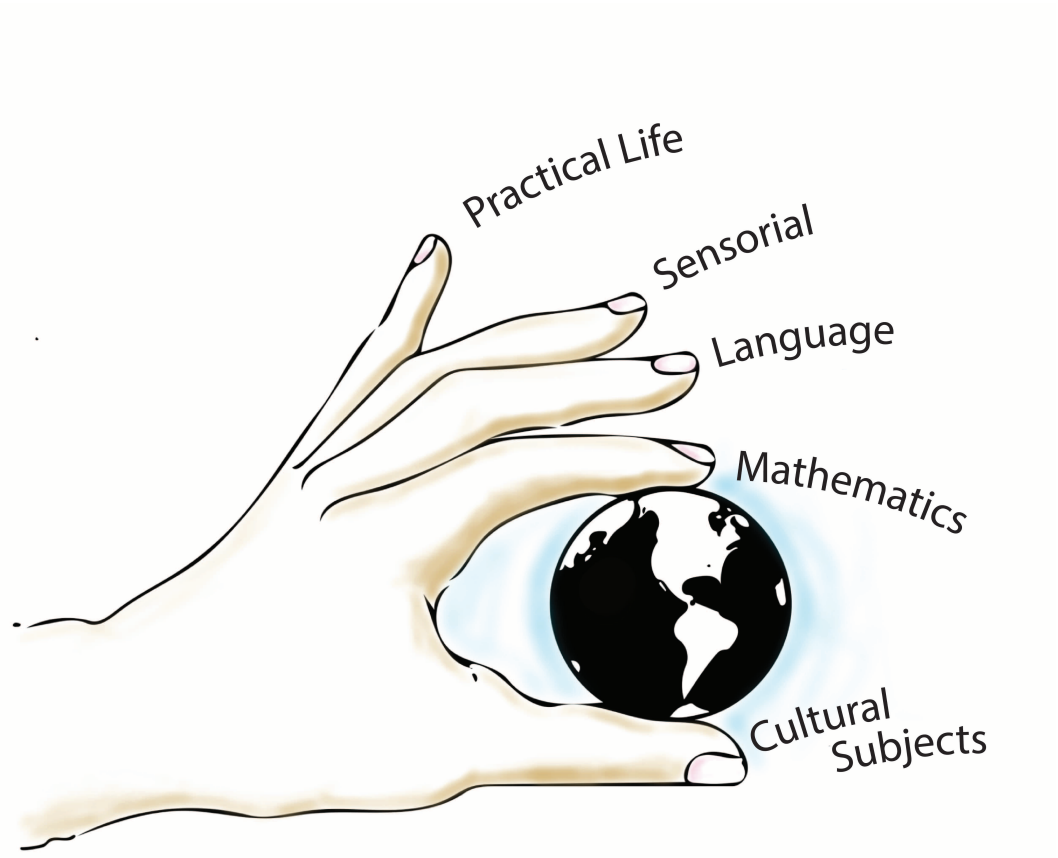
Montessori Educators International, Inc.



History

Early Childhood

Lesson Preparation Materials

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MEI, INC
2123 Stonybrook Rd
Louisville, TN 37777

865-982-8687

aledendecker@att.net

MEI, Inc. History Early Childhood

List of Contents

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Directions for Parents to Assist in the Preparation of A Time Line of Child's Life

NOTE: Directions are given for photographs 3 1/2 by 5 inches. Read all directions before beginning.

Materials:

Photographs of the child at birth and on each birthday.
Paper (Shelf paper may be used, but do not use the kind treated with insect repellent.) Adhesive such as 3M Photo Mount or white glue
Pencil, ruler and scissors

Procedure:

1. Obtain paper 8 inches wide and at least 43 1/2 inches long. You may make it longer, but it is easy to add more paper as needed. If photographs are more than the standard 3 1/2 by 5 inches, increase the width of the paper to accommodate the dimensions of all the photographs plus 3 inches. Increase the length as determined by laying out all the photographs to be used. Use the width of the largest photo as the amount of space for each so that the scale will be the same. Some photos will have more space between them than others, but allow for a minimum of 1 inch. Add 1 inch at the left end and 1 1/2 inches at the right end.* The extra half inch allows for addition of extra paper as you add photos through the years.
2. Collect photos of the child at each birthday plus one at birth or shortly thereafter. The time line gives a better appearance if all photos are the same size and if each can be oriented in the same direction, either all horizontal or all vertical. If you want to include other photos for occasions between birthdays, then lay out all the photos and calculate how much paper will be needed, allowing an inch between each photo.*
3. With a pencil, make light marks on the paper to indicate where photo placement will be. Use a ruler so that there will be even margins of 1 inch at the top and the two ends. Allow 2 inches at the bottom. Photos all the same size will have 1 inch between if all are oriented the same direction. If some will be a different direction, center the vertical ones in a 7 inch space.*
4. Place the photos in their correct sequence above the paper. Sequence from left to right so that the earliest photo is on the left and the latest at the right of the paper.
5. Apply adhesive to back of the first photograph and position it on the paper according to the pencil marks.
6. Under each photograph, carefully letter the month, day and year and the location. If you cannot letter well, print the information on a computer or type it and enlarge to a suitable size. Cut and adhere under each photo.
7. After it is thoroughly dry, fan-fold the time line. Fold the first section to the right, the third section to the left under the second photo. Continue until the fan folding is complete.
8. On the back of the first section, letter Time Line of the Life of (child's name).
9. You may cover the entire time line of the child's life with clear adhesive paper. Do not attempt this until you have had a demonstration by your child's teacher as to the easy way to apply it. Be sure to leave at least 1/2 inch uncovered to attach more paper at a later time. You may have the time line laminated if such service is available to you, but do not use the rigid form of lamination or it cannot be folded.
10. Place the fan-folded time line in an envelope and label it as on the first section.

* If in doubt, ask your child's teacher to show you an example.

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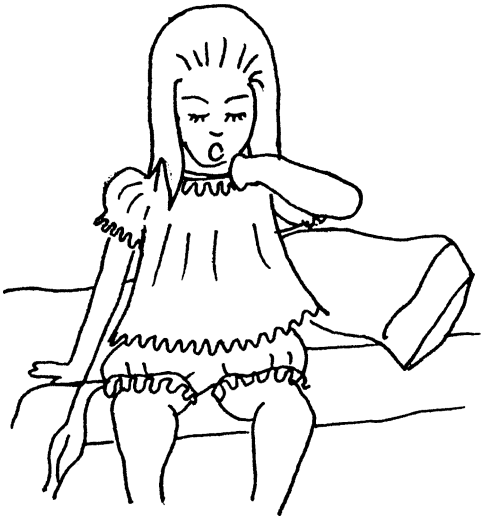

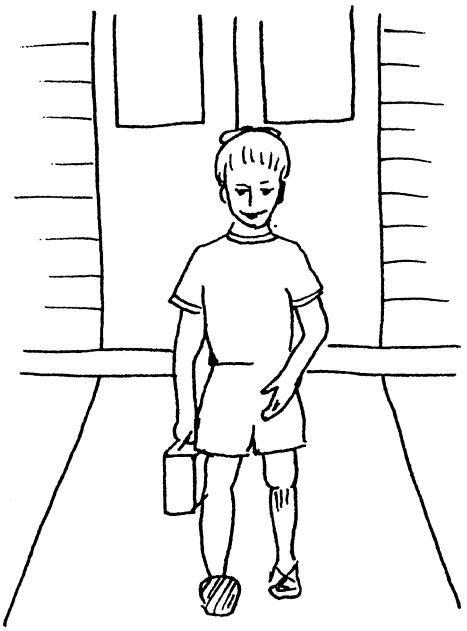

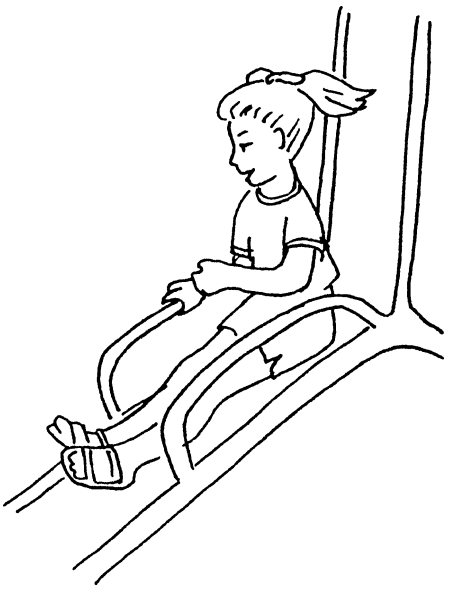

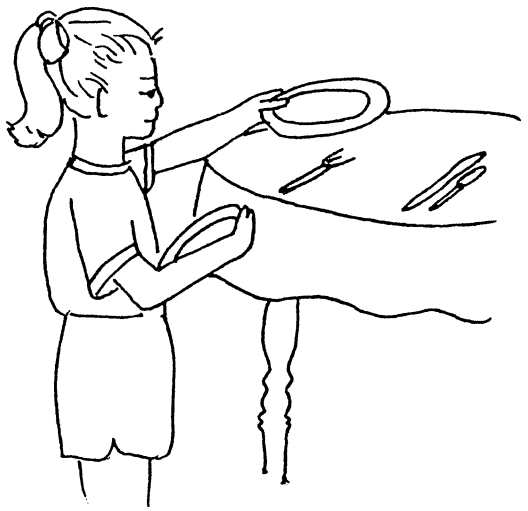

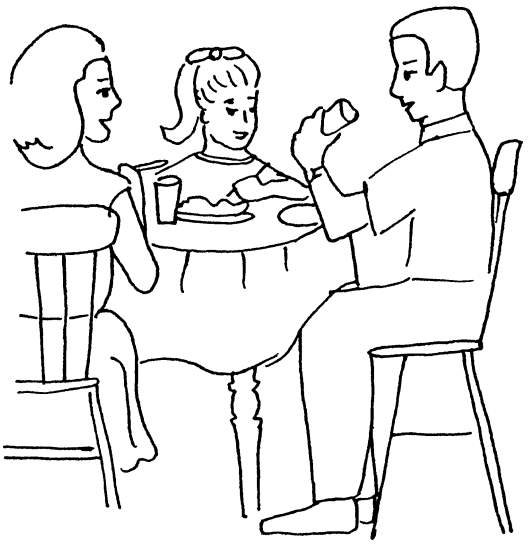

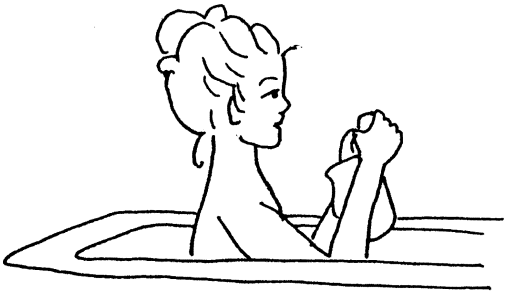

Special Days

January
January 1, New Year's Day, is the first holiday of the year.

January 21 is the birthday of Martin Luther King. He was a civil rights advocate. He was assassinated at the Lorraine Motel, Memphis, Tennessee, on April 4, 1968.

February
February 12 is the birthday of Abraham Lincoln, the sixteenth president of the United States. He was born in 1809 and died in 1865. The Civil War occurred during his term of office. He was assassinated in Ford's Theater, Washington, DC.

February 14 is Valentine's Day honoring a Christian martyr. St. Valentine died in Rome, Italy, about 270 AD. Gifts, cards and other expressions of love are given on this day.

February 22 is the birthday of George Washington, the first president of the United States. He was the general who led the war for independence from Great Britain. He was born in 1732 and died in 1799. His home, Mt. Vernon, Virginia, can be visited.

March
March 20 is celebrated as the first day of Spring. It is the time of the vernal equinox when the sun is directly over the equator.

The date of Easter is set on the first Sunday after the full moon following the vernal equinox. It can occur between March 22 and April 25. Easter is a Christian celebration commemorating the resurrection of Jesus Christ.

Passover is a Jewish festival commemorating the Exodus of the Jews from Egypt. It is celebrated in the Spring, beginning on the eve of the fifteenth day of Nisan. Nisan is the first month of the Jewish ecclesiastical year.

April
The first day of April is April Fool's Day. It is the custom to trick others, then to say, "April Fool!"

May
The second Sunday in May is Mother's Day. This is a special time for showing gratitude to mothers.

The last Monday in May is Memorial Day. Those who died in war are honored with parades, speeches and displays of the American flag.

June
The third Sunday in June is Father's Day. This is a special time for showing gratitude to fathers.

June 21 is the date of the summer solstice, the longest day of the year.

July
On July 4, 1776, the Declaration of Independence was adopted by the American colonies. This day, Independence Day, is celebrated as the time Americans separated from the rule of England. They formed their own government.

August
August has no holidays or birthdays of famous people.

September
The first Monday is Labor Day. It is a holiday honoring those who work.

Rosh Hashanah is a holiday commemorating the Jewish New Year. It occurs the first day of Tishri in the Jewish calendar which is September.

The autumnal equinox occurs on September 23.

Yorn Kippur is a day of atonement. It is celebrated on the tenth day of Tishri. On that day, Jews make amends for any harm done to another.

October
Columbus Day is the second Monday in October. It is a celebration of the discovery of America by Christopher Columbus on October 12, 1492.

October 31 is Halloween or Allhallows Eve. Originally, Halloween was a Roman harvest festival. In what is now Ireland and Scotland, the Druids conducted magical practices. In the Christian religion, All Saints Day follows on November 1. Pranks and mischief are common practices on Halloween. Wearing costumes and saying, "Trick or treat ," are customs today.

November
November 11 was the day that World War I ended in 1918. Once it was called Armistice Day because the armistice or truce was signed on that date. Now it is a day to remember those who served in all wars. It is called Veterans Day.

Thanksgiving is a national holiday in the United States. It occurs on the fourth Thursday in November. It is a day to give special thanks for all that we have. Turkey is the traditional food served at Thanksgiving dinner. The first celebration was held in Plymouth colony in 1621.

December
Chanukkah or Hanukkah is a Jewish festival that lasts for eight days near the end of December. It celebrates the victory of the Maccabees. Some believe it is connected with the winter solstice.

The winter solstice occurs on December 21.

Christmas commemorates the birth of Christ on December 25. Many customs are connected with this holiday. They are different in each Christian country. Gifts are given and evergreen trees are decorated in many countries.

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Muslim Calendar

Mohammed was a religious leader who established the Islam or Muslim religion. He was born about 567 AD by our calendar. He lived in Mecca, Saudi Arabia. Thursday, July 16, 622 A.D. was the date that Mohammed left Mecca and went to Medina. The era of the Hejira, or the Mohammedan era, is calculated from the first day of the month preceding the day Mohammed left Mecca.

The Hejira year is composed of 12 lunar months, beginning with the new moon. The names of the months are Muharram, Saphar, Rabia 1, Rabia 2, Jomada 1, Jomada 2, Rajab, Shaaban, Ramadan, Shawwal, Dulkaada, Dulheggia. The ninth month, Ramadan, represents a time for fasting.

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Paleozoic Era Animals

Kakabekia
This was the most primitive and earliest organism. It consisted of one cell. Probably it was bacteria, less than 1 micron across. Its fossils have been found in Canada.

Protozoans
These one-celled animals fed on other organisms or organic substances. Billions have lived and continue to live at the surface of water or on ocean floors. Those with hard parts became fossilized starting about 700 million years ago.

Porifera
Sponges had many forms. They lived on ocean floors in warm, clear water. Some of the forms found as fossils live today. They developed from protozoans.

Cnidaria
These are not as primitive as sponges. The jelly-like bodies did not make good fossils. The jellyfish is one form of fossil found where once there were oceans. Jellyfish live on the sea floor today as did their ancestors.

Stephanoceras
Ammonites had a disc-shaped shell about 8 inches across. It was coiled and ribbed. During the Mesozoic Era, there were thousands of species living in the seas. They became extinct at the same time as the dinosaurs. The nearest living relative is the pearly nautilus.

Arthropoda
Trilobites were three lobed marine animals. They crawled or swam. Some were able to curl up when attacked. There were about 10,000 species in the shallow seas. Sizes ranged from 1 inch to 28 inches long.

Brachiopoda
These fossils resemble bivalve mollusks. Size and curvature of shell valves were different in these animals. There was a beak-shaped point at the hinge end. A fleshy stalk protruded from the shells. They lived in the soft sediment at the bottom of seas.

Botryocrinus
This flower-like crinoid was attached to the sea floor by a stalk. The stalk could be 20 feet high. There was a crown and feathery arms. The arms caught food and passed it to the mouth. The remains of these crinoid beds formed great thicknesses of limestone.

Ostracoderm
These fish had bone-like skin which saved them from predators. These were the first animals with backbones. Heads had bony shields with jawless slits for mouths. Lengths varied from 2 to 7 inches. They lived in rivers and lakes.

Eusthenopteron
This long-bodied fish lived in fresh water. It had pairs of fins and a tail fin with 3 prongs. It was carnivorous. Because these fish had lungs, it could stay on land to find food.

Blattaria
Among the first true insects were enormous numbers of these cockroaches. They scavenged in leaf litter on the floor of forests.

Meganeura
The dragonfly was one of the first insects. It lived in warm swamps and ate other insects. It was the largest flying insect that ever existed. Its wingspan was more than 2 feet. The noise of insect wings was one of the first sounds on Earth.

Eryops
This was one of the amphibians that ruled Earth for millions of years. About 6 feet long, they lived on land but laid eggs in water. They were the second group of organisms that produced sounds.

Seymouria
One of the first reptiles, it did not lay eggs in water as the amphibians did. It was about 2 feet long. Its legs were stronger than those of amphibians.

Dimetrodon
This primitive lizard had a large fin-like "sail" the length of its back. It absorbed heat from the sun. This allowed regulation of body temperature. It was carnivorous. The length was about 11 feet. It lived in what is now Texas.

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Paleozoic Era Plants

Blue-green algae
These tiny, one-celled organisms were the first type of plant. For two-thirds of the time that plants and animals have been on Earth, these were the dominant organisms. Some were rock builders. Most had cellulose cell walls. These were ancestors of all other plants more than 1000 million years ago.

Psilophyte
These were among the first plants to develop true stems. Cooksonia is the earliest known example of vascular plants. There were no roots, leaves or flowers, just a cluster of erect forking stems about 2 inches tall. At the end of each stem was a sporangium or spore-filled capsule. Most grew near water.

Lepidodendron
This giant club moss was anchored to the ground by four root-like structures. The tall trunk had two sets of branches, repeatedly forked. There were narrow leaf-like structures on the branches.. Cone-like structures held large and small spores. The height was 100 feet.

Calamites
These were among the first plants to develop true roots. Stems were tall and jointed. The upswept branches had rings of narrow leaf-like structures. They grew to heights of 100 feet in warm climates, close to water. Coal deposits contain their fossil remains. These now are fossil fuels, burned for heat or to generate electricity.

Zamia
This is a survivor of the cycads of the Mesozoic Era. Leathery fronds grew from stems which were short, fat and pithy.

Cordaites
The tree ferns developed the first true leaves which were long and strap-like. They grew on a crown of branches.
The leaf canopy competed for sunlight, changing the forest floor. Seeds grew on stalks from cone-like buds. The 100 foot trunk was tall, slim and straight. The vascular system was more developed than in psilophytes.

Ginkgo
This living fossil tree exists today under cultivation. The natural habitat has been lost. The tree has existed for 225 million years. The height may be up to 100 feet. Leaves are fan-shaped. Large numbers grew during the time of the dinosaurs.

Conifers
These evergreen trees exist today. The leaves are stiff, flat and pointed. Cones are woody and surround many individual seeds. Pollen-bearing cones grow on the same tree When seeds are ripe, the cone opens. Each seed has a wing-like blade. Wind disperses both pollen and fertile seeds. These trees grow to a height of 150 feet.

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Mesozoic Era Animals

Morganucodon
This first mammal was the size of a mouse. It was covered with fur. It produced milk to feed its young. It lived at the time of the dinosaurs and the first birds.

Ichthyosaurus
Looking like a dolphin with rows of sharp teeth, this water animal could swim fast. It was a carnivore which caught fish to eat. It grew to be 40 feet long.

Pteranodon
Web-like membranes on the forelimbs allowed this reptile to glide up to 25 miles per hour on air currents. Probably it had to launch itself from a tree or cliff. The web-like membranes could not flap to allow flight. The wingspan was 26 feet. It had no teeth. It took its food from the ancient seas which once covered what is now Texas and Kansas.

Apatosaurus
The "thunder lizard" once roamed in herds what is now the western United States. A herbivore, it could walk on land or in shallow water and perhaps could swim. It was 70 feet long and weighed about 30 tons.

Stegosaurus
Large numbers of these reptiles roamed what is now North America. Bony plates and spikes on the tail offered protection from carnivores. This herbivore had a beak-like mouth with small, dull teeth. The reptile was the size of an automobile with a brain the size of a peanut.

Archaeopteryx
The term means ancient wing. It was the earliest known bird. It had dinosaur features such as sharp teeth and a long, bony tail. The stumpy, clawed wings had feathers. Probably it could fly only short distances. It was about the size of a crow.

Flying Insects
Because of greater mobility than their ancestors, bees, wasps and flies could move to all parts of plants. Pollen was carried among plants. This aided the development of angiosperms.

Triceratops
The term means three-horned face. Even Tyrannosaurus would flee from the horns of this charging animal. The large head was 1/4 the size of its body. It had a beaked mouth and a bony frill around the head. It was a herbivore measuring 36 feet long and weighing over 8 tons.

Plesiosaurus
The neck of this large marine reptile was 20 feet long. It could catch fish with quick, powerful stabs. Four paddle-like feet were used for swimming, but it could not swim fast. It was 39 feet long.

Tyrannosaurus
This was the fiercest and largest carnivore that ever lived. There were sharp teeth in the huge jaws and sharp claws on the hind legs. It could overpower most animals. The huge tail was carried just off the ground and used for balance. This animal was 50 feet long and 18 feet tall.

Mesozoic Era Plants

Cycads
Long, coarse, feathery fronds gave the appearance of ferns. Some of the ancient plants produced tiny spores which were distributed by the wind. Others developed large **spores** that remained attached to the plant. These helped the development of special conical structures within which eggs formed. Wind-blown pollen from other plants fertilized the eggs from which new plants grew.

Angiosperms
The first true flowers came from these plants. There were enclosed seeds and no specialized organs. Flying and crawling insects carried pollen among all kinds of plants. Pollen was wasted by being deposited on plants of a different kind. Later specific plants and insects developed together which allowed the requirements of each to be met.

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Large numbers of these reptiles roamed what is now North America. Bony plates and spikes on the tail offered protection from carnivores. This herbivore had a beak-like mouth with small, dull teeth. The reptile was the size of an automobile with a brain the size of a peanut.

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The term means ancient wing. It was the earliest known bird. It had dinosaur features such as sharp teeth and a long, bony tail. The stumpy, clawed wings had feathers. Probably it could fly only short distances. It was about the size of a crow.

The wingspan was 26 feet. It had no teeth. It took its food from the ancient seas which once covered what is now Texas and Kansas.

Because of greater mobility than their ancestors, bees, wasps and flies could move to all parts of plants. Pollen was carried among plants. This aided the development of angiosperms. The term means three-horned face.

Long, coarse, feathery fronds gave the appearance of ferns. Some of the ancient plants produced tiny spores which were distributed by the wind. Others developed large spores that remained attached to the plant.

Even Tyrannosaurus would flee from the horns of this charging animal. The large head was 1/4 the size of its body. It had a beaked mouth and a bony frill around the head. It was a herbivore measuring 36 feet long and weighing over 8 tons.

These helped the development of special conical structures within which eggs formed. Wind-blown pollen from other plants fertilized the eggs from which new plants grew.

The neck of this large marine reptile was 20 feet long. It could catch fish with quick, powerful stabs. Four paddle-like feet were used for swimming but it could not swim fast. It was 39 feet long.

The first true flowers came from these plants. There were enclosed seeds and no specialized organs. Flying and crawling insects carried pollen among all kinds of plants.

This was the fiercest and largest carnivore that ever lived. There were sharp teeth in the huge jaws and sharp claws on the hind legs. It could overpower most animals. The huge tail was carried just off the ground and used for balance. This animal was 50 feet long and 18 feet tall.

Pollen was wasted by being deposited on plants of a different kind. Later specific plants and insects developed together which allowed the requirements of each to be met.

Mesozoic Era Animals

Morganucodon

Ichthyosaurus

Pteranodon

Apatosaurus

Stegosaurus

Archaeopteryx

Flying Insects

Triceratops

Plesiosaurus

Tyrannosaurus

Mesozoic Era Plants

Cycads

Angiosperms

Cenozoic Era Animals

Chelydra Serpentia
Snapping turtles are generally smaller than many of the extinct reptiles which preceded them. Their waterproof eggs are laid on land. Scales protect the bodies of these animals. They are cold blooded so internal regulation of body temperature is not possible.

Basilosaurus
This prehistoric whale had rows of sharp teeth for catching and eating ocean prey. It was over 65 feet long, the longest prehistoric mammal. Its body was slender and rather snake-like. Its fossils are found in ancient sea beds in Africa and North America.

Eohippus
Although only about one foot high, eohippus was the early ancestor of modern horses and zebras. It was a fast runner and had toes instead of hooves.

Megatherium
This giant sloth lived 30 thousand years ago and may have become extinct only a few hundred years ago. It had a long thick tapered tail which helped it stand up on its hind legs so it could reach high into the trees to pull down branches from which it stripped the leaves with its tubular tongue.

megaloceros
A huge deer, it once roamed the abundant grasslands of Europe and Asia. Its antlers or rack were 11 feet across. These were used to threaten rivals more than to defend itself. It ran from most enemies. Its height was 15 feet. It became extinct about 2,500 years ago.

smilodon
Also known as saber-toothed tiger, this fierce carnivore could kill any animal. Its canine teeth were about 8 inches long. The animal itself was about 9 feet long. The first of these animals lived about 40 million years ago. Prehistoric people hunted them. About 10,000 years ago, they became extinct. Their fossils are found in Africa, Europe, North and South America.

mammuthus primigenius
Prehistoric people hunted this animal, also known as woolly mammoth. It had molar teeth for grazing and long curved tusks. Long, dark brown hair and thick woolly underfur protected it from cold. It could live north of the Arctic Circle. Its height was about 9 feet. Extinction occurred about 10,000 years ago.

Cenozoic Era Plants

graminales
Grass became abundant on the sandy hills and fertile river deltas 26 million years ago. Animals grazed on this vegetation. Humans hunted the animals and could eat some of the plants. They discovered that plants could be cultivated. This vegetation usually lies between deserts and forests. Grasslands replaced many forests.

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Megaloceros

Chelydra Serpentia

Smilodon

Basilosaurus

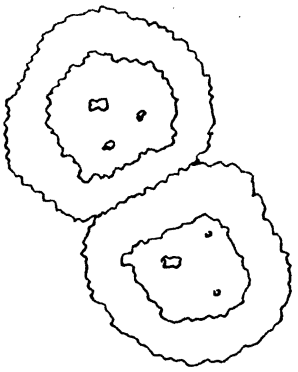
Mammuthus Primigenius

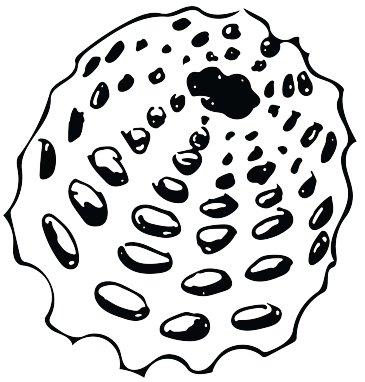
Eohippus

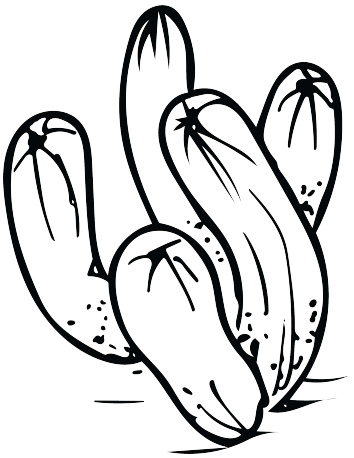
Cenozoic Era Plants

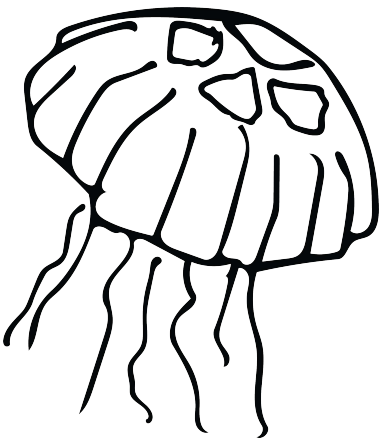
Megatherium

Graminales







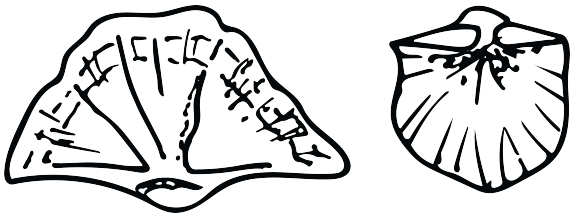


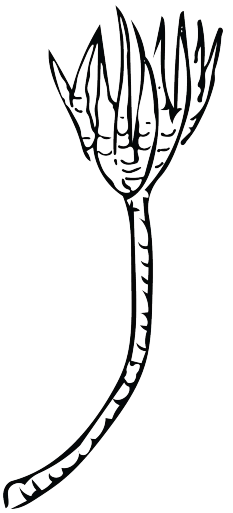
kakabekia

protozoan

sponges porifera

cnidaria



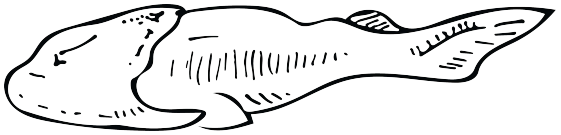


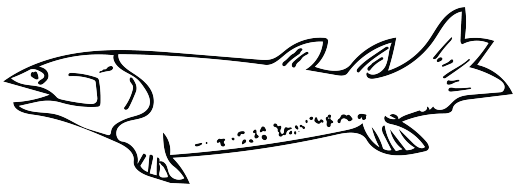
ammonite

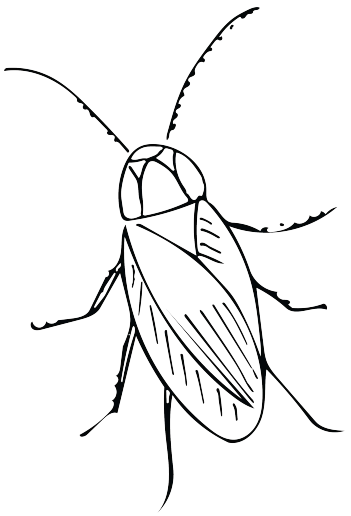
trilobite

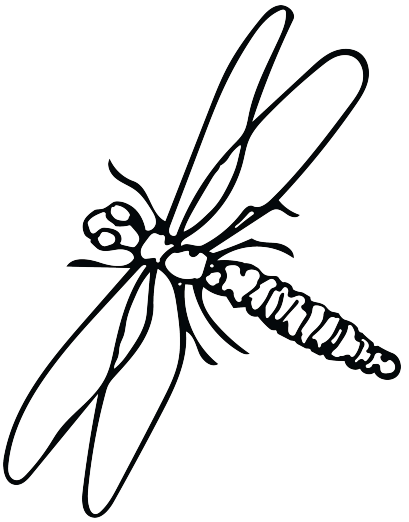
brachiopods

crinoid







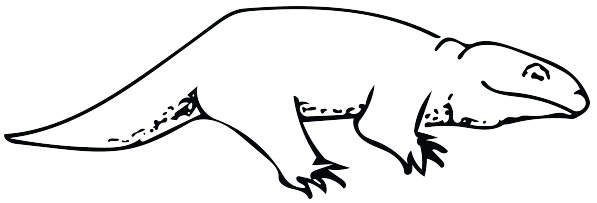


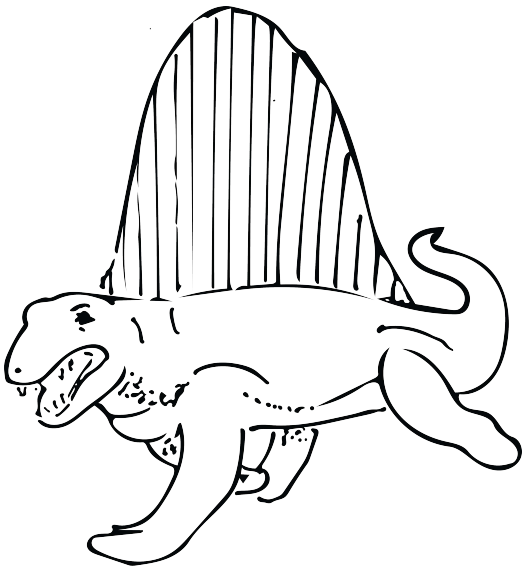
agnathan

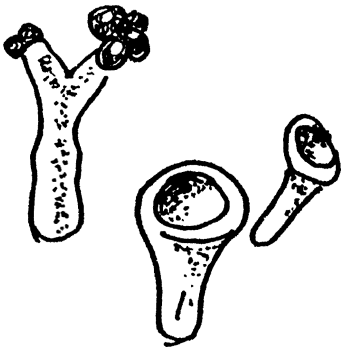
eusthenopteron

Blattaria

Meganeura





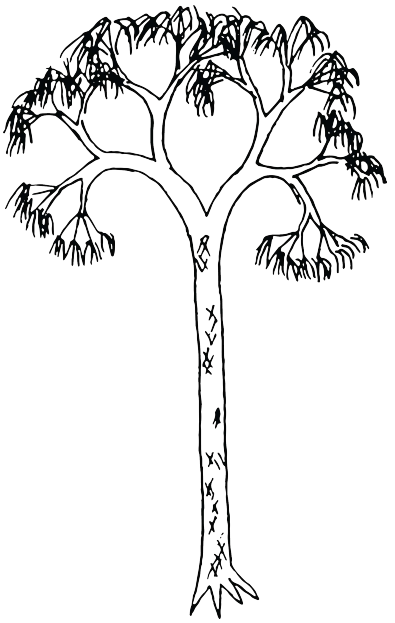


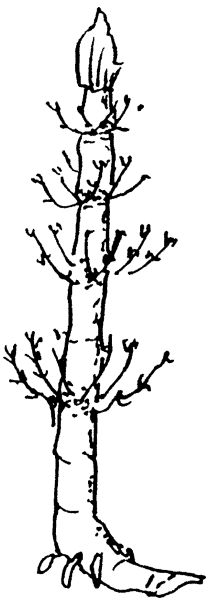
Eryops

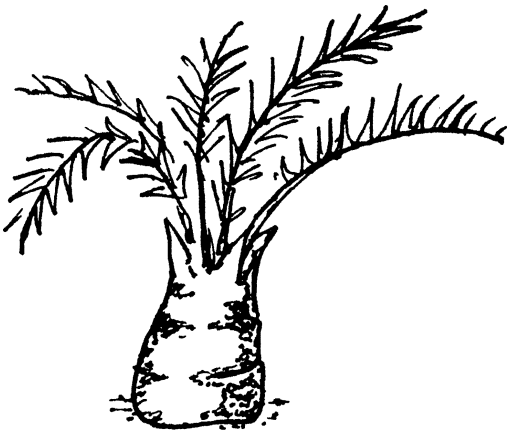
Seymouria

Dimetredon

blue-green algae





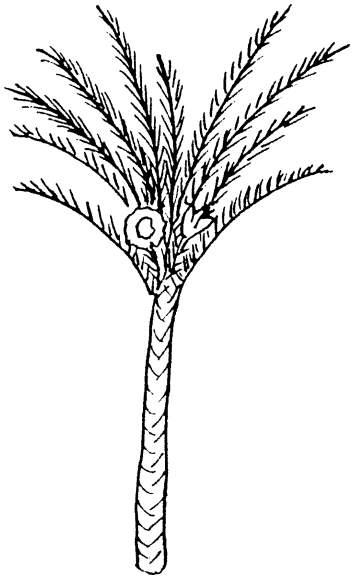


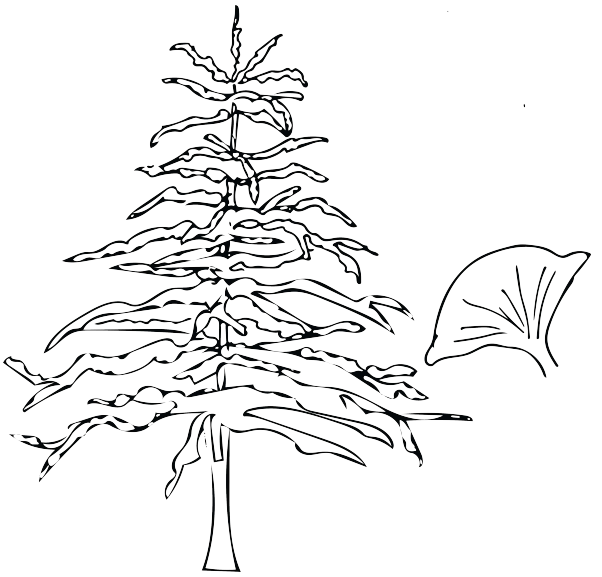
psilophyte

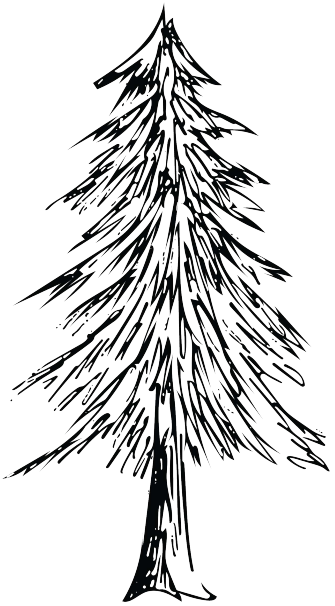
Lepidodendron

calamite

zamia





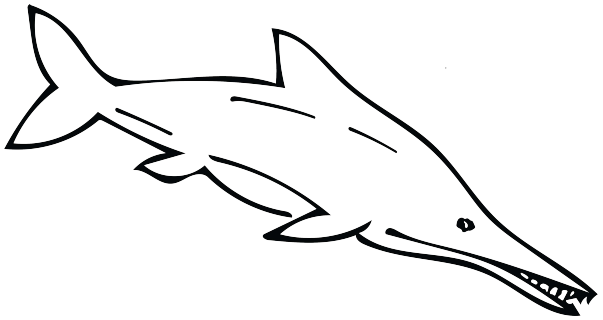


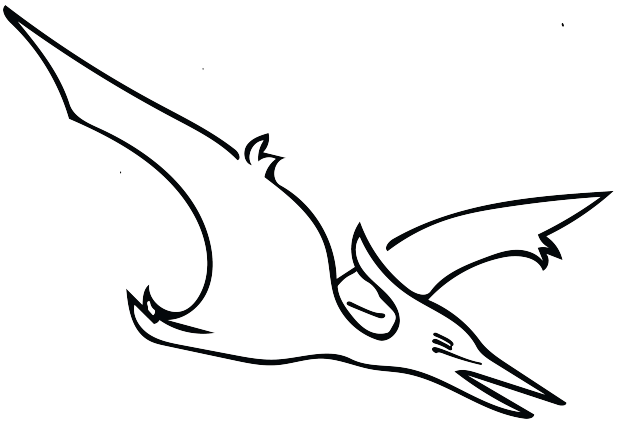
cordaites

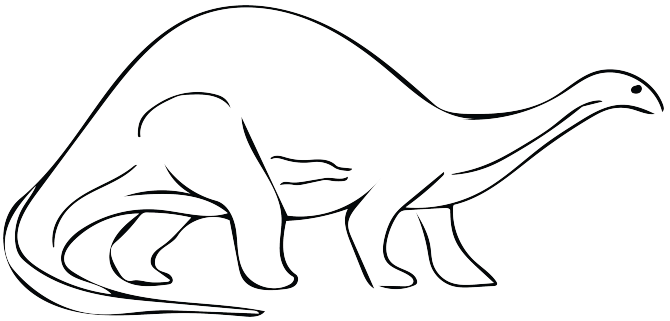
ginkgo

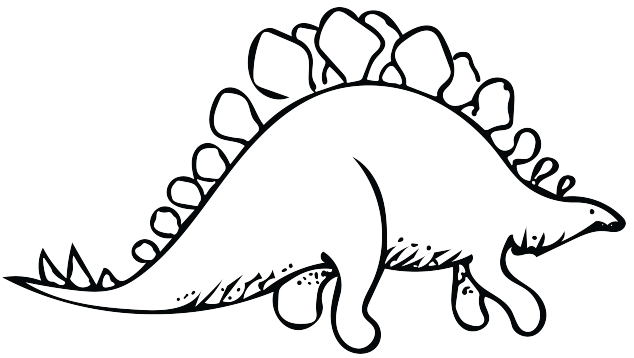
conifer

Morganucodon







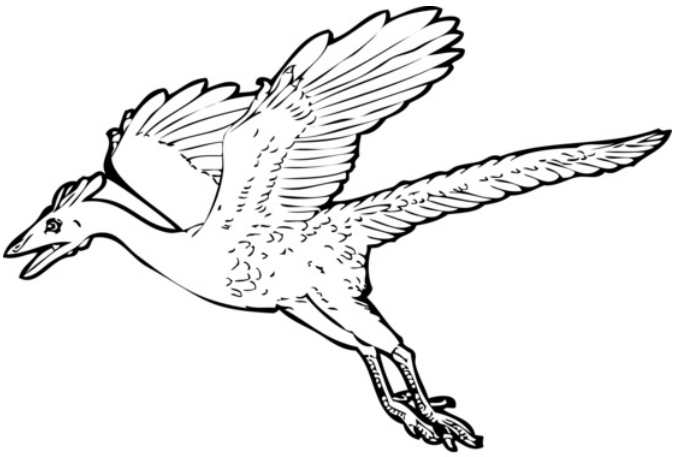


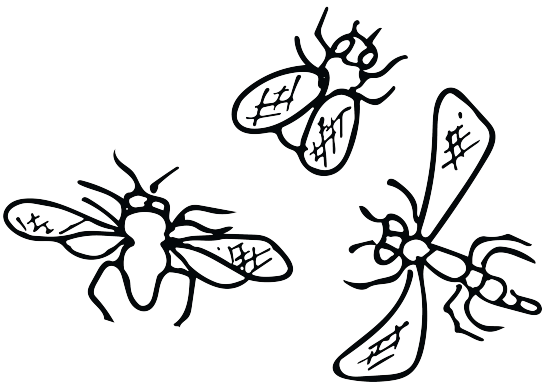
Ichthyosaurus

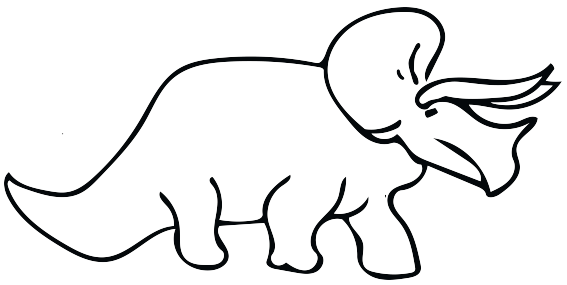
Pteranodon

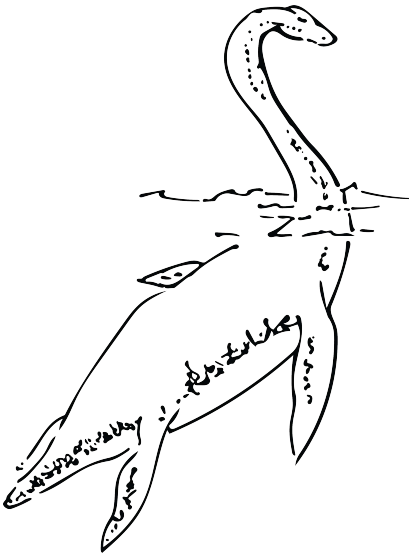
Apatosaurus

Stegasaurus







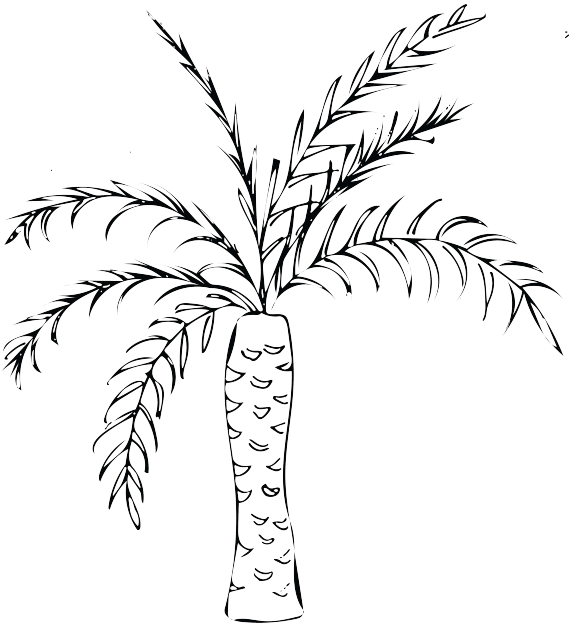


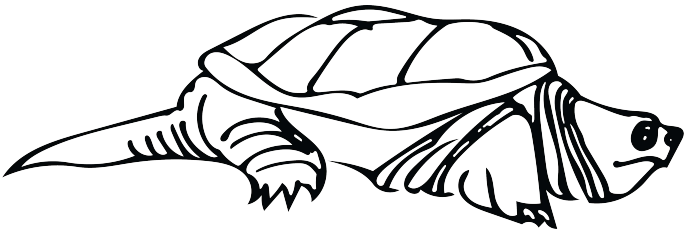
Archaeopteryx

flying insects

Triceratops

Pleisiosaurus



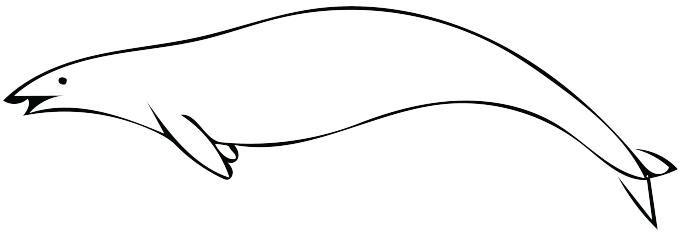


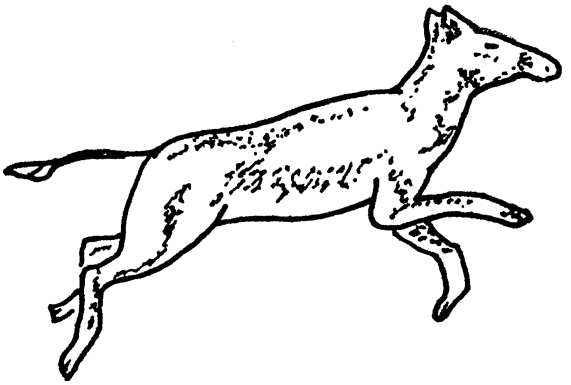
Tyrannosaurus

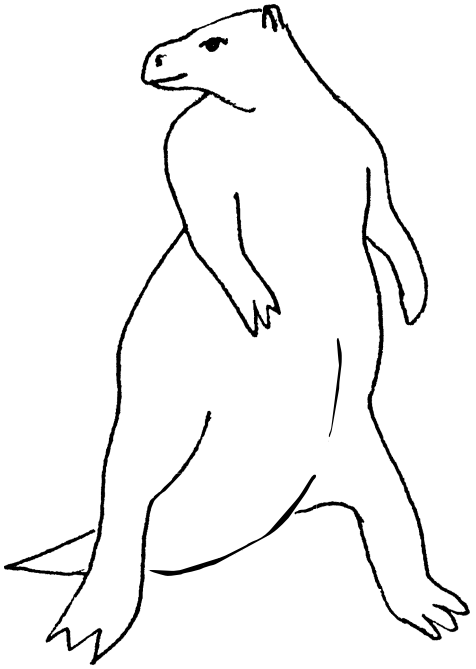
cycades

angiosperm

snapping turtle



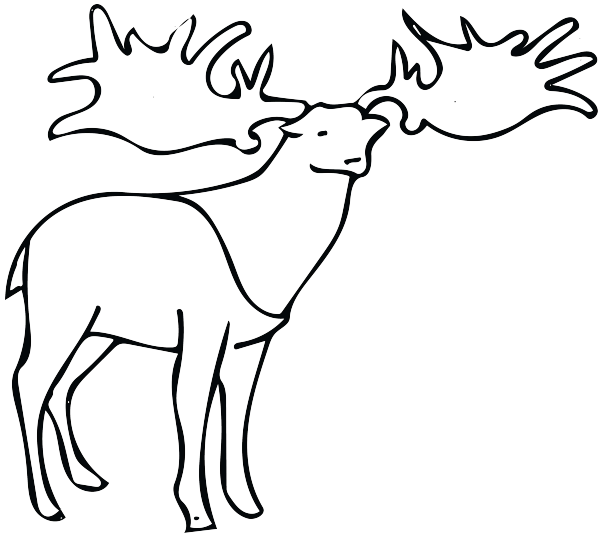


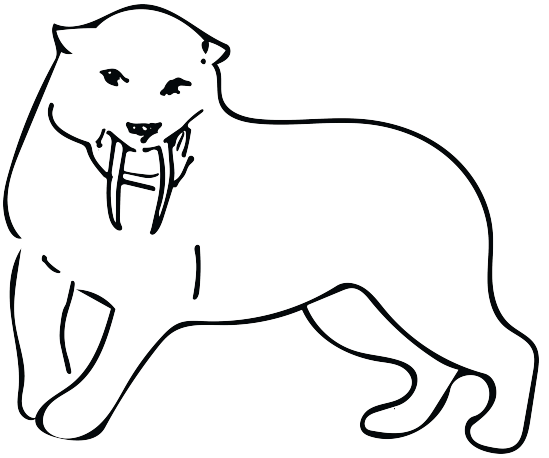


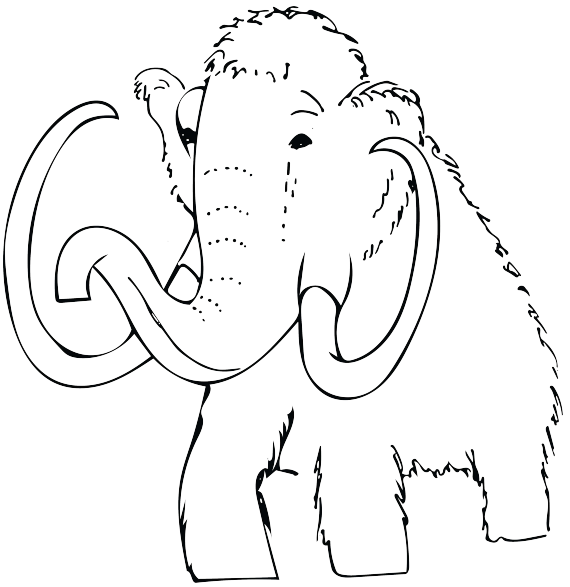
Basilosaurus

Eohippus

Megatherium







Megaloceros

Smilodon

Mammuthus primigenius

graminales

Geological Time

Precambrian Time

Earth's history is divided into three eons. The first two, Archeon and Proterozoic, lasted about 4 billion years. This is 80% of the total history of Earth. It is known as the Precambrian Time.

One theory is that Earth formed from a cloud of dust and gas. This contracted into a solid sphere.

A crust formed after millions of years. It melted, then hardened as continents formed.

Atmosphere and oceans also formed in the early Archean Eon.

Mountain-building occurred as molten rock erupted through the crust. The molten rock contained minerals such as gold, silver and uranium.

Phanerozoic Eon

The third eon, the Phanerozoic, is divided into three eras. The first is the Paleozoic Era which began about 570 million years ago. It ended 240 million years ago.

There were swamps covering most of the land.

Sinking areas in North America affected geography. These geosynclines collected sediment from land around them. The Appalachian geosyncline was in the east. The Cordilleran geosyncline was in the west

Seas covered these geosynclines many times during the Paleozoic Era.

The Appalachian Mountains formed when the North American Plate collided with the other plates. The resulting land mass was called Pangaea.

The Mesozoic Era is the second of the Proterozoic Eon. It began 240 million years ago and ended 63 million years ago.

Pangaea separated into the continents of the present day. The Atlantic Ocean started to form.

Plates collided, forcing molten rock to form the mountains of western North America.

Seas were full of marine life with shells that formed sedimentary rock known as chalk.

Mountain building continued.

At the beginning of the Cenozoic Era about 63 million years ago.the shifting land masses began to take the shape of present day continents.

Earth continues to change. Earthquakes, volcanic eruptions tidal waves, erosion and landslides produce changes easily seen.

Continental drift and changes made by movement of tectonic plates are not noticed unless an earthquake or volcanic eruption results.

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Precambrian Time

Phanerozoic Eon

Geological Time

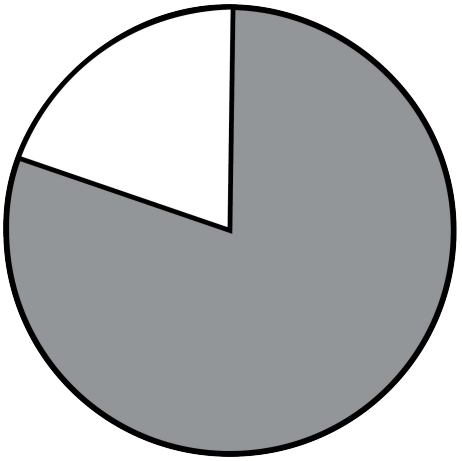
Archeon Eon

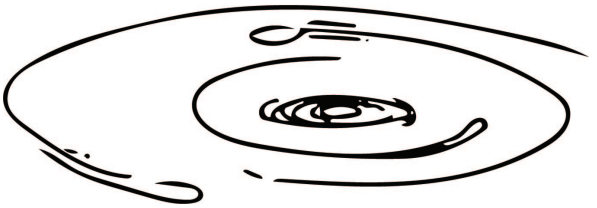
Proterozoic Eon

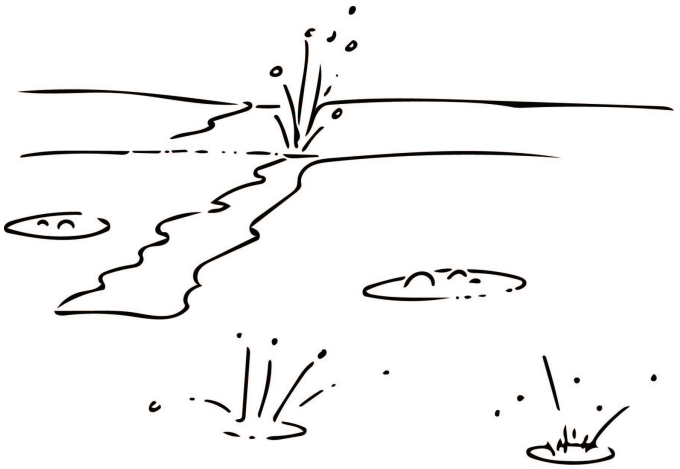
Paleozoic Era

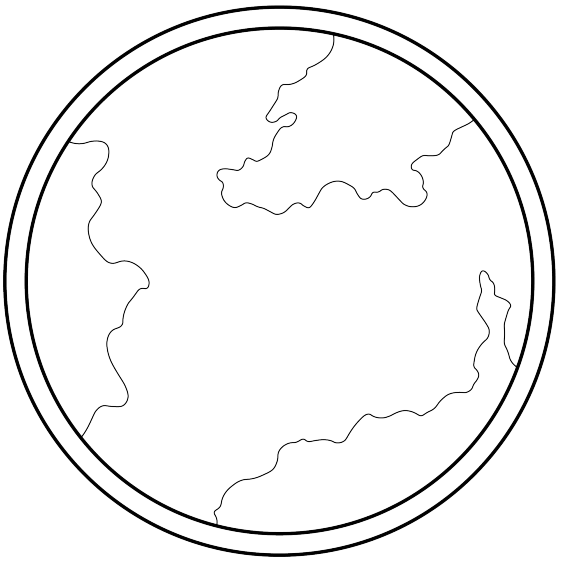
Mesozoic Era

Cenozoic Era







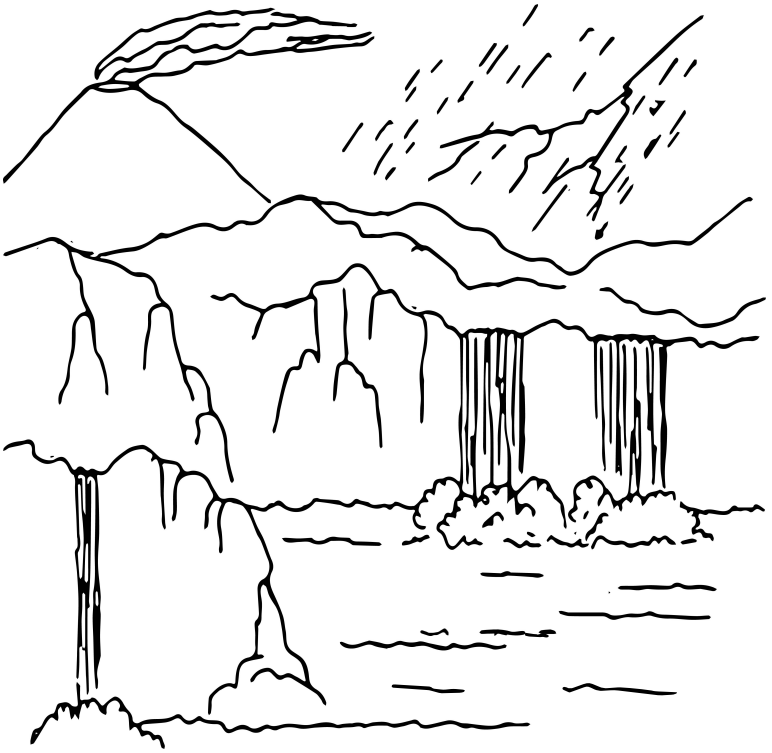


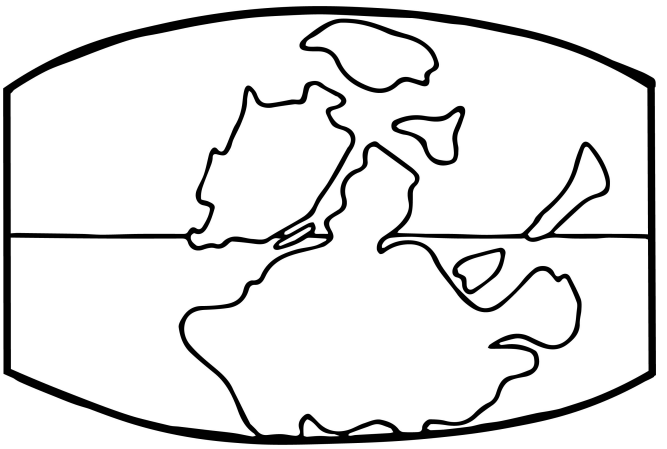
80% of earth's history

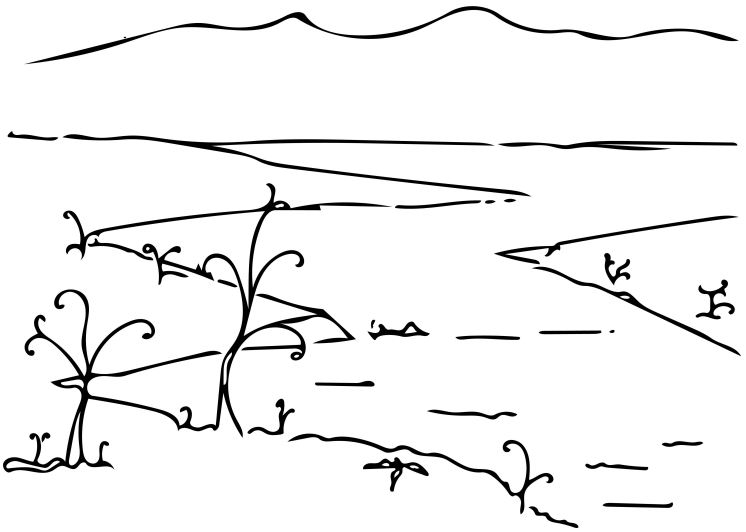
crust forms

clouds form into planets

atmosphere & oceans





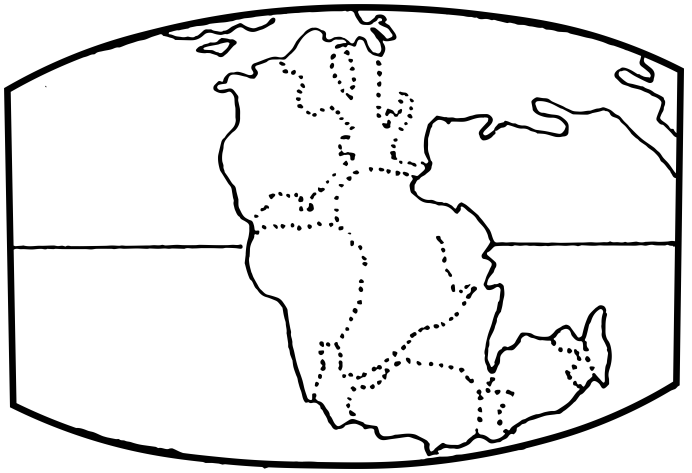


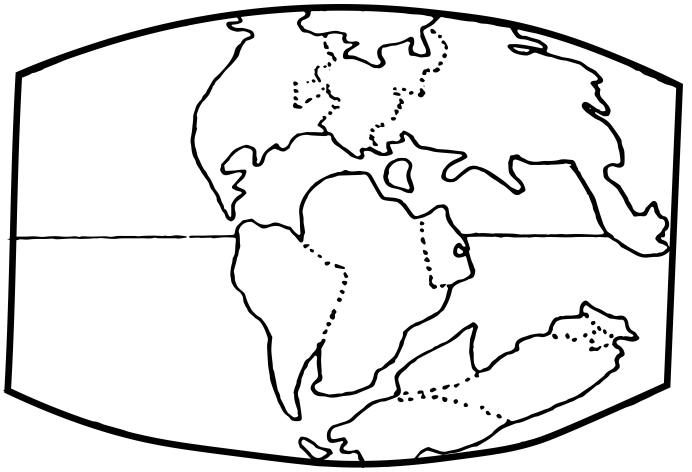
mountain building

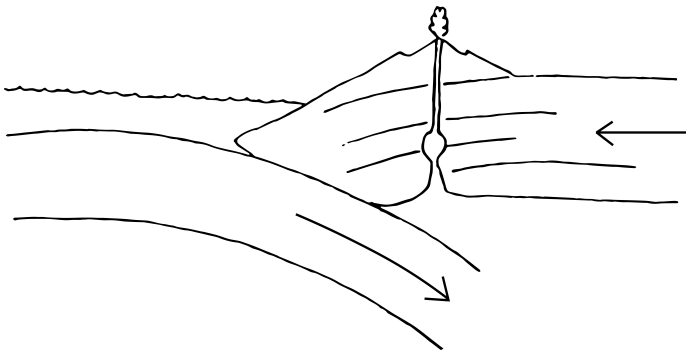
Paleozoic land masses

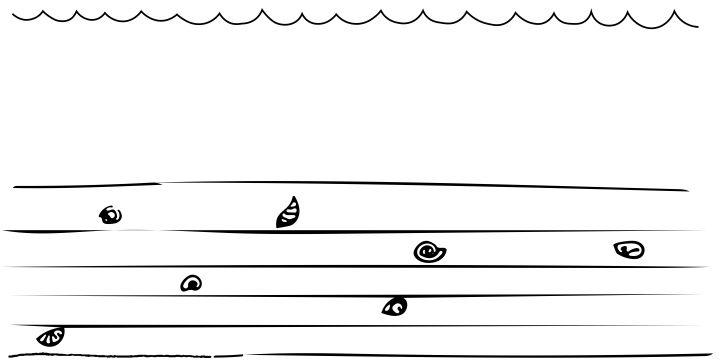
swamps

geosyncline







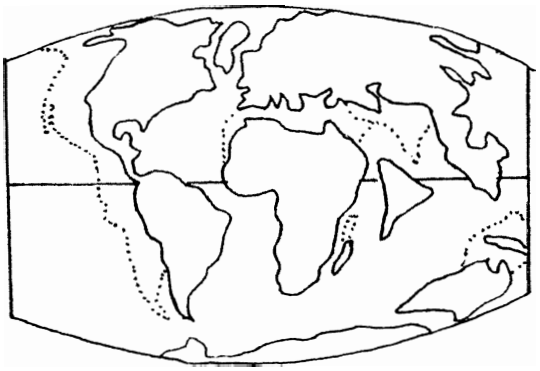


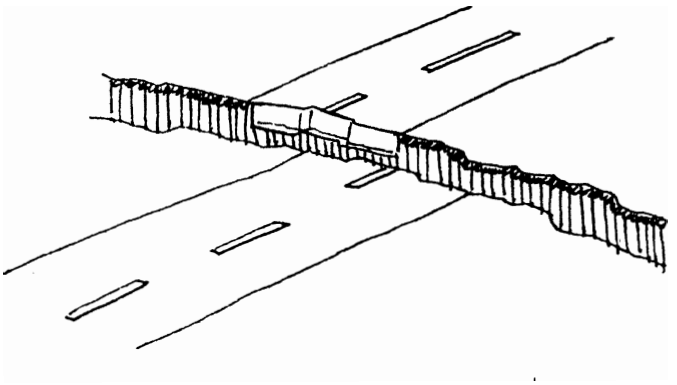
Pangaea

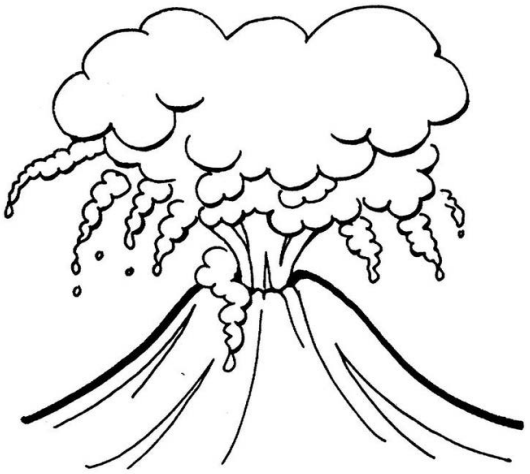
formation of mountains

Pangaea separating

sedimentation







63 million years ago

earthquake

volcanic eruption

Early Humans

Australopithecus
Australopithecus lived between about 5 and 1 1/2 million years ago. Fossil remains have been found in the Rift Valley of Africa.

Some fossils were from gracile australopithecines and some from robust australopithecines. All are extinct.

Australopithecines chewed from side to side. The face was flat. Premolar teeth had two cusps like present day humans.

From the skulls of australopithecines, it has been determined that the spine was attached to the skull toward the middle as in today's humans. This indicates that australopithecines walked upright on two legs.

Hip, thigh and foot bones give further evidence that australopithecines walked upright.

Fossilized footprints were found in Tanzania. They indicate that australopithecines walked on two legs.

Robust australopithecines had some characteristics that present day humans do not have such as very large molars, small canine teeth and small incisors. This indicates that robust australopithecines probably had a vegetarian diet.

Australopithecines probably used stones and bones as tools. There is no evidence that they changed the stones and bones to make tools deliberately.

Homo habilis
Homo habilis lived from about 2 million to 1 1/2 million years ago during the Old Stone Age or the Paleolithic Period. They are extinct. Fossils were found in eastern Africa.

Homo habilis had a short muzzle. The brain was larger than australopithecines but smaller than in present humans. Brain size is determined by making a cast of the inside of the skull.

Homo habilis were small, about the size of a twelve-year old human. They walked on two legs. There is evidence that homo habilis made tools from stone.

Cutting and scraping tools were found in Olduvai Gorge. There were hammer stones also. These were used to chip another stone to make a sharp-edged tool.

Homo erectus
Homo erectus lived from about one million to 100,000 years ago. They are extinct. Homo erectus means upright man, walking on two legs. Fossils were found in Africa and Southeast Asia.

Homo erectus migrated from Africa to Europe and from Southeast Asia to what is now China.

Homo erectus had a short muzzle, a brain larger than homo habilis and the ability to make tools. They are now extinct.

There is evidence that Homo erectus used fire to cook food and to keep warm.

Homo erectus was not like today's humans. The skull had a thick ridge at the back, a keeled top and a straight, thick brow ridge. The skull of present humans has none of these characteristics.

Homo sapiens Neanderthalensis or Neanderthal
Neanderthals lived between 100,000 and 40,000 years ago, before and during the Ice Age. They are extinct.

Fossils were found in a cave in the Neander Valley of Germany. Others were found later at several locations in Europe and the Middle East. Complete skeletons have been found.

Neanderthals had a short muzzle, a brain larger than homo erectus and walked on two legs.

Neanderthals made tools. They were hunters. Fire was used to cook food and to keep warm. There is evidence of ceremonial burials for the dead.

There are differences between the skulls of Neanderthals and today's humans. The Neanderthal skull had a large brow ridge, a dent at the back called the supra-iniac fossa and a rounded bump behind the jaw.

Homo sapiens sapiens
Modern humans had migrated to all parts of the world by 30,000 years ago. They lived and hunted in groups. There were no permanent places to live. It was necessary to go where there were animals to hunt for food.

Advanced hunters lived in caves during the Ice Age. Cro-Magnon people are the best known example. Cave floors provide archaeologists with discarded tools and remains of food from which to learn about these cave-dwellers.

Walls of caves where these early humans lived were decorated with paintings of animals they hunted.

Small figures of women were modeled from clay or carved from stone or bone. These works of art are evidence that language also developed. Art and language both use symbols to express an object or idea.

In areas where there were no caves, shelters were made from whatever was available. Tents of animal skins were common in the Far East.

Mud and reed or mud and stone huts provided shelter in the Eastern Mediterranean.

Mammoth bone was used to construct huts in Asia.

By the close of the Ice Age, humans raised crops such as wheat and barley. Animals were domesticated for food and transportation.

Grindstones or querns were used to grind grain.
Tool-making became more sophisticated. Stone was the main material used. Flaked projectile points were used on spears. Fish hooks and harpoons were developed.

Combs, beads and needles were made from bone.

Bowls and lamps were made from stone.

Early humans rapidly made advances in the development of tools, dwellings, art, agriculture, and animal husbandry. In many parts of the world cities grew and civilizations were established.

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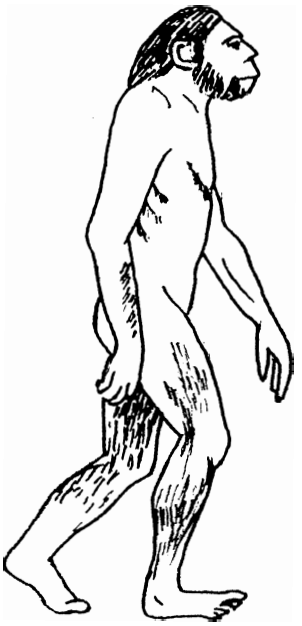
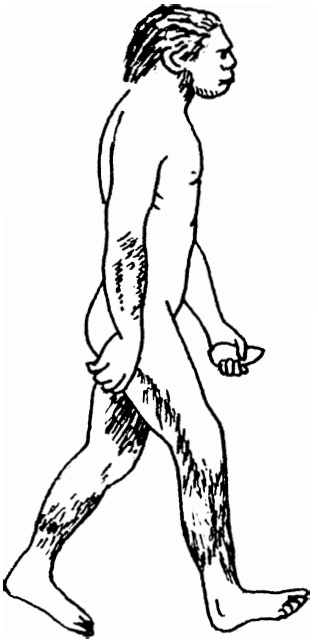
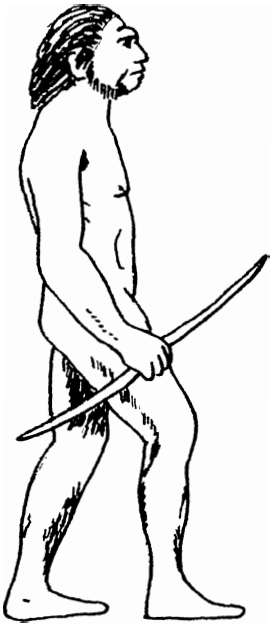




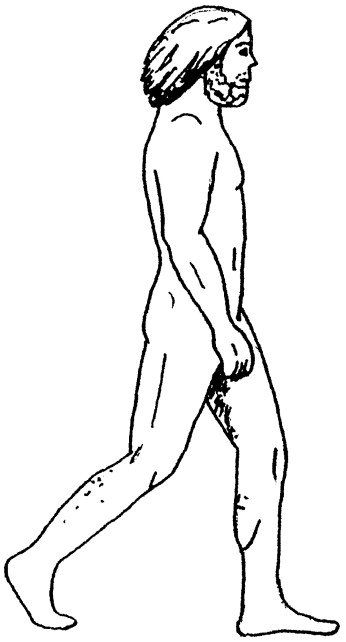


Australopithecus

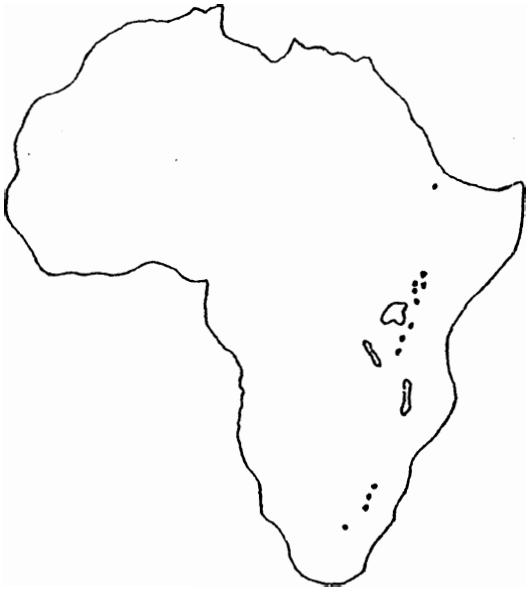
Homo hablis

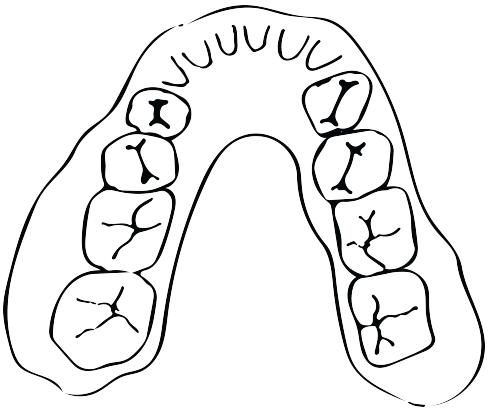
Homo erectus

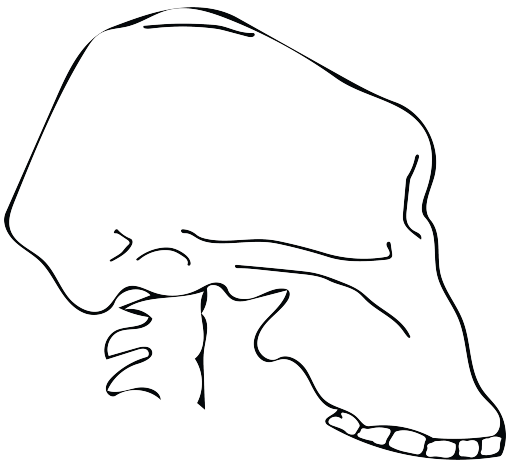
Homo sapiens Neanderthal

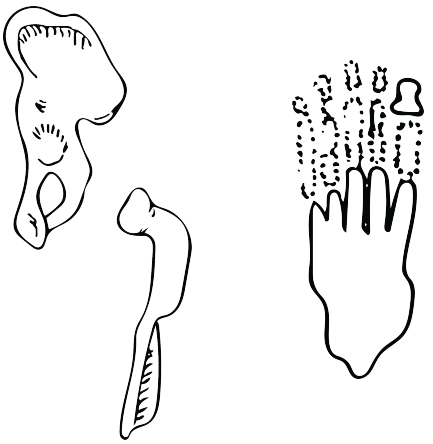


Homo sapiens sapiens







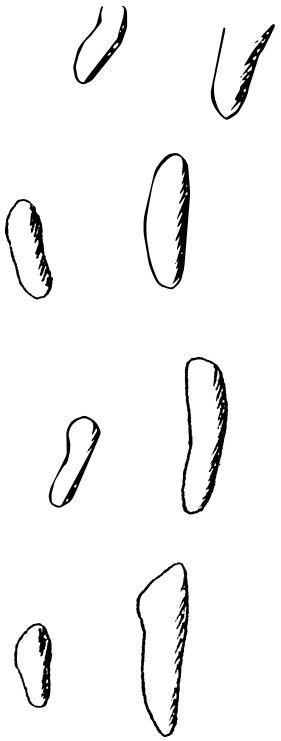


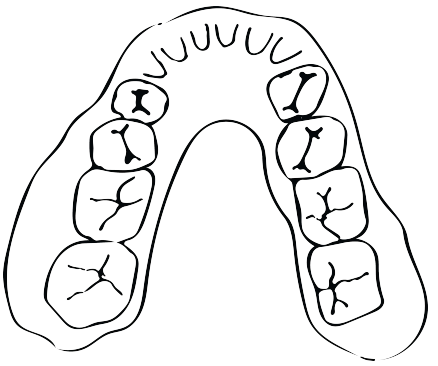
locations of Australopithicus

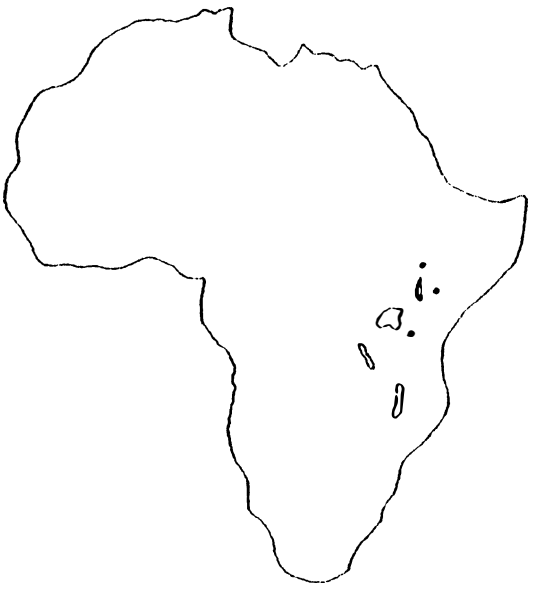
skull

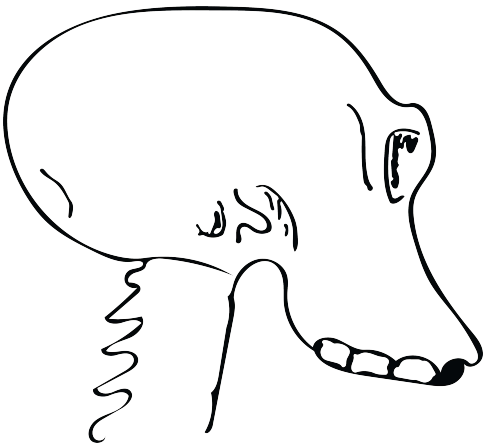
two cusps

hip, thigh and foot bones







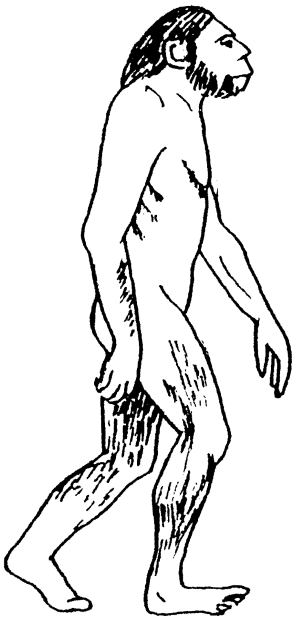


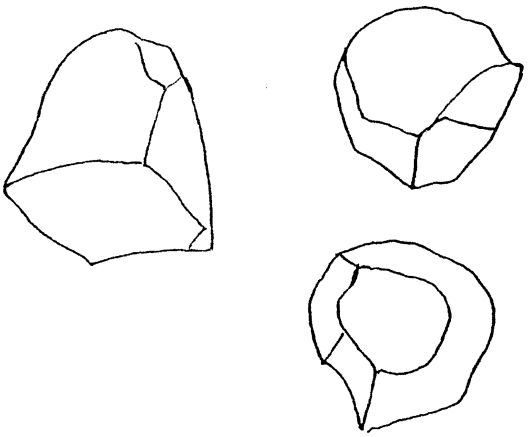
fossil footprint

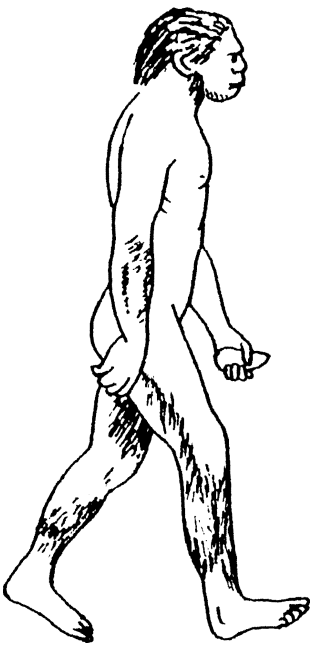
large molars

locations of habilis

habilis skull





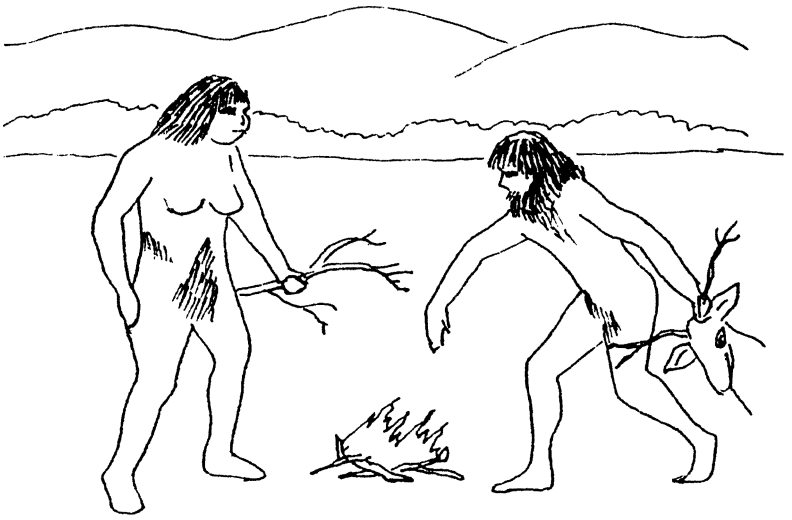


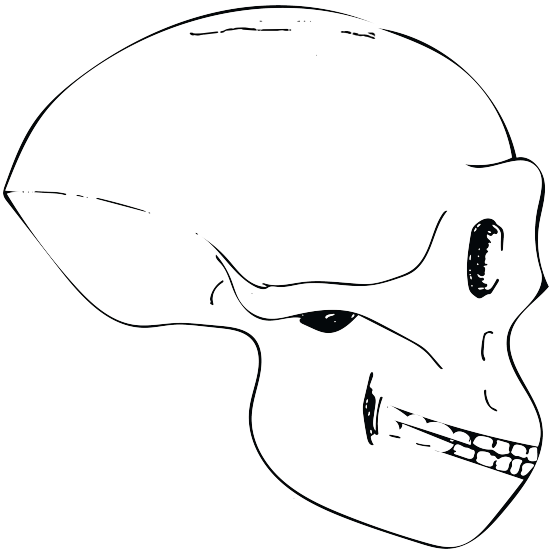
walked upright

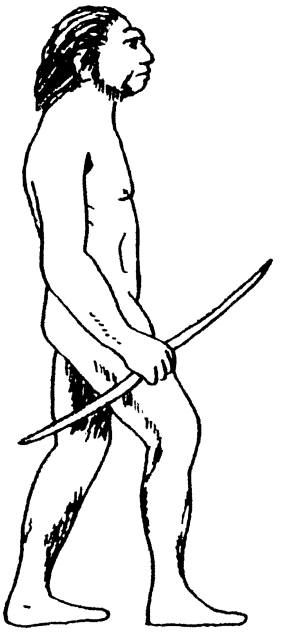
tools

Homo erectus locations

Homo erectus





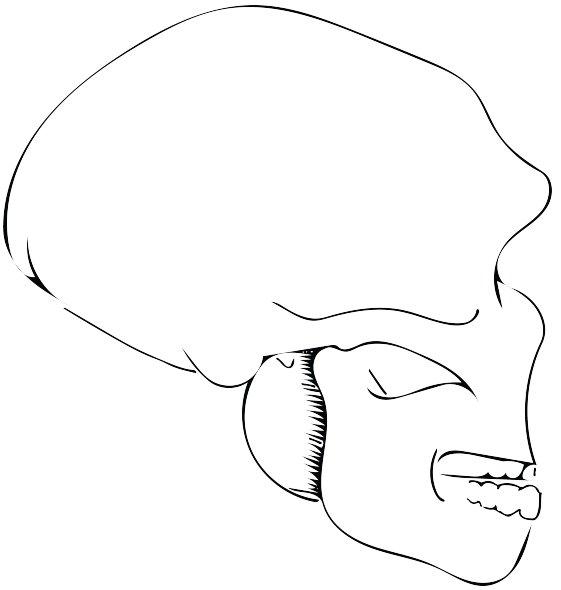


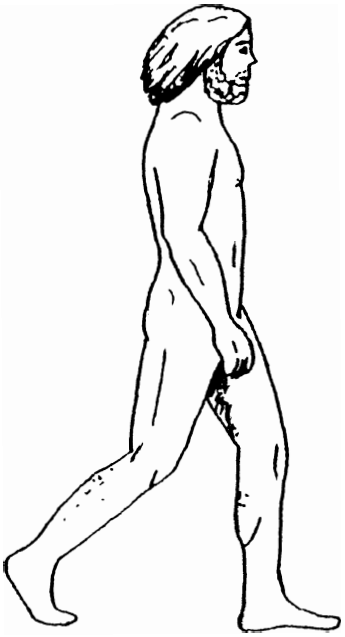
used fire

skull of erectus

locations of Neanderthals

Neanderthal



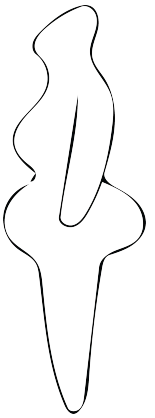


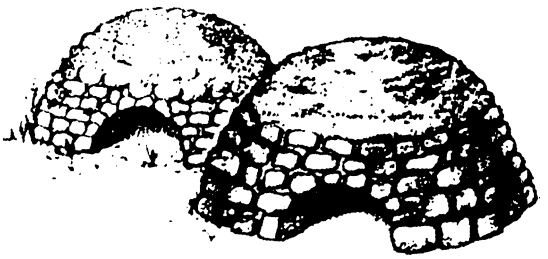
burial in pit grave

Neanderthal skull

Homo sapiens sapiens

cave dwelling



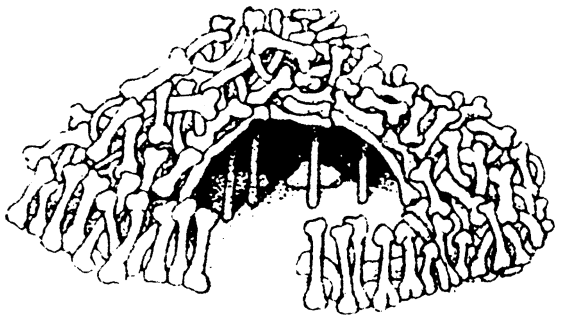


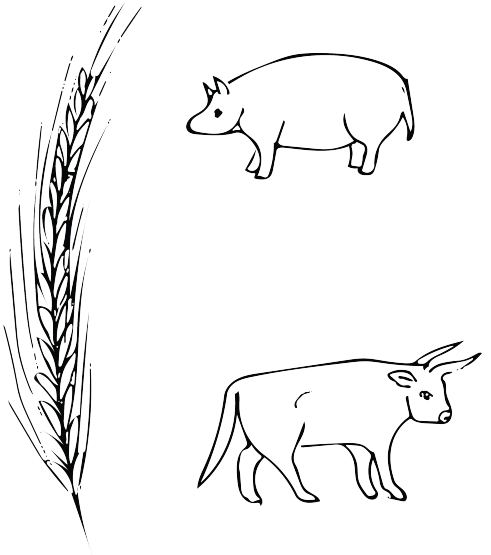
cave painting

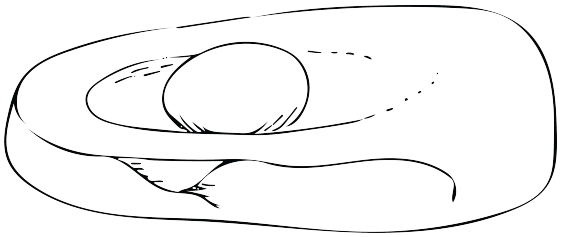
figurine

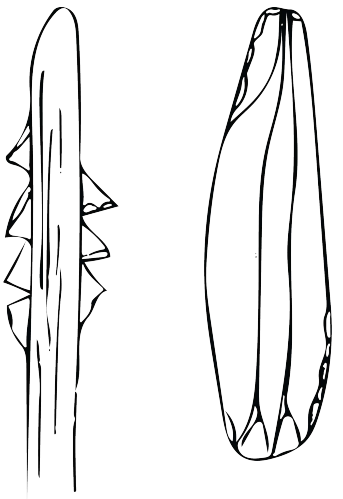
skin tent

mud and stone hut







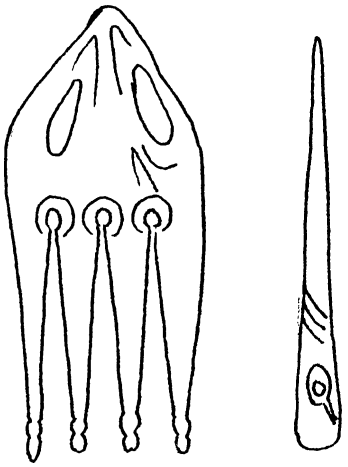


mammoth bone hut

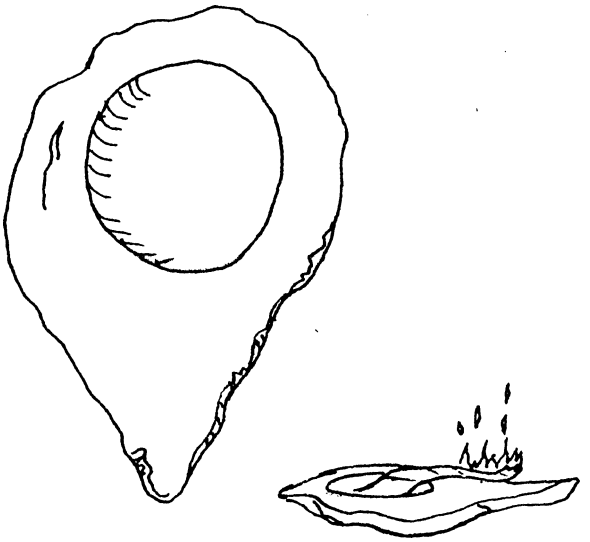
domestication

quern

tools



bone tools



stone lamp

Fundamental Needs of Humans

Spiritual Needs

religion and philosophy
self-expression (art, music, dance, drama)
self-esteem (love)
socialization

Material Needs

clothing
from animal sources
fur, skin,
leather silk
wool
feathers

from vegetable sources
flax
cotton
hemp
ramie jute
mulberry
pineapple
rubber

from synthetic sources
fiberglass
metal
rayon **(nitrocellulose,viscose acetate, cuprammonium)**
nylon
orion
dynel
Dacron
Saran
vinyl
polyester

nourishment
from animal sources
meat
fish
poultry
eggs
dairy products (milk, butter, yogurt, cream)
from vegetable sources
nuts
fruits
vegetables
grains
leaves
stalks

from inorganic sources
salt
water
synthetic vitamins and minerals

shelter
from animal sources
skins
bones

from plant sources
wood
grasses and
straw reeds
leaves
bark

from inorganic materials
stone
clay or dirt (bricks, tile, adobe, daub, mud) metals (iron, copper, tin)
cement
glass

from synthetic sources
asphalt
polyurethane
vinyl
styrofoam

transportation

- by water
  - log
  - dugout
  - raft of logs or reed
  - bundles reed boat
  - bark-or skin covered
  - canoe wood boat
  - galley
  - sail boat
  - steamboat
  - submarine
  - hydrofoil
- by land
  - animals (horse, camel, llama, elephant, ox)
  - travois
  - sledge
  - sleigh
  - chariot
  - cart, wagon, carriage
  - bicycle
  - motorized vehicles
- by air
  - balloon
  - glider
  - airship or
  - dirigible airplane
  - space craft

self-defense

- from stone
  - axes
  - knife blades
  - points,
  - arrowheads
  - harpoon
  - spear heads mace
  - heads
- from metal
  - spear
  - heads axes
  - knife blades
  - swords
  - crossbows
  - guns
  - cannons
  - missiles
- from wood
  - bow and
  - arrow siege
  - machine
  - catapult
  - assault tower

tools and industry

from bone
- fish
- hooks
- needles
- combs
- spin drill

from clay, dirt or sand
- ovens
- pottery mudbrick
- making kilns
- lamps
- stamp seal glass

from stone
- mortars and querns
- microliths
- grinders
- picks
- axes
- scrapers
- reaping knives
- sickles
- lamps
- paint cases
- bowls
- obsidian mirrors
- potters wheel
- flint mining

from fiber
- fish nets
- coiled
- baskets
- blankets
- weaving
- textiles

from metal
- chisel
- gouge
- pin
- metal smelting and casting
- lost wax bronze casting
- iron casting

inventions and discoveries
- domestication of animals and grains irrigation
- waterwheel
- watermill
- cog wheel
- wheel
- plow
- horse collar
- calendar
- astronomical observation
- decimal system
- coins
- paper
- mirrors
- folding umbrella
- underfloor heating
- seismograph

Communication

- gestures
- vocalization
- speech
- hieroglyphic
- writing cuneiform
- script pictographic
- script maunscript
- drums
- smoke signals
- telegraph telegram
- telephone facsimile
- mail

Fundamental Needs of Humans

Spiritual Needs

religion and philosophy

self-expression (art, music, dance, drama)

self-esteem (love)

procreation

Material Needs

clothing

nourishment

shelter

transportation

self-defense

tools and industry

communication

inventions and discoveries

The Great Ice Age

Since Earth was formed, there have been seven major ice eras. An ice era is a time when the temperature of Earth falls and glaciers cover large areas. In between the ice eras, the climate becomes much warmer. These warmer periods are called interglacials. (Time line showing ice eras and interglacials.)

The Great Ice Age occurred in the Pleistocene Epoch during the Cenozoic Era of geological history. It is sometimes called the Glacial Epoch. It began about two million four hundred thousand years ago. (Geological time line showing the eras and epochs)

Earth was much colder during the Glacial Epoch. Ice sheets covered the continents of the northern hemisphere. There were more alpine glaciers. Glaciers covered all of Canada, Iceland, Greenland, Ireland and the Scandinavian countries. Most of England and northern Russia as well as parts of China were covered. (Polar map with ice sheets)

In the United States, glaciers extended as far south as New York City; Cincinnati, Ohio; St. Louis and Kansas City, Missouri; and Pierre, South Dakota. The ice sheet covered the White Mountains in New Hampshire. It was about one mile thick.
(Map of US showing extent of ice sheets)

Antarctica was covered by more ice than it is today.
(Map showing extent of glaciers)

Sea level dropped as much as 400 feet. The moisture that evaporated from the sea fell as snow to form glaciers. It was so cold that the glaciers did not melt to return water to the sea.
(Map showing dropped sea level)

The Great Lakes and many smaller lakes of North America were formed by glacial scour. (Map)

Plains, river valleys, fiords and Niagara Falls were the work of glaciers. (Picture of fiord)

The fertile soil of the north central states is a result of the silt or loess carried by the strong glacial winds.
(Picture of Great Plains)

Humans survived the Ice Age by living in caves. Drawings and paintings were made on cave walls. Stone tools, pottery fragments and animal bones have been discovered in the caves. There is evidence of campfires used to cook food and to keep warm. (Picture of cave dwelling)

Some humans lived in shelters made from the bones of mammoths, covered with animal skins.
(Picture of bone and skin hut)

The Glacial Epoch lasted several hundred thousand years. The most recent ice era began one hundred twenty thousand years ago. In the past ten thousand years, there have been three cold spells. From the fifteenth to the nineteenth century, some parts of Earth were so cold that crops did not grow. People could not raise food to eat or to sell to others. There was a famine.
(Time line of Glacial Epoch showing most recent ice era, 3 cold spells)

Glaciers exist today in the polar regions and in high mountain areas. (Picture of glacier.)

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Roman Numerals

The oldest inscription containing Roman numerals can be seen on a monument in the forum of Rome. This monument commemorates a Roman victory over the Carthaginians in 260 **BCE.**

The spread of Roman control throughout Europe took with it Roman culture. The Roman numeral system was simple and easy to learn. It has been used for about two thousand years and has some use today.

Only seven letters need to be memorized. These are I, V, X, L, C, D and M.

The fingers represent the vertical lines tor I, 11, 111, and 1111.

The symbol, V, can be seen in the shape made by the thumb and forefinger. It represents five.

The symbol tor four can be written IV, meaning one less than five.

The symbol, X, can be seen when the wrists are crossed. This shows two symbols tor five or V, so X stands for ten.

The symbol tor nine can be written Villi or IX, meaning one less than ten.

The symbol for fifty is L. It is a modification of chi which was represented by X in Greek.

Originally, the Greek symbol for one hundred was theta, *e*. It was changed to C for the Latin word centum, meaning one hundred.

The symbol for five hundred is D. It was represented in Greek by delta Δ-

Originally the Greek symbol for one thousand was phi, cp. It was changed to M for the Latin word mille, meaning thousand.

A bar - over a symbol multiplies it by one thousand. For example, X equals ten thousand.

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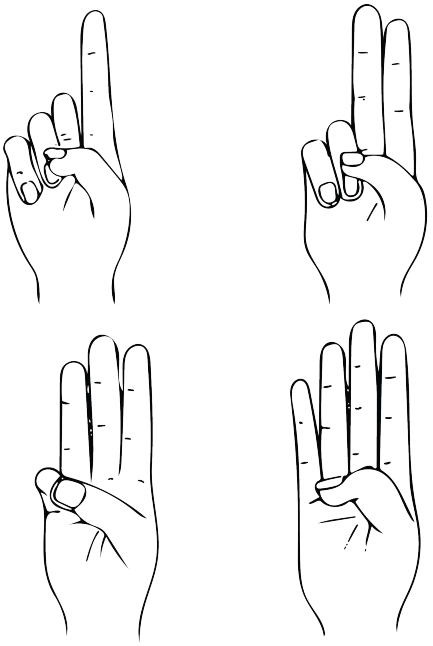

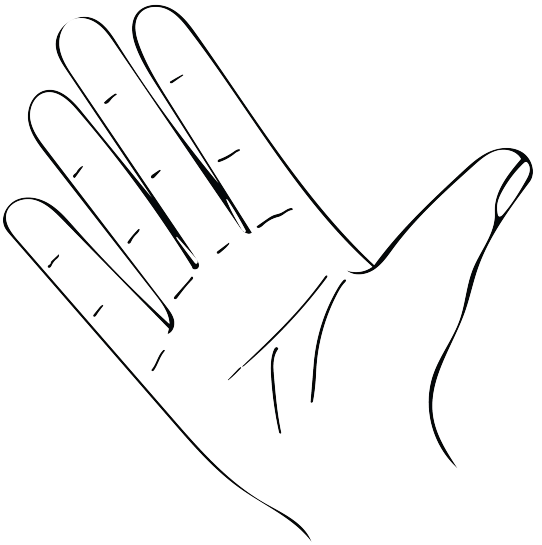

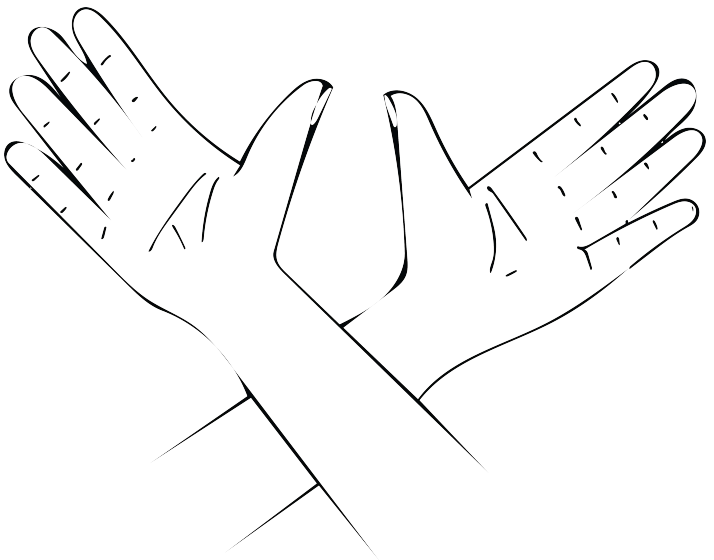

Roman Numerals

I	V
one	five
II	VI
two	six
III	VII
three	seven
IIII or IV	VIII
four	eight

VIIII or IX

nine

X

ten

XI

eleven

XII

twelve

XIII

thirteen

XIIII or XIV

fourteen

XV

fifteen

XVI

sixteen

XVII

seventeen

XVIII	forty
eighteen	L
XVIIII or XVIX	fifty
nineteen	LX
XX	sixty
twenty	LXX
XXX	seventy
thirty	LXXX
XXXX or XL	eighty

LXXX or XC	four hundred
ninety	D
C	five hundred
one hundred	DC
CC	six hundred
two hundred	DCC
CCC	seven hundred
three hundred	DCCC
CCCC or CD	eight hundred

DCCCC or CM

nine hundred

M

one thousand

Anthropology, Archaeology and Paleontology

Archaeologists study objects made by people in earlier cultures. This helps to determine the kind of society which once existed. Remains of tools, pottery, clothing and buildings are examined.

Size and kinds of houses can be determined by excavating places where ancient cultures existed.

Anthropologists study the remains of humans found in burial sites of long ago. They can determine the similarities and differences between ancient people and those of the present day.

Brain size is investigated by anthropologists. Endocasts of skulls are made. The size of the brain is measured from the cast. Brain size can be related to the kinds of primitive tools found with the skeletal remains. The larger the brain, the more complex the tools.

Anthropologists also study present day cultures. This helps to understand people around the world.

Burial sites have many valuable objects which were placed in graves. Pottery, jewelery and statues from graves help in the study of the culture.

Animal bones and plant remains at the living sites can be examined to determine the kinds of food eaten. The kinds of plant and animal remains can be studied to learn if they were wild or domesticated.

Paleontologists study prehistoric animals and plants. Fossils of plants and animals are found in sedimentary rock.

Fossils help determine the age of rocks in which they are found. They also tell whether the rocks were formed on land or under water. If the rock contains marine animals, it was formed under water.

Nutrition

Protein Foods

meat: beef, veal, pork, lamb
game: rabbit, venison, squirrel,
poultry: chicken, turkey, duck, goose, squab,
eggs game birds: duck, goose, pheasant, quail,
dove seafood: fish, clams, oysters, crab, lobster,
scallops, shrimp
nuts: almonds, cashews, pistachios, pecans,
macadamias, Brazil, hazel, chestnuts,
coconuts
seeds: sunflower, pumpkin, sesame, anise,
poppy, caraway
legumes: dried beans, peas, limas, kidney, black-
eyed peas, soybeans, peanuts

Dairy Products: milk, cheese, yogurt,
cottage cheese, cream, ice cream
butter,

Fruit:
citrus: oranges, grapefruit, tangerines, limes,
lemons, tangelos
from trees: apples, peaches, pears, apricots,
nectarines, plums, cherries
from bushes: blueberries, raspberries,
blackberries, currents, gooseberries
from vines: strawberries, grapes, pumpkins,
watermelons, cantaloupes, honeydews,
kiwis
from other plants: pineapple, bananas
fruits considered vegetables: eggplant, peppers,
squash, okra, cucumber, tomatoes, olives

Vegetables:
roots: potatoes, sweet potatoes, beets,
onions, turnips, radishes, carrots
stems: asparagus, celery, rhubarb
leaves: cabbage, lettuce, spinach,
turnip greens, kale, collards, parsley,
Brussels sprouts
flowers: broccoli, cauliflower
seeds: peas, corn, string beans, mung
beans, soybeans

Grains:
wheat, oats, rice, rye, millet, barley,
buckwheat made into cereal or flour for bread,
pasta, cookies, cake

Fats:
vegetable :olive oil, corn oil, soybean oil,
safflower oil, coconut oil, sunflower
oil.sesame oil, cotton seed oil, canola oil,
peanut oil
animal: lard, butter,

tallow Sugar:
refined sugar, brown sugar, honey, maple
syrup, sorghum

Nutrition

protein foods

dairy products

fruit

vegetables

grains

fats

sugars

Nutritional Needs

Water
There is water in every living organism. The human body is about 65 % water. The body of a mouse is about 65 % water. A tomato is about 95 % water.

Water is essential to life. Foods are dissolved in solutions within the living organism.

Nutrients from digested foods are transported throughout the living system in liquids such as blood which is mostly water.

Chemical reactions take place in liquids within the organism. This transforms nutrients into energy or into substances which maintain growth and function.

Water removes the dissolved wastes which result from the conversion of food into energy or for the process of growth.

Humans need 2 1/2 quarts of water per day. A large apple tree requires 95 gallons of water per day in summer.

Minerals
Minerals are essential for maintenance and growth of living organisms.

Humans require calcium to maintain and build bones and teeth as well as to clot blood.

Iron is essential for hemoglobin in the blood. Hemoglobin enables oxygen to be carried from the lungs to all of the body's cells.

Other essential minerals are magnesium, phosphorus, iodine, potassium, sodium, sulfur, zinc, copper, chromium and fluoride compounds.

Vitamins
Small amounts of chemical compounds called vitamins are essential for health. They aid the chemical conversion of food into energy.

Five vitamins are produced in the human body. The other 8 vitamins are obtained from foods or from vitamin pills. All of the vitamins are essential every day.

Energy
Every living organism needs energy to stay alive and to grow. Humans obtain energy primarily from carbohydrates, fats and protein foods.

Energy is measured in calories. More calories are required for larger bodies. The greater the activity such as work or exercise, the more calories are needed. Children need more energy for growth.

To maintain body temperature in cold weather, more energy is required.

Fiber
The digestive system requires fiber to be able to function properly.

Fiber is found in foods such as fruits, vegetables and grains. It is essential that these foods be eaten every day to preserve one's health.

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Nutritional Needs

Water

Minerals

Vitamins

Energy

Fiber

Terms Related to Time

semester	**6 months**	**1/2 year**
trimester	**3 months**	**1/4 year**
bimensal **bimenstrial**	**2 months**	**1/6 year**
centennial	**pertaining to the completion of 100 years**	
bicentennial	**pertaining to the completion of 200 years**	
sesquicentennial	**pertaining to the completion of 150 years**	

decade

century

millennium

10 years

100 years

1000 years

Before Christ B.C.

Anno Domini A.D.

1st century **A.D.**
2nd century **A.D.**
3rd century **A.D.**
4th century **A.D.**
5th century **A.D.**
6th century **A.D.**
7th century **A.D.**

8th century **A.D.**
9th century **A.D.**
10th century **A.D.**
11th century **A.D.**
12th century **A.D.**
13th century **A.D.**
14th century **A.D.**

15th century **A.D.**
16th century **A.D.**
17th century **A.D.**
18th century **A.D.**
19th century **A.D.**
20th century **A.D.**
21st century **A.D.**

35th century **B.C.**
34th century **B.C.**
33rd century **B.C.**
32nd century **B.C.**
31st century **B.C.**
30th century **B.C.**
29th century **B.C.**

28th century **B.C.**
27th century **B.C.**
26th century **B.C.**
25th century **B.C.**
24th century **B.C.**
23rd century **B.C.**
22nd century **B.C.**

21st century **B.C.**
20th century **B.C.**
19th century **B.C.**
18th century **B.C.**
17th century **B.C.**
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15th century **B.C.**

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