HISTORY OF THE EARTH
4.6 BILLION YEARS OLD

HISTORY OF THE EARTH

https://www.youtube.com/watch?v=SYOarZKipnU

HISTORY OF THE
4.5 BILLION YEAR OLD EARTH

STEP#1 ED PROBLEM

CREATING A
DEEP-TIMELINE

OF THE LIFE ON EARTH

DEEP TIMELINE PROCEDURE

Earth's history is marked by a series of transformations, mass extinctions, and geologic changes that have taken place over the course of 4.6 billion years. In this part of the lesson **Partners** are going to use a Web site to research some of the most important events. **Later Partners will** label the events on a geologic timeline.

Divide the class into three groups. Assign one of the following subjects to each group: Transformations, Extinctions, and Geologic Changes.

Students then visit the Deep Time Web activity for information about the "events" listed under their group's subject. (These events are listed below.) **Each group will** divide up the events so that **EACH** student is required to find information about only one or two events during the research period. **Students will** take detailed SQ3R notes about the events they **research,** (STEP ED #2) including when the event happened, a description of the event, and what other events were happening around the same time.

Exploring Deep Time

http://cptv.pbslearningmedia.org/resource/tdc02.sci.ess.earthsys.deeptime/deep-time/

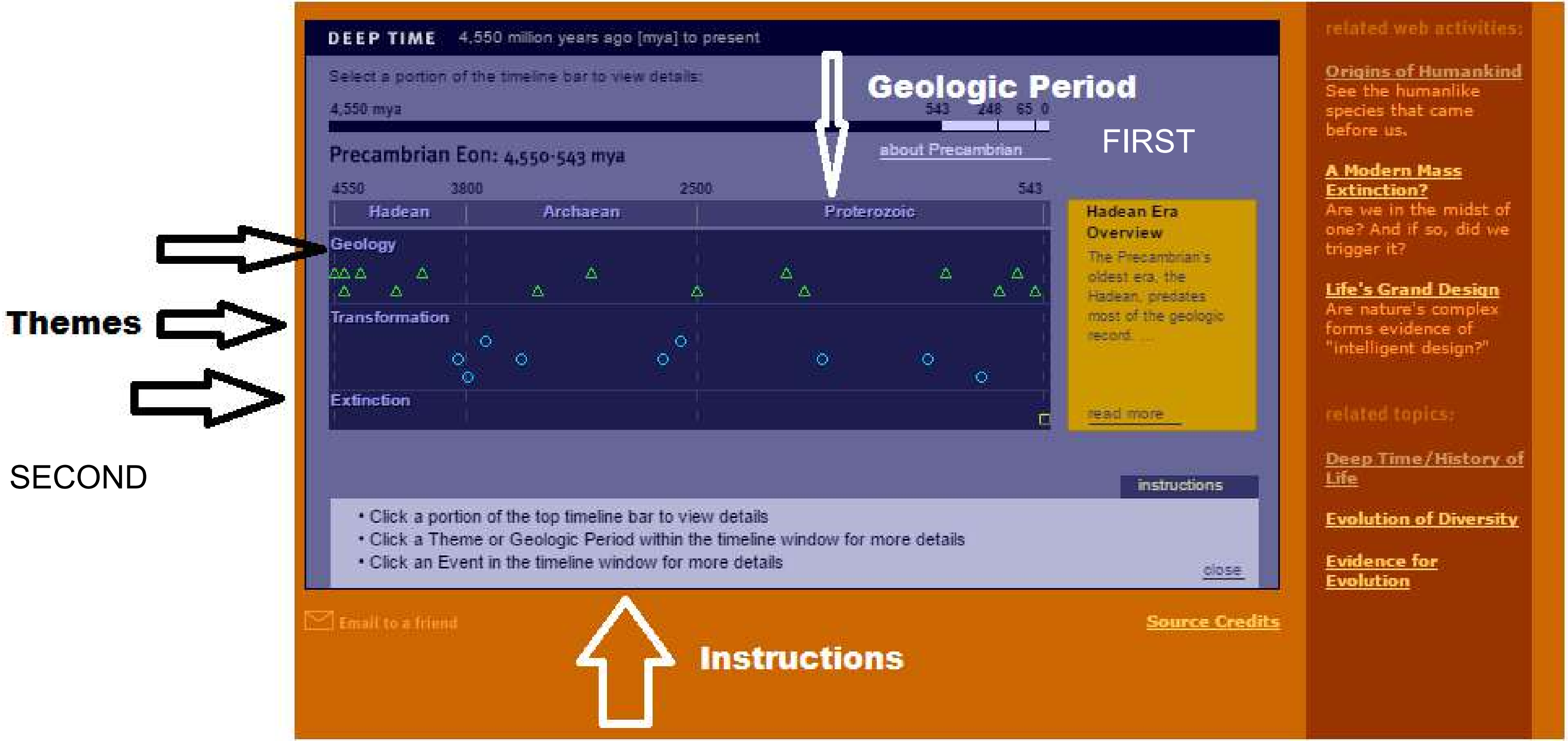
Following a period of research using the Deep Time Web activity, students will deliver a two- or three-sentence oral report on the information they found about their event(s). Students should include the approximate date of the event, a description of the event, and a brief summary of other events that were happening around the same time. Following each report, students will be given the corresponding event tag to place in the appropriate place on the geologic timeline.

When all event tags have been placed on the timeline, students will be asked to identify any patterns they see. Students should look for connections between **geological** changes and the **extinctions** and/or **transformations** that follow.

Deep Time

Earth has been significantly altered over its 4.6-billion-year history by climate swings, vulcanism, drifting continents, and more. These dynamic conditions, in turn, have influenced every living thing that has inhabited the planet. This interactive timeline from the *Evolution* Web site provides a framework through which to learn about geological events that have shaped the planet and its past and present life forms, and to better appreciate the timescale over which numerous remarkable transformations have occurred.


DEEP TIME 4,550 million years ago [mya] to present
Select a portion of the timeline bar to view details:
4,550 mya
543 248 65 0
Precambrian Eon: 4,550-543 mya
about Precambrian
4550 3800 2500 543
Hadean
Archaean
Proterozoic
Geology
Transformation
Extinction
Hadean Era Overview
The Precambrian's oldest era, the Hadean, predates most of the geologic record. ...
read more
instructions
• Click a portion of the top timeline bar to view details
• Click a Theme or Geologic Period within the timeline window for more details
• Click an Event in the timeline window for more details
close
Email to a friend
Source Credits
related web activities:
Origins of Humankind
See the humanlike species that came before us.
A Modern Mass Extinction?
Are we in the midst of one? And if so, did we trigger it?
Life's Grand Design
Are nature's complex forms evidence of "intelligent design?"
related topics:
Deep Time/History of Life
Evolution of Diversity
Evidence for Evolution
Instructions


DEEP TIME 4,550 million years ago [mya] to present
Select a portion of the timeline bar to view details:
4,550 mya
543 248 65 0
Geologic Period
FIRST
Precambrian Eon: 4,550-543 mya
about Precambrian
4550 3800 2500 543
Hadean
Archaean
Proterozoic
Geology
Transformation
Extinction
Themes
SECOND
Hadean Era Overview
The Precambrian's oldest era, the Hadean, predates most of the geologic record. ...
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Evidence for Evolution

SKIP INTRO

To understand evolution, humans must think in much larger units of time than those we use to define our lives.

After all, evolutionary change isn't apparent in days, months, and years. Instead, it's documented in layers and layers of rock deposited over 4.6 billion years.

Click

Email to a friend

Source Credits

4.6 BILLION YEAR PROOF

Scientists have determined with great confidence that the **Earth is 4.54 billion years old. This is based on radiometric dating** of meteorites (particularly one found in Arizona) and agrees well with ages determined from dating lunar samples, estimating cooling rates, studies of our sun, and host of other methods. The oldest rocks on Earth are in the Jack Hills of Western Australia and were dated to 4.4 billion years by dating tiny minerals called zircons. The majority of ages we have for any types of events are determined by the **radioactive decay** of certain isotopes. Depending on how old something is, different methods can be used. A lot of assumptions are made when using radiometric dating, such as that decay rates remain constant over time, but in general the science behind dating methods is very sound.

The stretch of geologic history is commonly referred to as "deep time," and it's a concept perhaps as difficult to conceive as deep space. Can humans measure deep time? Yes. Will we ever truly comprehend such immensity of time? Probably not. But to develop a better understanding of evolutionary change in its proper historical context, we must try. This timeline, and the events portrayed along it, provide a framework for doing so.

STUDENT PARTNER ASSESSMENT

Transformations

- What are some of the major evolutionary transformations in the history of life?
- When did these transformations occur, and what types of organisms were involved?
- What fossil examples of such transformations have been discovered?

STUDENT PARTNER ASSESSMENT

Extinctions

- Name the five largest mass extinction events in the history of life on Earth.
- When did these mass extinctions occur, and what organisms were affected?
- What kinds of evidence do scientists use to better understand prehistoric extinctions?

STUDENT PARTNER ASSESSMENT

Geologic Changes

- How did the continents change from the Precambrian to the Permian to the Jurassic to the Eocene?
- How could the shifting of continents have influenced the distribution and migration of plants and animals?
- What patterns can you see in the movement of landmasses over time?

Transformations

- First evidence of life
- Oldest fossils
- First evidence of soft-bodied animals
- The Cambrian Explosion
- First land plants and fish
- First reptiles
- First mammals and dinosaurs
- First birds
- First hominids
- Modern humans

Transformations

- First evidence of life (3,850 million years ago [Mya])
- Oldest fossils (3,500 Mya)
- First evidence of soft-bodied animals (900 Mya)
- The Cambrian Explosion (530 Mya)
- First land plants and fish (480 Mya)
- First reptiles (350 Mya)
- First mammals and dinosaurs (220 Mya)
- First birds (150 Mya)
- First hominids (5.2 Mya)
- Modern humans (0.1 Mya)

Extinctions

- Some single-celled animals and soft-bodied animals
- Reef-builders and other shallow-water organisms
- Twenty-five percent of marine invertebrate families
- Fifty to fifty-five percent of marine invertebrate genera
- Ninety percent of all species
- About 50 percent of marine invertebrate genera
- Dinosaurs and 60 to 80 percent of all species
- Foraminifera, gastropods, and sea urchins
- Many woodland, plant-eating herbivores
- Nearly all mammals and birds over 45 lbs.

Extinctions

- Some single-celled animals and soft-bodied animals (Vendian 543 Mya)
- Reef-builders and other shallow-water organisms (Cambrian 520 Mya)
- Twenty-five percent of marine invertebrate families (End Ordovician 443 Mya)
- Fifty to fifty-five percent of marine invertebrate genera (Late Devonian 364 Mya)
- Ninety percent of all species (End Permian 250 Mya)
- About 50 percent of marine invertebrate genera (Late Triassic 206 Mya)
- Dinosaurs and 60 to 80 percent of all species (End Cretaceous 65 Mya)
- Foraminifera, gastropods, and sea urchins (Late Eocene 33 Mya)
- Many woodland, plant-eating herbivores (Miocene 9 Mya)
- Nearly all mammals and birds over 45 lbs. (Late Pleistocene 0.1 Mya)

Geologic Changes

- Formation of the great oceans
- Continents begin shifting
- Rodinia supercontinent breaks up
- Gondwana forms
- Great mountain ranges form
- Formation of Pangaea supercontinent
- Pangaea supercontinent breaks up
- Inland seas dry up
- Global ice ages begin

Geologic Changes

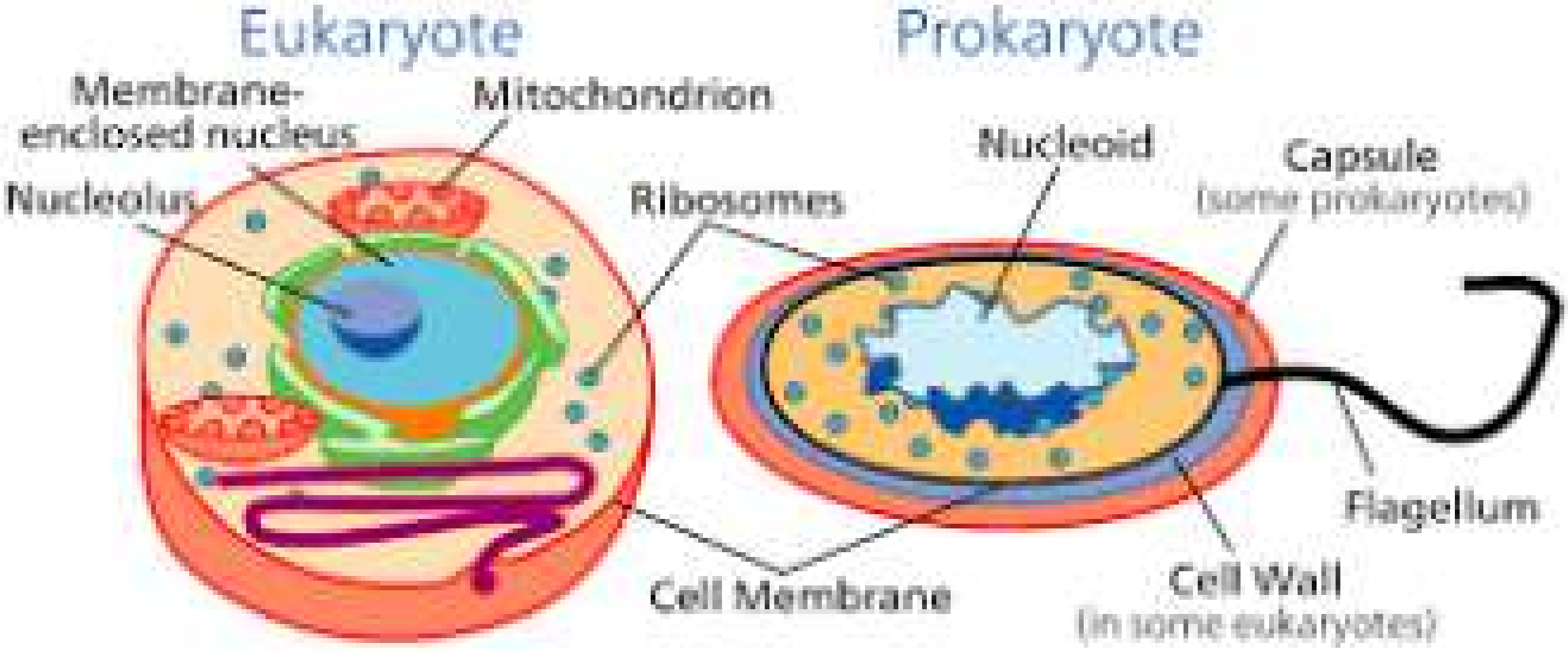
- Formation of the great oceans (4,200 Mya)
- Continents begin shifting (3,100 Mya)
- Rodinia supercontinent breaks up (700 Mya)
- Gondwana forms (500 Mya)
- Great mountain ranges form (425 Mya)
- Formation of Pangaea supercontinent (280 Mya)
- Pangaea supercontinent breaks up (200 Mya)
- Inland seas dry up (20 Mya)
- Global ice ages begin (2 Mya)

Geologic Timescale

Time	Eon	Era	Period
	Phanerozoic	Cenozoic	Quaternary
2 mya			Tertiary
65 mya		Mesozoic	Cretaceous
			Jurassic
			Triassic
250 mya		Paleozoic	Permian
			Carboniferous
			Devonian
			Silurian
			Ordovician
			Cambrian
540 mya	Proterozoic		
2.5 bya	Archean		
3.8 bya	Hadean		
4.6 bya			

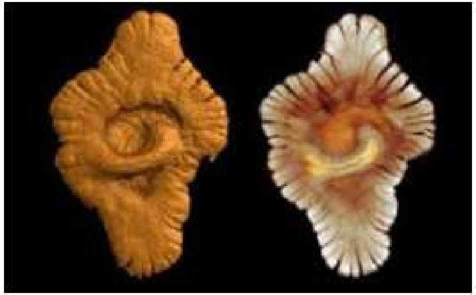
Table 1 Major Events in Geological Time

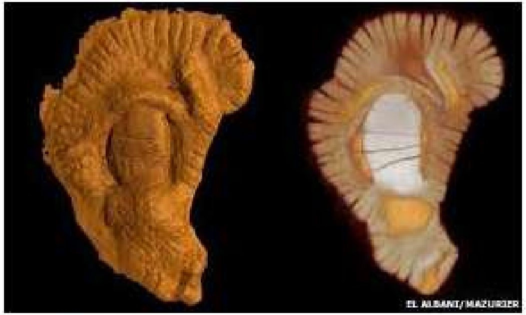
Time	Scale	Major Event	
Today	0 cm	The Present	CENOZOIC ERA (write in blue)
~100,000 ya	0.1 mm	Homo Sapiens (Modern Form of Human Species)	
~ 22 mya	2.2 cm	Grasses	
~ 33 mya	3.3 cm	First Apes	
~50 mya	5 cm	Eohippus (First Known Horse)	
65 mya	6.5 cm	**CENOZOIC ERA**	
~ 65 mya	6.5 cm	Dinosaurs Extinction	MESOZOIC ERA (write in red)
~140 mya	14 cm	First Flowering Plants	
~200 mya	20 cm	Earthworms	
~220 mya	22 cm	First Mammals	
~240 mya	24 cm	Start of the age of the dinosaurs	
248	24.8 cm	**MESOZOIC ERA**	
~330 mya	33 cm	Winged Insects	PALEOZOIC ERA (write in green)
~380 mya	38 cm	First Insects	
~390 mya	39 cm	First Sharks	
~395 mya	39.5 cm	Amphibians	
~400 mya	40 cm	Ferns	
~440 mya	44 cm	First Land Plants	
~440 mya	44 cm	First Jawed Fish	
540 MYA	54 cm	**PALEOZOIC ERA**	
~550 mya	55 cm	Jellyfish	PRECAMBRIAN TIME (write in orange)
~1.8 bya	1 m 8 cm	First Eukaryotes	
~2.4 bya	2 m 40 cm	Significant rise in oxygen, to ~2% level	
~3.5 bya	3 m 50 cm	Prokaryotes (bacteria)	
~4.6 bya	4 m 60 cm	Formation of Earth and Moon	
4.6 bya	4 m 60 cm	**PRECAMBRIAN TIME**	

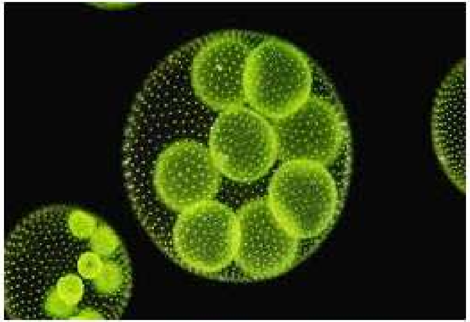


Eukaryote
Prokaryote
Membrane-
enclosed nucleus
Mitochondrion
Nucleolus
Ribosomes
Nucleoid
Capsule
(some prokaryotes)
Flagellum
Cell Membrane
Cell Wall
(in some eukaryotes)

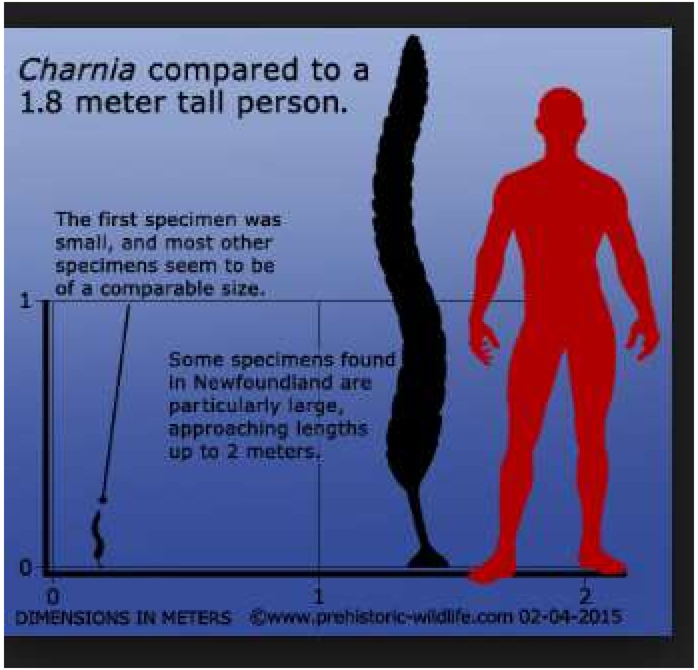
One Billion Years Ago






Charnia
560 MYA





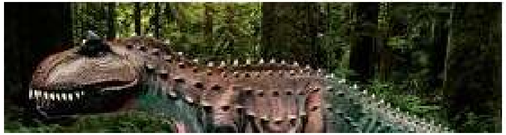



Land Plants 450 MYA



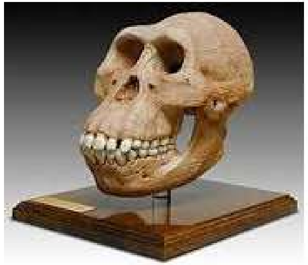


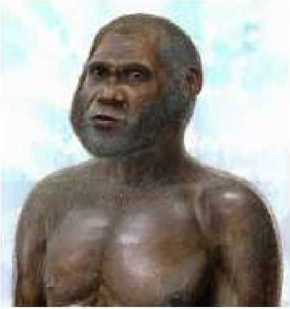


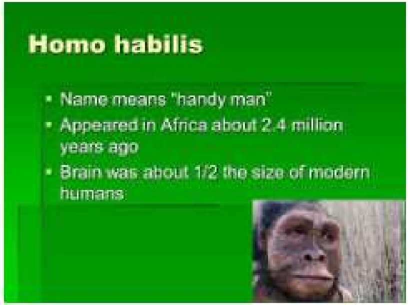




Dinosaurs 230-65 MYA

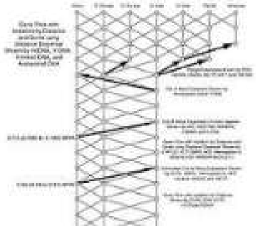
Eozostodon 210 MYA

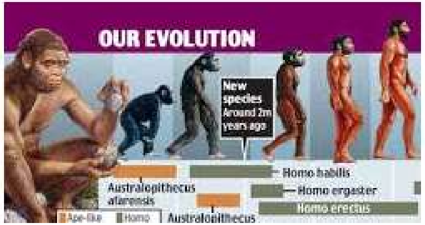








Modern Humans 2.4 MYA

What Killed the Dinosaurs?

It is one of the greatest puzzles in paleontology.

For more than 150 million years, dinosaurs dominated the Earth. They were so successful that other animal groups -- mammals included -- had little chance of playing anything more than secondary roles.

Then, 65 million years ago, the dinosaurs vanished from the world forever.

Did they meet a quick and catastrophic end, or did they fade away gradually?

What happened 65 million years ago?

What Killed the Dinosaurs?

Introduction

Conclusion

HYPOTHESIS	Rare Metal	Melted Rock	Fractured Crystals	Fossil Record	Lava Flows	Sea Level	Impact Crater
Asteroid Impact	■	■	■	■			■
Volcanism	■		■	■	■		
Mammal Competition				■			
Continental Drift				■		■	

EVIDENCE

Instructions

Who Killed the Dinosaurs?

A)Each Table will be assigned a hypothesis:

Table#1- Asteroid Impact Table#2 - Volcanism
Table#3-Mammal Competition Table#4- Continental Drift

B) Students will go to the website (http://cptv.pbslearningmedia.org/resource/tdc02.sci.ess.earthsys.dinokill/what-killed-the-dinosaurs/) and look for evidence for their hypothesis. Each student at the table will research at least one form of evidence.

C) Each table will then present their hypothesis and evidence to the class.

D) Individual Students will listen to the class presentations and will be assigned the following questions on the next page.

SQ3R Note Taking Assignment

Students will explore the What Killed the Dinosaurs? Web activity and discuss the following:

- What animals were most affected by the extinction that occurred at the end of the Cretaceous period, 65 million years ago?
- What are some of the hypotheses scientists have come up with to explain the extinction of the dinosaurs?
- What types of evidence do scientists use to support those hypotheses?
- Is one of those hypotheses more accepted than the others?
- What group of animals probably benefited most from the extinction of the dinosaurs? Why?

RESOURCES :
DEEP TIMELINE
HISTORY OF THE EARTH

http://cptv.pbslearningmedia.org/resource/tdc02.sci.life.div.lp_divdeeptime/deep-time-and-the-history-of-life/

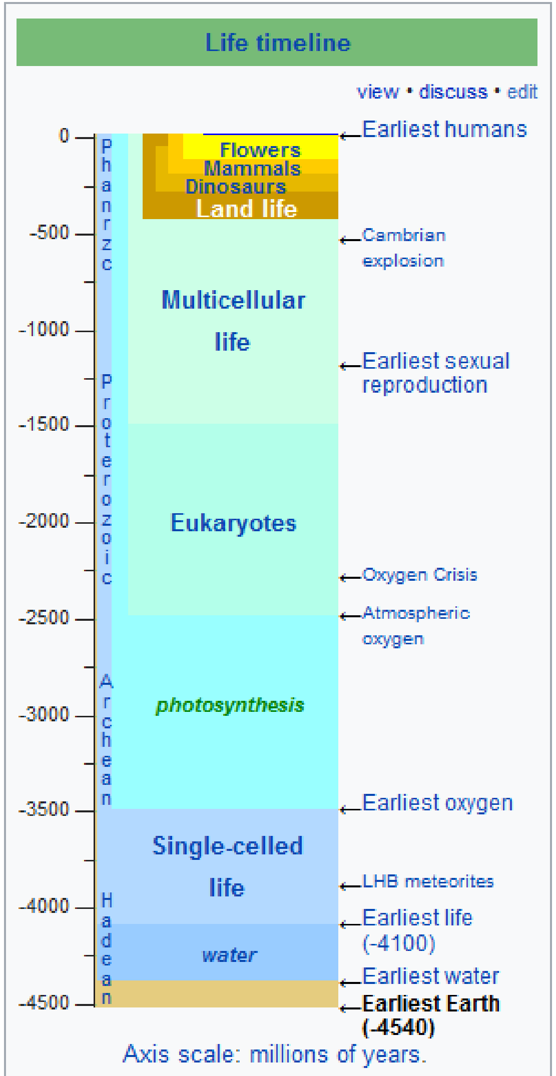
Interesting facts about how long earth history is:
http://www.ucmp.berkeley.edu/education/explorations/tours/geotime/gtpage1.html

http://www.pbs.org/wgbh/evolution/change/deeptime/index.html

http://cptv.pbslearningmedia.org/resource/tdc02.sci.ess.earthsys.dinokill/what-killed-the-dinosaurs/

http://www.bbc.co.uk/nature/history_of_the_earth

http://www.bbc.co.uk/science/earth/earth_timeline


Life timeline
view • discuss • edit
0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500
Phanrzc
Proterozoic
Archean
Hadean
Flowers
Mammals
Dinosaurs
Land life
Multicellular life
Eukaryotes
photosynthesis
Single-celled life
water
Earliest humans
Cambrian explosion
Earliest sexual reproduction
Oxygen Crisis
Atmospheric oxygen
Earliest oxygen
LHB meteorites
Earliest life (-4100)
Earliest water
Earliest Earth (-4540)
Axis scale: millions of years.

Analysis

1. For how long has there been life on Earth? ______________________________________

2. For what percentage of time has life existed on Earth (round to the nearest whole number).

   ____

3. For about how many years of geological time have humans existed on Earth?

   ____

4. For about how many years of geological time have the dinosaurs existed on Earth?

   ____

5. Did dinosaurs exist at the same time as humans? ______________________________

6. How do scientists determine when an era begins and when it ends?

   ____

   ____

7. What is the purpose of making a geological timeline?

   ____

   ____

FANTASTIC FOSSILS

Students investigate fossils.

Students learn about fossils—what they are, how they are formed, and why scientists and engineers care about them.

Some engineers study fossils to learn about the prehistoric processes and functions that were present in the Earth's history. By understanding how prehistoric creatures lived and became extinct, engineers acquire new ideas for how to design ways to study global climate change and species extinction. Engineers also design the high-tech instrumentation that helps paleontologists discover fossils, especially at the microbial level; these technologies include MRIs, CAT scans and mass spectrometry (or spectroscopy). Engineers are integral to the development of current technologies that use fossils (and fossil fuels) for materials and energy production.

https://www.teachengineering.org/lessons/view/cub_rock_lesson03 https://www.teachengineering.org/activities/view/cub_rock_lesson03_activity1

FOSSIL FONDUE

Use melted chocolate to learn about the fossilization process!

To understand how fossils are formed, students model the process of fossilization by making fossils using small toy figures and melted chocolate. They extend their knowledge to the many ways that engineers aid in the study of fossils, including the development of tools and technologies for determining the physical and chemical properties of fossilized organisms, and how those properties tell a story of our changing world.

Engineers design tools to help us learn about our natural world and how we can help people thrive. As fossils are uncovered, and previously unknown organisms are discovered, engineers learn how our world is changing. Fossil discoveries inspire the development of advanced engineering technologies to locate and even create 3-D images of prehistoric organisms. Engineers recreate how these organisms may have moved to get new ideas for new technologies or processes. By searching out the physical and chemical changes to the environment, engineers apply their knowledge to create processes to address global warming, as well as develop products that mimic prehistoric capabilities.

SEA TO SKY

Students will be assigned individual landforms to research and report back to the class such as:

http://geology.about.com/od/structureslandforms/a/Landform-Picture-Index.htm

Mountains
Plateaus
Rivers and other bodies
Canyons and valleys
Plains
...And more

Each student will build a model of their assigned landform and share with the class.

SEA TO SKY

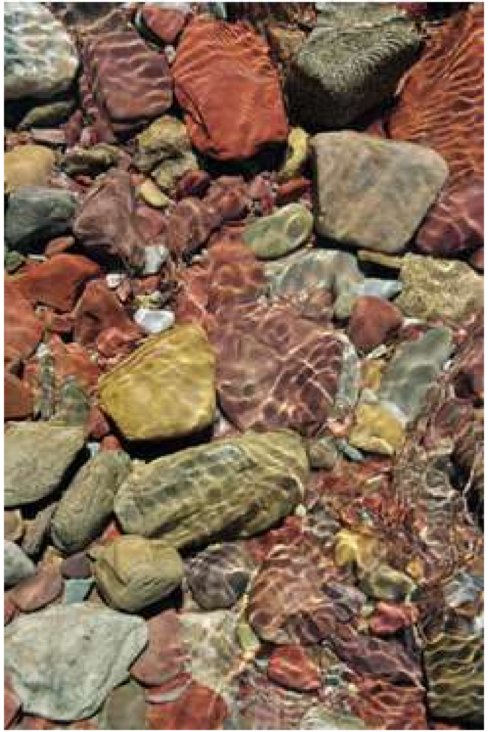
The many different landforms on planet Earth. Engineers must know about the earth before they begin a construction project.

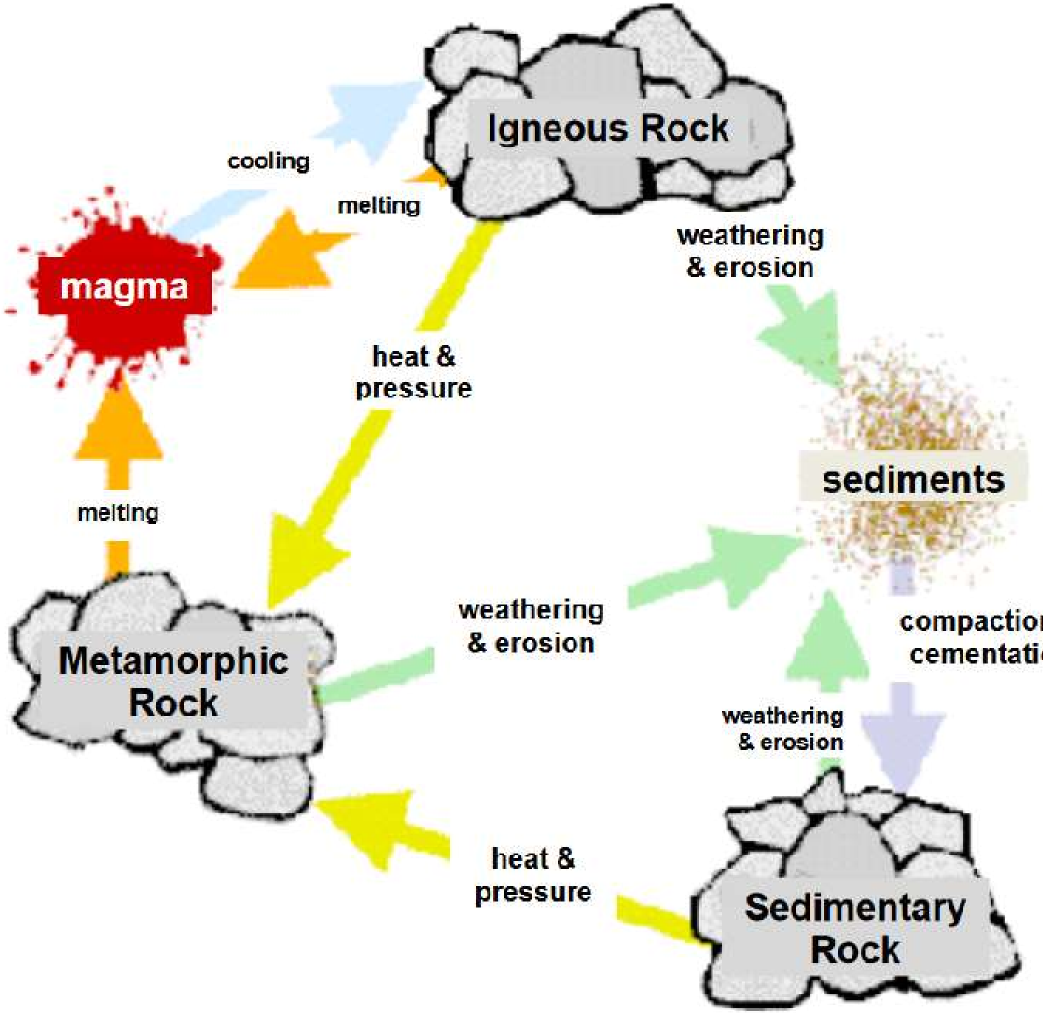
Sudents learn about major landforms (such as mountains, rivers, plains, valleys, canyons and plateaus) and how they occur on the Earth's surface. They learn about the civil and geotechnical engineering applications of geology and landforms, including the design of transportation systems, mining, mapping and measuring natural hazards.

Engineers must understand the landforms and the geology of the Earth if they are to build transportation infrastructure. Engineers are responsible for deciding where to put roads, highways, train tracks and bridges. They must also locate telephone cables, electricity towers, and wind and solar farms, which is often challenging in remote areas with large mountains, hills or dense forests. Geotechnical engineers study landforms and their implications in mining, infrastructure development, natural-hazard mitigation and environmental remediation. Engineers are involved in designing digital maps, based on aerial photography and satellite imagery, to help solve engineering challenges for the benefit of humanity and our world.

ROCKS, ROCKS, ROCKS

WHAT IS EARTH'S PLACE IN THE UNIVERSE

ROCK  CYCLE


Igneous Rock
cooling
melting
magma
weathering & erosion
heat & pressure
sediments
melting
Metamorphic Rock
weathering & erosion
compaction & cementation
weathering & erosion
heat & pressure
Sedimentary Rock

WHAT IS EARTH'S PLACE IN THE UNIVERSE

Examining a soil profile in Tennessee.

Soil Investigations

WHAT'S DOWN THERE?

What's down an oil well?

During this activity, students learn how oil is formed and where in the Earth we find it. Students take a core sample to look for oil in a model of the Earth. They analyze their sample and make an informed decision as to whether or not they should "drill for oil" in a specific location.

One tool engineers use to find oil is core drilling. Huge drills extract cylinders of rock or sediment from below the Earth's surface. Petroleum engineers use microscopes to study these cores in a laboratory, looking for the presence of fossil fuels. They use their understanding of the composition of the layers of the Earth to analyze the (potential) reservoir rock properties (porosity, permeability, saturations, compressibility, etc.) to make informed decisions about where to drill, and minimize the number of costly wells they must drill to obtain oil.

HARVESTING OIL FROM THE EARTH

Students explore how oil is harvested from the Earth

Students investigate sources of fossil fuels, particularly oil. Through two associated activities, they work with a model of the Earth to learn how engineers and scientists look for oil by taking core samples, and they explore and analyze oil consumption and production in the U.S. and around the world.

Finding fossil fuels below the Earth's surface is a challenge for geological and petroleum engineers. Much investigation is done before drilling expensive wells: They examine core samples, look for natural fractures in the reservoir rock, and investigate the size and porosity of the reservoir and how fast oil droplets move through the pores. Engineers also design special machines and tools for extracting and transporting oil, and complex refining processes to convert the crude oil into many forms of usable energy.

OIL AND ENERGY CONSUMPTION

Students explore oil production

Students analyze international oil consumption and production data. They make several graphs to organize the data and draw conclusions about the overall use of oil in the world.

Engineers of all disciplines use data as a tool. Organizing data into tables and graphs helps them better understand problems and formulate solutions. For example, engineers often analyze data to understand energy consumption around the world; they put this data into graphs to analyze it visually. From examining data, engineers may: learn which problems impact the most people, notice patterns and trends, clearly communicate with others, forecast future demands, etc.

OTHER RESOURCES/ACTIVITIES

Name ______________________ Date_______________________ **Grade 6 Block__________________**

Geological Timeline Activity

Significant developments and extinctions of plant and animal life can be shown on a geologic time scale.

To understand evolution, humans must think in units of time much larger than those we use to define our lives. After all, evolutionary change occurs too slowly to be measured in days, months, or years. Instead, it's documented in layers upon layers of rock deposited over the course of 4.6 billion years.

The earth has been significantly altered during this time by climate swings, volcanism, drifting continents, and other "earth shattering" events. These dynamic conditions, in turn, have influenced every living thing that has inhabited the planet. Because of this, biology alone cannot fully explain the evolution of life on our planet. It's necessary to include the physical sciences -- geology, chemistry, and physics -- in order to understand the conditions in which life arose and evolved.

The story of life is told primarily by its victims. Scientists say that only one in a thousand species that have ever lived survives today. The other 99.9 percent are extinct, gone forever. With few exceptions, the lifespan of individual species is short by geological standards, on average between 2 and 10 million years. No matter how well adapted a creature is to its environment, history has shown that even the most dominant can be wiped away. Ironically, extinction is a springboard to other life. Even in the most catastrophic of events, species survive and continue to evolve, often filling niches left by the victims.

Extinction is by and large a natural process in which species, groups, and even whole families of organisms disappear. Background extinctions, which are ongoing throughout the history of life, eliminate one family every million years or so. The more destructive and relatively sudden kind of extinction -- the mass extinction event -- is caused by environmental influences and has a global impact on diversity. All extinctions identified in this timeline are mass extinction events.

The geologic time scale we use to study the history of the earth and of it life forms is commonly referred to as "deep time," and it's a concept perhaps as difficult to conceive as deep space. Can humans measure deep time? Yes. Will we ever truly comprehend such immensity of time? Probably not. But to develop a better understanding of evolutionary change in its proper historical context, we must try. This timeline provides a framework for doing so.

PROOF:

Scientists have determined with great confidence that the Earth is 4.54 billion years old. This is based on radiometric dating of meteorites (particularly one found in Arizona) and agrees well with ages determined from dating lunar samples, estimating cooling rates, studies of our sun, and host of other methods. The oldest rocks on Earth are in the Jack Hills of Western Australia and were dated to 4.4 billion years by dating tiny minerals called zircons. The majority of ages we have for any types of events are determined by the radioactive decay of certain isotopes. Depending on how old something is, different methods can be used. A lot of assumptions are made when using radiometric dating, such as that decay rates remain constant over time, but in general the science behind dating methods is very sound.

Procedure to make a Geological Timeline of Major Events

1. Work in a group of four students.
2. Lay the adding machine tape on the floor where it won't interfere with other students. Tape the ends to the floor. **Use the hallway floor.**
3. Within the first 20 centimeters in the **top left corner**:
   a. Write a **full heading** – Geological Timeline, names in the group, date, and period
   b. Underneath the heading, make a **scale**. 1 meter = 1 billion years
      1 centimeter = 10 million years
      1 millimeter = 1 million years

4. Measurement for the timeline will begin with "**Today,** Starting on the **left side of the paper**, **measure 20 cm** to the right on the line, and make a vertical mark. Label this mark – **Today**

5. Using the Major Events listed in **Table 1**, **measure and write the major events** on your geologic time line.

History of the Earth

Geological time periods

Geologists have organised the history of the Earth into a timescale on which large chunks of time are called periods and smaller ones called epochs. Each period is separated by a major geological or palaeontological event, such as the mass extinction of the dinosaurs which occurred at the boundary between the Cretaceous period and the Paleocene epoch.

Archean era
3.8 billion–2.5 billion years ago

Cryogenian period
850 million–635 million years ago

Ediacaran period
635 million–545 million years ago

Cambrian period
545 million–495 million years ago

Ordovician period
495 million–443 million years ago

Silurian period
443 million–417 million years ago

Devonian period
417 million–354 million years ago

History of the Earth

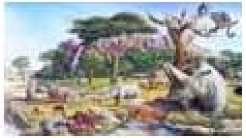
Carboniferous period
354 million–290 million years ago

Permian period
290 million–248 million years ago

Triassic period
248 million–205 million years ago

Jurassic period
205 million–142 million years ago

Cretaceous period
142 million–65 million years ago



Palaeocene epoch
65 million–54.8 million years ago

Eocene epoch
54.8 million–33.7 million years ago

History of the Earth

Oligocene epoch
33.7 million–23.8 million years ago

Miocene epoch
23.8 million–5.3 million years ago

Pliocene epoch
5.3 million–2.6 million years ago

Pleistocene epoch
2.6 million–11.7 thousand years ago

Holocene epoch
11.7 thousand years ago–present day

EARTH TIMELINE

We humans have only been around for a tiny fraction of the Earth's 4.6-billion-year history, but we have still managed to build up our knowledge of what happened so long ago.

This Earth timeline highlights some of the important events that have shaped our world. The pages in the timeline contain interesting video clips from BBC television series such as Earth: Power of the Planet, Horizon, How the Earth Made Us, and Bang Goes the Theory.

Another popular way of dividing up the Earth's history is through geological time periods. For example, the period 545-495 million years ago is known as the Cambrian. Visit the BBC Nature site to see these time periods and learn what life was like hundreds of millions of years ago.

Image: The sky glows pink just before sunrise along England's Jurassic Coast in Winspit, Dorset. About 185 million years of Earth's history is recorded in these rocks. (credit: Adam Burton/naturepl.com)