours, 46 minutes, and 39 seconds to reach a billion.



The above graphic depicts astronomical, geological, biological, and climatological events for a billion years in the past and a billion years into the future. For a full size version of this pdf file, go to [www.themwelt.com/1\\_billion.pdf](http://www.themwelt.com/1_billion.pdf)