
ACTIVITY PAGES

The Earth is Dancing (Thinking & Talking)

Earth is approximately 4.5 billion years old. That is a really big number, written like this: **4,500,000,000**.

How long do you think it would take to count to one billion? If you start counting one number a second without stopping until you reach a billion, it will take you 31 years, 259 days, 1 hour, 46 minutes, and 40 seconds!

It might seem like the earth stays still, and we are the ones dancing on top of it. While we do move, grow and change much faster than our planet does, Earth dances too! But you have never seen a dance so slow, to music we cannot hear!

The earth moves and changes very slowly, slower than we can even imagine. Geological time (or earth time) is measured by time periods of varying lengths. From the longest to the shortest, these are called eons, eras, periods, and epochs. The "Precambrian Eon" which ended when complex life began, lasted 4 of the 4.5 billion years of the earth's history!

Here is a definition of those geological time words:

Eon – A division of time made up of two or more eras

Era – A division of time composed of several periods.

Period – A division of time shorter than an era and longer than an epoch.

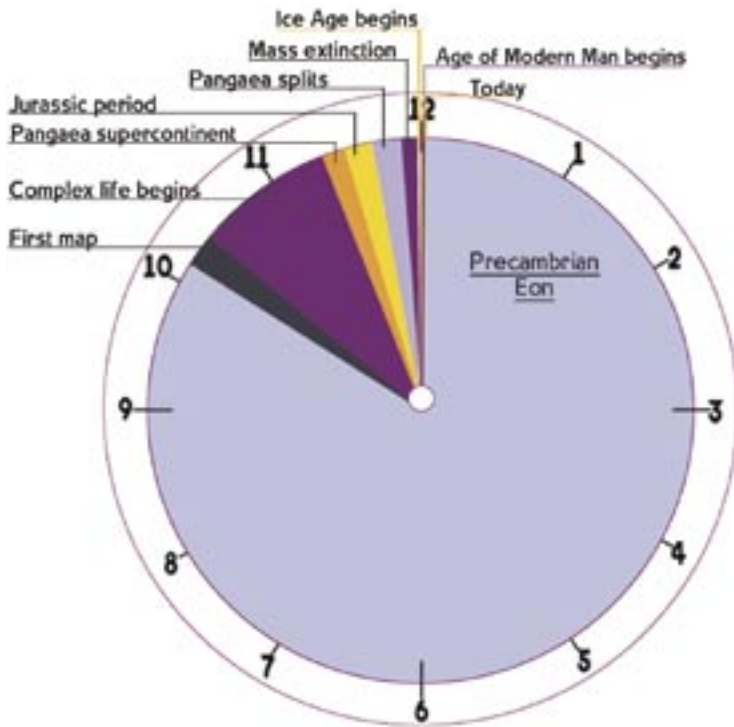
Epoch – A unit of geologic time that is a division of a period and is characterized by rock formations.

Each of these measuring units does not have an exact number of years, but are measured by the changes in rock formations that show scientists when events happened in the earth's history. Radiological dating methods help scientists to figure out about how many years passed between each change.

Take a look at our *geological clock* on the next page, and see what the earth may have looked like at different points in its history. Notice that modern man has only been around for 10,000 years, less than a second on the geological clock!

ACTIVITY PAGES

(The Earth is Dancing, continued)



See this activity's interactive clock online at:
www.worldartswest.org/plm/guide/activitypages/kidsroom/earthisdancing.shtm

Precambrian Eon

Earth Began - 4.5 billion years ago - In the Precambrian eon the building blocks of life developed, as the earth started to cool down. This counts as over 80% of the earth's existence!
Clock time = 00:00:00

First map

The oldest rocks dated by scientists allow them to guess at a map of the earth during the late Precambrian - 650 million years ago
Clock time = 10:17:09

Complex life begins

Paleozoic Era in the Cambrian Eon- 570 million years ago - Complex life begins, in the form of the first multi-cell creatures in the ocean.
Clock time = 10:29:48

Pangaea Supercontinent

Mesozoic Era - 200 million years ago - The most recent time that all the landmasses on the earth collided to form a supercontinent, called Pangaea. Plant and animal life (mostly reptiles) in abundance.
Clock time = 11:28:21

Jurassic Period

Late Jurassic Period- 152 million years ago - This was the height of the dinosaurs, Pangaea was at the north, the southern continent is called Gondwana
Clock time = 11:55:37

Pangaea Splits

Late Cretaceous Period- 95 million years ago - Gondwana breaking up, separating South America from Africa
Clock time = 11:44:58

ACTIVITY PAGES

(The Earth is Dancing, continued)

Mass extinction

KT boundary - 65 million years ago - Comet hits near Mexico and 75% of life on earth goes extinct.

This gives rise to the "Age of Mammals."

Clock time = 11:49:43

Ice Age begins

Ice Age begins - 1.6 million years ago - One of the coldest periods of the earth's history.

Clock time = 11:59:45

Age of Modern Man Begins

Ice Age ends - 10,000 years ago - The time of modern man begins. We are just a drop in the bucket of geological time, and the earth keeps on dancing as slowly as ever.

Clock time = 11:59:59

Today

Today's world - Along with the natural global warming trend, the burning of fossil fuels and other technological and industrial processes has more impact on the earth's climate than any other species in history! This may make geological climate change more rapid than ever before. However, we are at the beginning of a new day, and we have the power to learn and change!

Clock time = 12:00:00

Here are some great links to sites with geological time scales that name the eons, eras, periods and epochs, and show them in proportion.

wrgis.wr.usgs.gov/docs/parks/gtime/gtime2.html

Putting time into proportion, from USGS

www.3d-fossils.com/earth_sciences/paleontology/geological_time_scale_2.html

Geological time scale as a clock

*More valuable activities, images, links and related information is available online, 24-7 at
<http://www.worldartswest.org/plm/guide>. Visit our ONLINE Viewer's Guide!*