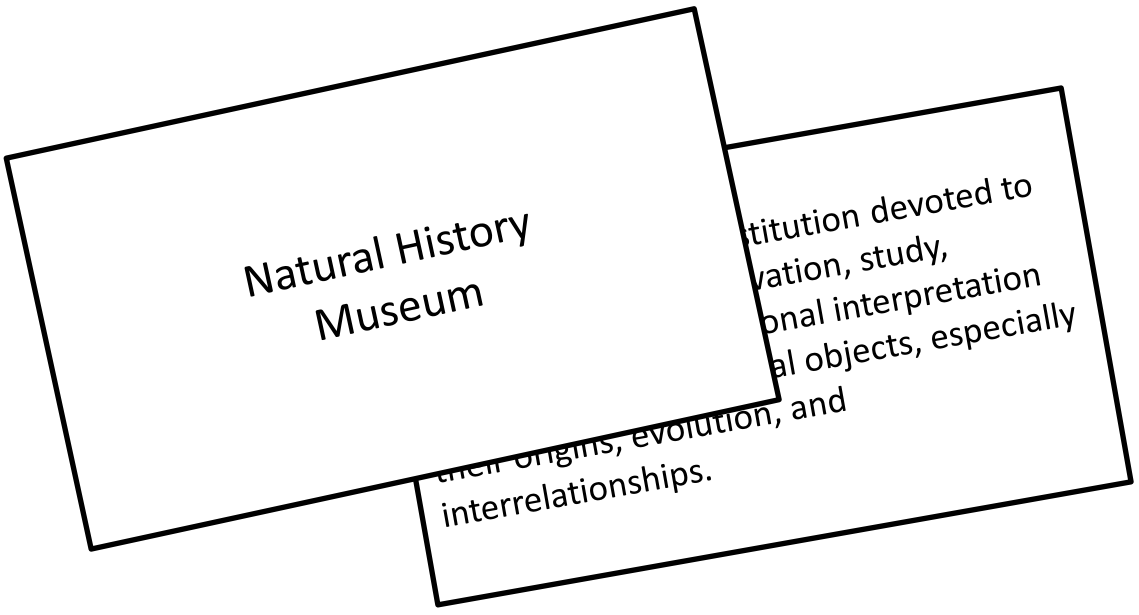
Natural History Museum and Planetarium

Vocabulary Flash Cards



OBJECTIVE: Students will learn what exhibits to expect when visiting a natural history museum. This activity can also be modified to target specific areas of study that are exhibited in a natural history museum, for instance geology, diversity, evolution, paleontology and animal life forms.

Science GPS: S3E2; S4L2; S5E1; S5L1; S6E5; S7L4; S7L5

DIRECTIONS:

Materials: print out of flash cards either separated and folded with the term on one side and the definition on the back or the term and definition separated, floor map of the natural history museum, optional: containers for answers to the vocabulary words on the flash cards

Pre-field trip: Teachers should discuss the vocabulary words listed on this page so that students will have a good understanding of what a natural history museum is and some of the resources that they will find in a natural history museum.

Field Trip: Students will work solely, in pairs or in groups. Students will find the vocabulary words on the flash cards. This activity may be manipulated in various ways. Students may simply learn about some or all of the terms before hand in the classroom, come to the museum with the words and a prior understanding of their meanings and then find a visual reference to the term (like a scavenger hunt). Students also may be given the flash card front and back and told to find the location in the museum where the term is located or where it is significant. Another option is to give the students the terms only, separate from the definitions. Place the definitions in containers located at each numbered display. The students have to locate the relevant area in the museum. Once the display is correctly found then the correct definition must be chosen from a multiple choice of cards in the container. Pictures may be taken of the specimens or displays for future reference (see below).

Post-field trip: Teachers may choose to extend this activity into a project for their students. It is highly unlikely that any one student would be able to find all the terms. The cards could be dealt out, giving each student or group of students 5 to 10 cards. Once back in the classroom all the information and resources (including pictures taken) can be compiled into a scrap book or classroom project of the information at the museum. Students may be given one topic to do a small research project on. Projects can be developing and researching the topic to make a museum diorama using shoe boxes and art supplies. The projects or scrapbooks can be compiled and used for display at parent-teacher-student meetings, events or end of semester/ year portfolios, thus highlighting the school's commitment to enhancing their students education by taking them to a museum.

Vocabulary:

Natural history museum: A building, place, or institution devoted to the acquisition, conservation, study, exhibition, and educational interpretation of organisms and natural objects, especially their origins, evolution, and interrelationships
Geologic time scale: a chart, table or model that relates stratigraphy (layers of rocks) to time that is used by geologists, paleontologists and other Earth scientists showing the events that have occurred in the history of the Earth
Geology: the science and study of the physical matter that makes up the Earth
Paleontology: the science and study of prehistoric life including organisms evolution and interactions with each other and their environment
Diversity: is the variation of life forms within a given ecosystem, biome, or on the entire Earth
Evolution: the change in the inherited traits of a population of organisms through successive generations
Extinction: the end of an organism or group of organisms
Fossil: are the preserved remains or traces of animals, plants, and other organisms from the ancient past

Permineralization
(Petrification)
(per-mĭn-er-al-ĭ-zā-shen)

Case #4 :
A process of fossilization in which the pore spaces of a bone are filled with mineral rich water and internal crystals begin to form eventually turning the bone into rock.

Replacement

Case #4 :
A process of fossilization in which the organisms hard body parts dissolve and are replaced by other minerals.

Trace fossil
(Ichnofossil)

Case #4 :
A fossilized trail, track, burrow or other evidence of an animal's activity.

Unaltered preservation

Case #4 :
A fossil that has undergone little or no change in structure or composition.

Carbonization	Case #4 : A process of fossilization in which plant leaves and some soft body parts fish, reptiles and marine invertebrates decompose leaving behind only the carbon.
Coprolite	Case #4 : An example of a trace fossil. Fossilized animal dung.
Fossil	Case: Any case Preserved remains or traces of animals, plants and other organisms from the past. A fossil must be at least 10,000 years old.
Mass death assemblage	Case #3 and #5 : An group of dead organisms or fossils that occurred together in a given area at a given moment of geologic time.

Echinoderm
(ĭ-kī'nə-dûrm')

Case #5 :
Spiny skinned invertebrates having five-fold symmetry that live on the ocean floor.

Mollusc

Case #5 and #6 :
An invertebrate having a soft unsegmented body usually enclosed in a shell.

Brachiopods
(brā'kē-ə-pŏd‘)

Case #5 :
Marine animals with hinged upper and lower shells enclosing two armlike parts with tentacles that are used for guiding tiny food particles to the mouth.

Corals

Case #5 and #6 :
The hard rock-like skeletons secreted by certain marine polyps (anthozoans) and often deposited in extensive masses forming reefs and atolls.

Bryozoans
(brī'ə-zō'ənz)

Case #5 :
Tiny invertebrate water animals that form branching moss-like colonies and reproduce by budding.

Porifera
(puh-rif-er-uh’)

Case #5 :
Sponges. A simple aquatic sessile invertebrate having a porous body and a tough skeleton often made of silica or calcium carbonate.

Arthropods
(är'thrə-pŏds')

Case #5 :
Invertebrate animals with jointed legs, a segmented body, and an exoskeleton including insects, crustaceans and arachnids.

Trilobite
(trī'lə-bīt')

Case #5 :
Extinct marine arthropods having the body divided by two furrows into three parts. They are abundant fossils in Paleozoic rocks.

Crustaceans
(krŭ-stā'shəns)

Case #5 :
Arthropods, including shrimp, crabs, barnacles, and lobsters, that usually live in the water and breathe through gills: they have a hard outer shell and jointed appendages.

Amber

Case #5 :
A yellow or brownish-yellow fossil which is the remaining part of tree resin or sap.

Exoskeleton
(ĕk'sō-skĕl'ĭ-tn)

Case #5 :
An external skeleton that supports and protects an animal’s body.

Invertebrate
(ĭn-vûr'tə-brĭt, -brāt')

Case #5 & #6 :
An animal without a backbone. Invertebrates include 95% of all animal species.

Age of Fishes

Case #6 :
The Paleozoic time period, 543 to 245 million years ago, when the dominant animals on Earth were fishes.

Agnathans
(āg'nə-thəns)

Case #6 :
Primitive jawless fishes including the lampreys and hagfishes. They are the oldest known vertebrate.

Vertebrate
(vûr'tə-brĭt, -brāt')

Case Most cases :
Vertebrates have an internal skeleton formed of cartilage, bone, or both. The skeleton consists of a backbone (vertebral column), which partly encloses a spinal cord; a skull, which encloses the brain; and usually two pairs of limbs.

Osteichthyes
(Bony Fishes)
(ŏs-tē-ĭk-thē-ēz)

Case #6 and #9:
A group of fish that have bony skeletons including a great majority of living fishes and virtually all the world's sport and commercial fishes.

Chondrichthyes
(Cartilaginous Fishes)
(kän-drĭk-thē-ēz)

Case #6 and #9:
Jawed fish with paired fins, paired nostrils, scales, two-chambered hearts, and skeletons made of cartilage rather than bone.

Lobe-finned Fish

Case #6 :
Fish that lived in fresh waters with fleshy bases to their fins which were strong and flexible, letting them leave drying pools. They evolved into the amphibians.

Ichthyostega
(ĭck-thē-ōw-stā-gah)

Case #6 :
An early tetrapod that lived at the end of the Upper Devonian epoch (374 - 359 million years ago). It was a labyrinthodont, an intermediate form between fish and amphibians.

Tetrapod
(tĕt'rə-pŏd')

Case: Most cases
Vertebrate animals having four feet, legs or leglike appendages.

Fish

Case #6 and #9 :
Any cold-blooded aquatic vertebrate animal that is covered with scales, and equipped with two sets of paired fins and several unpaired fins.

Birds

Case #12 :
Winged, bipedal, warm-blooded, egg-laying vertebrates.

Amphibians

Case #6 :
Cold-blooded vertebrates that lay their eggs in water and metamorphose from a juvenile water-breathing form to an adult air-breathing form.

Amniotic egg
(ām'nē-ŏt'ĭk)

Case #7 and #12 :
An egg in which the developing embryo is protected by a series or membranes and a hard shell which resists desiccation.

The Age of Reptiles

Case #7 :
The Mesozoic time period, 245 to 65 million years ago, when the dominant animals on the land were reptiles.

The Age of Mammals

Case #10, #11 and #14 :
The Cenozoic time period, 65 million years ago to present, when the dominant form of life is mammals.

Anapsids
(ə-nāp'sĭd)

Case #7 :
A reptile having a skull with no temporal openings. Living examples are turtles.

Synapsid
(sĭ-nāp'sĭd)

Case #7 :
Animals with one temporal opening on each side of the skull. Living examples include mammals.

Diapsid
(dī-āp'sĭd)

Case #7 :
Animals with two pairs of temporal openings on each side of the skull. Living examples include lizards, snakes, crocodiles and birds.

Dimetrodon
(dī-mĕt'rə-dŏn')

Case #7 :
Often called a “sail-backed” reptile, pelycosaur or “mammal-like” reptile. Scientists believe that it is the ancestor to mammals.

Archaeopteryx
(är'kē-ŏp'tər-ĭks)

Case #7 :
The earliest and most primitive bird known. The ‘missing link’ between reptiles and birds.

Continental Drift

Case #8 and #11 :
The movement of the Earth's continents relative to each other. Alfred Wegener developed the theory in 1912.

Leaf margin analysis

Case #8 :
A technique for estimating mean annual temperatures of the past by looking at the proportion of toothed versus smooth edged margins of leaves.

Baleen
(bə-lēn')

Case #9 :
Filtering structures composed of keratin in the mouth of most whales, which they use to feed by sieving small animals from large mouthfuls of seawater

Hardie Mine Site

Case #9 :
A fossil collection site in Wilkinson County Georgia that is 36 million years old. Evidence to support the "fall line."

Reptile	Case #7 : Vertebrates that are cold-blooded, breathe air, lay amniotic eggs and having skin with scales or scutes.
Mammal	Case #10, #11, #13, #14, #15, #16, #17 : Vertebrates that breathe air, have females that have mammary glands, have sweat glands, and hair or fur.
Badlands National Park Site	Case #10 : A fossil site in South Dakota that is 25 to 35 million years old that includes ancient rhinoceros, horses, camels and cats and canines.
Mega-toothed Shark	Case #6 : A species of shark related to the Great Whites that went extinct 1.7 million years ago. The largest of these sharks were 50 feet long and weighed as much as 50 tons.

Australopithecus
(ôw-strā-lō-pĭth-ĭ-kuhs)

Case #17 :
An extinct genus of hominids originating in Africa that eventually led to the *Homo* genus (humans).

Homo sapiens
(hōmō sā'pē-ənz)

Case #17 :
The only living member of the *Homo* genus. Humans are characterized as bipedal and having a highly developed brain capable of reasoning, language, introspection and problem solving.

Bipedal locomotion

Case #17 :
A form of terrestrial locomotion in which the animal moves with it's two rear limbs or legs. Developed in primates 6 million years ago.

Mutation rate

Case #16 :
The chance of a mutation (change) occurring in an organism or gene in each generation

“Ice Age”	Case #14 : A geological period of long-term reduction in the temperature of the Earth's surface and atmosphere, resulting in an expansion of continental ice sheets, polar ice sheets and alpine glaciers.
Clark Quarry Site	Case #14 : A fossil site in Brunswick, Georgia that is 12,000 to 20,000 years old that includes animals that lived during an ‘ice age.’
Great American Biotic Interchange	Case #11 : A event in which land and freshwater animals migrated from North America to South America and vice versa, as the two continents drifted toward each other and he volcanic Isthmus of Panama rose up from the sea floor and bridged the separated continents.
Santa Fe River Site	Case #11 : A fossil site in northern Florida that is about 3 million years old. It is evidence of the Great American Biotic Interchange.

Solution Cave

Case #2 :
Caves formed in limestone and similar rocks by the action of water percolating through the rocks.

Cave shield

Case #2 :
A *cave shield* forms as calcite-rich seep water under hydrostatic pressure is forced from tiny cracks in a cave wall, ceiling or occasionally, floor.

Flowstone

Case #2 :
A cave speleothem composed of sheetlike deposits of calcite formed where water flows down the walls or along the floors of the cave.

Drapery or Cave bacon

Case #2 :
A type of cave speleothem that is a thin calcite formation with alternating brownish and whitish colors resembling strips of bacon.

Soda straws

Case #2 :
A type of cave speleothem that are very thin and long stalactites having an elongated cylindrical shape.

Stalagmite
(stə-lāg'mīt‘)

Case #2 :
A type of speleothem that rises from the floor of a limestone cave due to the dripping of mineralized solutions and the deposition of calcium carbonate.

Stalactite
(stə-lāk'tīt‘)

Case #2 :
A cave speleothem formed on the ceiling of a limestone cave deposited by dripping water containing calcium carbonate.

Shelfstone

Case #2 :
A type of speleothem that grows inwards from the edge of a cave pool. It takes the form of ledges that tend to be flat on top and sloping underneath.

Precambrian
(prē-kām'brē-ən)

Case : none
Geologic time eon 4,600 million to 570 million years ago.

Phanerozoic
(fān'ər-ə-zō'ĭk)

Case : all cases
Geologic time eon from 570 million years ago to present.

Paleozoic
(pā'lē-ə-zō'ĭk)

Case : #5, #6, #7, #8
Geologic time era from 570 million to 250 million years ago that includes the periods Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, (Carboniferous) and Permian.

Mesozoic
(měz'ə-zō'ĭk)

Case : #4, #5, #6, #7
Geologic time era from 250 million to 65 million years ago that includes the periods Triassic, Jurassic and Cretaceous.

Cenozoic
(sē'nə-zō'ĭk)

Case : most cases
Geologic time era from 65 million years ago to present that includes the periods Tertiary and Quaternary.

Cambrian
(kām'brē-ən)

Case : #5
Geologic time period from 570 million to 510 million years ago.

Ordovician
(ôr'də-vĭsh'ən)

Case : #5
Geologic time period from 510 million to 438 million years ago.

Silurian
(sĭ-lŏŏr'ē-ən)

Case : #5
Geologic time period from 438 million to 408 million years ago.

Devonian
(dĭ-vō'nē-ən)

Case : #5, #6, #8
Geologic time period from 408 million to 355 million years ago.

Carboniferous
(kär'bə-nĭf'ər-əs)

Case : #5, #6
Geologic time period from 355 million to 290 million years ago that also includes the Mississippian and Pennsylvanian periods.

Permian
(pûr'mē-ən)

Case : #6, #7
Geologic time period from 290 million to 250 million years ago.

Triassic
(trī-ās'ĭk)

Case : #6, #7
Geologic time period from 250 million to 205 million years ago.

Jurassic
(jŏŏ-rās'ĭk)

Case : #4, #5, #6, #7
Geologic time period from 205 million to 135 million years ago.

Cretaceous
(krĭ-tā'shəs)

Case : #4, #5, #6, #7
Geologic time period from 135 million to 65 million years ago.

Tertiary
(tûr'shē-ĕr'ē)

Case : most cases
Geologic time period from 65 million to 1.6 million years ago.

Quaternary
(kwŏt'ər-nĕr'ē)

Case : many cases
Geologic time period from 1.6 million years ago until present day.

Paleocene
(pā'lē-ə-sēn')

Case : #8
Geologic time epoch from 65 million to 53 million years ago.

Eocene
(ē'ə-sēn')

Case : most cases
Geologic time epoch from 53 million to 36.6 million years ago.

Oligocene
(ŏl'ĭ-gō-sēn‘)

Case : #4, #7, #10, #16
Geologic time epoch from 36.6 million to 23 million years ago.

Miocene
(mī'ə-sēn')

Case : #4, #5, #8, #17
Geologic time period from 53 million to 36.6 million years ago.

Pliocene
(plī'ə-sēn')

Case : #11, #17
Geologic time epoch from 5.3 million to 1.6 million years ago.

Pleistocene
(plī'stə-sēn')

Case : many cases
Geologic time epoch from 1.6 million to 10,000 years ago.

Holocene
(hŏl'ə-sēn‘)

Case : many cases
Geologic time epoch from 10,000 years ago to present day.