MONTANA ANCIENT TEACHINGS
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MONTANA ANCIENT TEACHINGS
Curriculum Connections

Theme Content Description
(By Lesson and Arch Activity)

THEME 1. ANCIENT TEACHINGS IN ARCHAEOLOGY

1A What Is Archaeology?

Arch Activity: The Mystery of the Missing Pages

Science—scientific process of drawing conclusions
Writing—write the missing pages
Reading—read text to solve a mystery, deduction

1B How Is Archaeology Connected to the Present?

Arch Activity: Past Times

History—historical events
Math—measurement, range, subtraction, and addition
Writing—similarities and differences

1C How Do Archaeologists Find and Study Archaeological Sites?

Arch Activity: Site in a Box

Science—excavation process
Writing—descriptive
Math—metric measurement
Critical Thinking—describe a culture

1D Why Do We Preserve and Protect Archaeological Sites?

Arch Activity: The Importance of the Past

History—culture
Writing—sentence response to questions

THEME 2. ANCIENT ORIGINS AND PEOPLE

2A What Is the Earth's Ancient Origin?

Arch Activity: Continent Connection

Science—plate tectonics
Geography—location and coordinates
Writing—paragraph structure
Arts—create Pangaea (paper)

Arch Activity: Wheeling Through Time

Science—geology, geologic time scale
Writing—sentence comparisons

Arch Activity: Fossil Imprints

Science—paleontology and fossils
Writing—detailed creative story of fossil's past
Arts—create a fossil (plaster and paint)

2B What Were the Environmental Conditions of the Human Past?

Arch Activity: Glacial Gutters

Science—glaciation
Writing—sentence comparisons
Arts—illustrate differences

Arch Activity: Rising Waters
Science—ice ages, water
Writing—paragraphs

2C How Did Humans Arrive in North America?
Arch Activity: Humans on Earth
History—anthropology and culture
Math—time, geologic scale, millions, and billions
Writing—sentences
Science—geology

2D Who Are Montana's Ancient People?
Arch Activity: Buffalo Jump (Using the Land as a Tool)
History—anthropology and culture
Communication—presentations
Arts—displays/dioramas
Critical thinking—analyze an event

Arch Activity: Montana Indian Cultures
History—culture
Writing—letters of request
Geography—land and water features

THEME 3. ANCIENT TECHNOLOGY

3A What Is Ancient Stone Technology?
Arch Activity: Tool Time
Science—technology
History—tradition and change
Writing—comparisons

3B What Non-stone Materials Were Used for Ancient Technology?
Arch Activity: Tool Time II (Antler and Bone)
Science—technology
History—tradition and change
Writing—comparisons

3C What Technology Did Ancient People Use to Harvest and Process Plants?
Arch Activity: Making Pemmican
History—cultural heritage
Science—technology and foods
Math—fractions

3D What Ancient Technology Assisted in Food Preparation?
Arch Activity: Ancient Pottery
Science—technology
History—culture
Arts—create pottery

3E How Was Ancient Art Created?
Arch Activity: Ancient Artists
Science—rock art
Writing—symbols, definitions, and creative writing
Communication—commercials
Arts—create illustration

3F How Do Archaeologists Analyze and Date Ancient Technology?
Arch Activity: Determining the Age of Artifacts
Science—physics
Math—calculations

THEME 4. ANCIENT SUBSISTENCE

4A What Plants Did Ancient People Use?
Arch Activity: Surviving the Wilds
Science—technology
History—culture
Writing—chart comparison

4B What Animals Did Ancient People Eat, and How Did They Hunt Their Prey?
Arch Activity: Stone Tool Measuring
Math—metric measurement
Science—stone technology
Writing—diagrams

4C What Cooking Methods Did Ancient People Use?
Arch Activity: What's on the Menu?
Science—diet and health
Writing—charts

THEME 5. ANCIENT SHELTER

5A What Shelter Was Most Popular Among Ancient People?
Arch Activity: Make a Tipi
Math—construction
Arts—design and paint

5B Besides Tipis, What Other Types of Shelters Did Ancient People Use?
Arch Activity: Construct a Cave
Arts—make papier maché

Curriculum Content Description
(By Arch Activity)

1. Communication Arts

Writing

Activity 1A. Mystery of the Missing Pages	Replacement of missing pages
Activity 1B. Past Times	Similarities and differences
Activity 1C. Site in a Box	Descriptive writing
Activity 1D. The Importance of the Past	Sentence response to questions
Activity 2A. Continent Connection	Paragraph structure
Activity 2A. Wheeling Through Time	Sentence comparisons
Activity 2A. Fossil Imprints	Creative story writing
Activity 2B. Glacial Gutters	Sentence comparisons
Activity 2B. Rising Waters	Paragraphs
Activity 2C. Humans on Earth	Sentences
Activity 2D. Montana Indian Cultures	Letters of request
Activity 3A. Tool Time	Comparisons
Activity 3B. Tool Time II	Comparisons
Activity 3E. Ancient Artists	Symbols, definitions, and creative writing
Activity 4A. Surviving the Wilds	Chart comparisons
Activity 4B. Stone Tool Measuring	Diagrams
Activity 4C. What's on the Menu?	Charts

Reading

Activity 1A. Mystery of the Missing Pages	Read text to solve mystery

Critical Thinking

Activity 1C. Site in a Box	Describe a culture
Activity 2D. Buffalo Jump	Analyze an event

Communication

Activity 2D. Buffalo Jump	Presentations
Activity 3E. Ancient Artists	Commercials

2. History and Geography

History

Activity 1B. Past Times	Historical events
Activity 1D. The Importance of the Past	Culture
Activity 2C. Humans on Earth	Anthropology and culture
Activity 2D. Buffalo Jump	Anthropology and culture
Activity 2D. Montana Indian Cultures	Culture
Activity 3A. Tool Time	Tradition and change
Activity 3B. Tool Time II	Tradition and change
Activity 3C. Making Pemmican	Cultural heritage
Activity 3D. Ancient Pottery	Culture
Activity 4A. Surviving the Wilds	Culture

Geography

Activity 2A. Continent Connection	Location and coordinates
Activity 2D. Montana Indian Cultures	Land and water features

3. Arts

Activity 2A. Continent Connection	Create Pangaea (paper)
Activity 2A. Fossil Imprints	Create a fossil (plaster and paint)
Activity 2B. Glacial Gutters	Illustrate differences
Activity 2D. Buffalo Jump	Displays/dioramas
Activity 3D. Ancient Pottery	Create pottery (clay)
Activity 3E. Ancient Artists	Create illustration
Activity 5A. Make a Tipi	Design and paint
Activity 5B. Construct a Cave	Make paper maché

4. Math

Activity 1B. Past Times	Measurement, range, addition, and subtraction
Activity 1C. Site in a Box	Metric measurement
Activity 2C. Humans on Earth	Timeline, scale, millions, and billions
Activity 3C. Making Pemmican	Fractions
Activity 3F. Determining Artifact Age	Calculations
Activity 4B. Stone Tool Measuring	Metric measurement
Activity 5A. Make a Tipi	Construction

5. Science

Activity 1A. The Mystery of the Missing Pages	Scientific method, conclusions
Activity 1C. Site in a Box	Excavation process
Activity 2A. Continent Connection	Plate tectonics
Activity 2A. Wheeling Through Time	Geology, geologic time scale
Activity 2A. Fossil Imprints	Paleontology and fossils
Activity 2B. Glacial Gutters	Glaciation
Activity 2B. Rising Waters	Ice Ages, water
Activity 2C. Humans on Earth	Geology
Activity 3A. Tool Time	Technology
Activity 3B. Tool Time II	Technology
Activity 3C. Making Pemmican	Technology and foods
Activity 3D. Ancient Pottery	Technology
Activity 3E. Ancient Artists	Technology and art
Activity 3F. Determining Artifact Age	Physics
Activity 4A. Surviving the Wilds	Technology
Activity 4B. Stone Tool Measuring	Stone technology
Activity 4C. What's on the Menu?	Diet and health

MONTANA ANCIENT TEACHINGS
Glossary for Teachers
(compiled by Mark Baumler, State Archaeologist)

A

absolute dating

Determination of age on a specific time scale, as in years Before Present (B.P.) or according to a fixed calendrical system (e.g. A.D. 1543). Contrast with relative dating. [Lessons 1C, 4D]

adapt/adaptable

The ability to adjust to your surroundings or environment and to changes that may occur in them over time and space. Humans adapt to the natural environment through their culture. [Lesson 5C]

agriculturalist

A farmer; one who is skilled in the planting, growing, and harvesting of domesticated plants. [Lesson 4A]

amino acid dating

A method of absolute dating to determine how old a bone is by measuring the amount of decay of protein molecules in the bone. A newer and less accepted method than radiocarbon dating. [Lessons 3F, 4D]

amphibian

Animals that can live either in water or on land, for example, frogs. [Lesson 2A]

analyze

To study something critically and objectively in order to identify its parts and understand their relationships to one another; scientific method; logical thinking. [Lesson 1C]

ancestor

A family member from the distant past, usually several or many generations ago; forefather or foremother. [Lesson 1A]

ancient

Very old; of the distant past. [Lesson 1A]

animal skin pouch

A wrapping of animal hide used to cover meat during cooking on hot stones in excavated pits. [Lesson 4C]

Antiquities Act of 1906

The first national law passed in the United States to protect archaeological sites on public land. Made it illegal to disturb archaeological sites on federal land without a special "antiquities" research permit. [Lesson 1D]

anthropology

The study of humankind, living and extinct, from a holistic biological, behavioral, and cultural perspective. Anthropology is divided into four sub-fields: physical anthropology, cultural anthropology, linguistics, and archaeology. [Lesson 2C]

archaeological research team

A group of scientists and other specialists working together on an archaeological project or site, often including archaeologists, geologists, botanists, zoologists, Native American traditionalists, and others. [Lesson 3F]

archaeologist

A person who studies the human past through archaeology. [Lesson 1A]

archaeology

The scientific study of the human past. Archaeology involves the analysis of the sites and material remains (artifacts) of prehistoric and historic cultures to determine cultural chronology, past lifeways, and the processes that underlie human behavior. Archaeology is a sub-field of the discipline of anthropology. [Lesson 1A]

Archaic or Middle Prehistoric Period

(6000 B.C.–A.D. 500) A term used by Montana archaeologists to refer to the period of time in Montana prehistory from about 8,000 to 1,500 years ago. During this period, prehistoric people hunted a wide range of large and small animals with the atlatl and also gathered many different kinds of wild plants for food and medicine. Most archaeologists believe that Archaic peoples lived a less-specialized hunting and gathering life than those before and after. [Lessons 1A, 2D]

artifact

Any object made or used by people or showing human workmanship. Also known as "material culture." Most prehistoric artifacts in Montana were crafted from natural materials such as stone, bone, wood, and clay. Historic artifacts include glass and metal. [Lesson 1A]

astronomy

The science of the material universe beyond our atmosphere—or "outer space." Astronomers, scientists of astronomy, have theories for how the earth and our galaxy were formed billions of years ago. [Lesson 2A]

An Aztec term meaning "spear-thrower." The atlatl is a sophisticated compound hunting weapon system consisting of a wooden throwing stick or launcher used to propel a long dart tipped by a stone point. The throwing stick functions like an extension of the arm, providing more thrusting leverage. [Lessons 2D, 3A, 4B]

A hand-held drilling tool often used by archaeologists to bore small holes in the ground of an archaeological site to determine the presence of buried artifacts and evaluate the potential of excavating the site. [Lesson 1C]

awl

A bone (or stone) tool tapered to a point. Used to pierce holes or make decorations. [Lesson 3B]

B

balsamroot

(Balsamorhiza sp.) A native plant of recorded use by Montana historic tribes for food, medicine, and ritual. Found in prehistoric sites as well. Different parts of the plant (root, flower stem, leaves, seeds) were used for different purposes and at different times of the year. [Lesson 3C]

bands

In anthropological terms, "bands" refers to generally small, cooperating, kin-based groups (family groups) of perhaps 50 or fewer individuals. Thought to be the typical size group of nomadic prehistoric hunters and gatherers. Related bands may have met annually in larger tribal gatherings and communal hunts. [Lesson 2D]

basalt

An igneous (volcanic) rock of a dark, often black color. Fine-grained basalt was often used for the making of stone tools by prehistoric "flintknappers." [Lesson 3A]

baskets

A container made of interwoven (i.e. by weaving) plant fibers and other materials. Baskets were used to store and carry foods and could be made waterproof to also transport water. Baskets, although probably common among prehistoric Montana hunter and gatherer groups, do not preserve well over time and rarely are found by archaeologists outside of special sites, such as dry caves. [Lesson 3B]

Beringia/Bering Land Bridge

A wide, low strip of land that connected the Old World (Russian Siberia) with the New World (Alaska) during glacial periods of the Ice Age when sea levels were lower. A possible route of first human entry into the New World, Beringia is now covered by the shallow Bering Sea. [Lesson 2C]

Big Bang

Theory held by most astronomers that a giant explosion created the universe over 18 billion years ago. [Lesson 2A]

biographical style

A style of rock art common between A.D. 1750 and 1900 (Protohistoric/Historic period) during which scenes depicting actual events in the life of an individual or group were drawn, such as a major battle, horse stealing, or a significant ceremony. This kind of rock art may be "read" like a picture-story. [Lesson 3E]

bison

Buffalo; a large horned animal that lives in herds and grazes, resembling an ox but larger and more powerful. Bison were a regular food source for many Montana people from the earliest times to the historic period when the buffalo were hunted almost to extinction. [Lesson 4B]

bitterroot

(Lewisia rediviva) Montana's state flower and a native plant of major use by some Montana tribes, particularly in the west, as a food and medicine source (roots). [Lessons 3C, 4A]

blade and core

A sophisticated stone tool manufacturing technology involving the regular production of long, narrow flakes (blades) from a prepared piece of lithic raw material (core). The blades could be used as is for cutting tools or as blanks for the manufacture of other types of stone tools. [Lesson 3A]

blood residue

If preserved, dried blood on the edges of prehistoric stone tools can be analyzed to determine what animal the tool was used to kill, butcher, or eat. [Lesson 3F]

botanists

Scientists who study plants. Botanists can identify the species of a plant from its seeds and other parts that might be preserved in an archaeological site. [Lessons 3F, 4D]

bow and arrow

In prehistory, a hunting and weapon missile system involving the propulsion of a feathered, stone-tipped wooden shaft (arrow) from a high-tension stringed, curved piece of wood (bow). Although wooden pieces of prehistoric bows and arrows have been found in some caves, the primary preserved artifact of the bow and arrow is the small, chipped stone projectile point ("arrowhead") that once tipped the arrow. Small points become common after about 2,000 years ago (Late Prehistoric period), suggesting that this is when the bow and arrow was used in Montana. [Lessons 2D, 3A, 4B]

Bronze Age

A period of time in Old World prehistory referring to the early widespread adoption and use of bronze metallurgy, involving the smelting of copper and tin. In Europe, refers to the period between about 2500 B.C.–1000 B.C. [Lesson 2C]

buffalo drives and jumps

A method of hunting bison involving the controlled movement of the buffalo herd to a place where the animals could be stampeded over a cliff and killed (see below, "pishkin"). In Montana, became common after A.D. 200 in the Late Prehistoric period. Represented in the archaeological record by lines of stone piles (see below, "drive line") leading to a cliff edge, at the base of which can be found the bones of many butchered bison (bone bed). [Lessons 2D, 4B]

butchering knives

In prehistory, stone tools used to butcher and prepare meat for cooking and eating. A stone butchering knife may be a hafted bifacially-worked (chipped on both faces) tool or a simple flake with a sharp edge. [Lesson 3A]

C

cairns

Rock piles or stacked piles of rocks. A common archaeological feature in Montana that may be a result of various different activities: a land marker for trails; a place to store meat or other valuable items (i.e. a "cache"); part of a buffalo jump (see below, "drive line"); or a memorial or burial place. [Lesson 2C]

calories

Energy obtained by eating food; the unit of heat or energy produced by any food substance. A person's age, body size, and activity level creates the need for different amounts of calories to survive. [Lesson 4A]

camas

(Camassia quamash) An important wild plant food for prehistoric and modern tribes, particularly those in western Montana (Salish-Kutenai people) where the plant is abundant. The root or bulb is edible and harvested with a "digging stick" (see below) in the spring and early summer. [Lessons 3C, 4A]

carbohydrates

A substance (such as sugar, starch, or cellulose) found in plants and composed of carbon, hydrogen, and oxygen. Important in human diet. Roots of wild plants such as camas, bitterroot, biscuitroot, and Indian breadroot provided carbohydrates for prehistoric people. [Lesson 4A]

carbon-14

Unstable radioactive isotope of carbon (see: radioactive element) found in small amounts in all living things. At death, carbon-14 is no longer absorbed by living things. The decay of radioactive carbon-14 to stable nitrogen-14 occurs at a constant rate (see: half-life) and is used to determine the age of organic materials, or how long ago they died (see: radiocarbon dating). [Lesson 3F]

carbonized

Burnt or turned to charcoal and ash. Seeds and other plant materials that have been carbonized in a fire may survive for a long time and be found in archaeological sites. Carbonized remains may be radiocarbon dated, or they can be studied to identify the species of plants used by prehistoric people. [Lesson 4D]

Cartesian coordinate system

Two- or three- dimensional graph (x, y, z) based on intersecting perpendicular lines or planes. Used by archaeologists to establish grids for the excavation of archaeological sites to keep track of the location ("provenience") of discovered artifacts and features. [Lesson 1C]

caves

A chamber hollowed out of rock horizontally by natural or human processes. Natural caves provided ready-made shelter for prehistoric people but probably were not their primary places of habitation. [Lesson 5B]

chemical composition

The make-up or parts of an object. In archaeology, the chemical composition of artifacts such as obsidian stone tools can be determined and used to identify where the material comes from (see: obsidian sourcing). [Lesson 3F]

chert

A hard glassy type of rock often sought by flintknappers to use for making stone tools. Sometimes referred to as "flint." Chalcedony, jasper, and agate are also kinds of chert. [Lesson 3A]

chronology/chronological

Time-line; an arrangement of events in the order in which they occurred. [Lessons 2A, 3A, 3F]

clan symbol

A motif or other design that identifies a group of people, such as a flag or badge. Some archaeologists believe that rock art may have served in part as a clan symbol for prehistoric groups. [Lesson 3E]

coiling

To wind in rings to make a spiral shape. Ancient hand-made pottery was made by coiling strings of moistened clay together. [Lesson 3D]

composition

The make-up or parts of a whole. Archaeologists speak of the composition of a group of people as being if and how many men, women, and children there are. The composition of an archaeological site consists of what kinds and how many artifacts and features there are at the site. Used to compare and contrast similar and different sites. [Lesson 5C]

conical

Having the shape of a cone. Tipis are conical shelters. [Lesson 5A]

context

Setting; looking at something in relation to the things around it; the relationship among artifacts and other remains of human activity found at a site, as well as their place in the larger patterns of history or prehistory. It is important to the interpretation of an artifact or a site that its context remain undisturbed. [Lesson 1C; Lesson 1D]

continental crust

The outer layer of the earth's surface on land or continents. [Lesson 2A]

Continental Divide

The place on the continent where water flows on one side to the east, and on the other side to the west. The Rocky Mountains in Montana form part of the North American Continental Divide. [Lesson 4B]

continental drift

The geological scientific theory that the earth's surface is made up of major and minor crustal plates that are constantly moving laterally over time. Where two plates join, there are often mountain ranges built and sometimes earthquakes occur (see: plate tectonics; Pangaea). [Lesson 2A]

cordage

String, rope, or yarn (cord) produced by twisting or braiding several strands of plant fiber together. Cordage and other non-carbonized organic materials are rarely preserved in most archaeological sites, but are sometimes found in cave sediments. [Lessons 3B, 4A]

Cordilleran

Term used to identify the montane glacial ice sheet that covered the northern Rocky Mountains during the Ice Age. [Lesson 2B]

core

Center or source. In geology, the core of the earth is thought to consist of hot molten rock [Lesson 2A]. In stone tool making technology, a core refers to a piece of stone from which smaller pieces of stone ("flakes") are struck off to form a tool; sometimes the flakes themselves are used as tools. [Lesson 3A]

corridor

Passageway or path. Based on the study of geological sediments, many archaeologists believe there was an ice-free corridor between the Cordilleran and Laurentide ice sheets on the eastern front of the Rocky Mountains at some periods during the Ice Ages. This passageway would have allowed the earliest prehistoric people to migrate south from Alaska, through Canada, and into Montana (see: Beringia; Cordilleran; Laurentide; Rocky Mountain Front). [Lesson 2C].

counting coup

The act of successfully striking one's enemy and getting away, not so much as to hurt them, but to embarrass them and gain honor for bravery. From the French "coup": to strike a blow. Common among Plains Indian tribes observed by historic travelers and thought to be depicted in some prehistoric and historic rock art. [Lesson 3E]

covering

Anything that covers or wraps over something. Buffalo hides were used as coverings for tipi shelters. [Lesson 5A]

cribbed log structure

Lodge made of logs and poles laid horizontally and stacked three or four feet high. Probably used hides or brush for a roof. Often five-sided (see: pentagonal). [Lesson 5B]

culture

The shared, learned way of life of a group of people expressed by their common beliefs, values, and behavior. Archaeologists—who cannot observe people directly—often use the term "culture" to refer to patterns of traits in artifacts, features, and sites that suggest a shared way of life in a particular place during a time period— known as an "archaeological culture." [Lesson 1B]

D

data sheet

Forms for the recording and organizing of "data" (information from observations) about an artifact, feature, or site. The kind of data recorded on a data sheet might include, for example, the location and depth of an artifact excavated from an archaeological site, or the written description and measurements of an artifact analyzed in the laboratory. Serves as the basis for study, interpretation, and discussion. [Lesson 1C]

dendrochronology

(*dendro* = tree; *chrono* = time; *ology* = study of.) Also known as "tree ring dating": determining the age of a tree by counting its annual growth rings. [Lessons 3F, 5C]

digging stick(s)

Special digging tools made of wood and/or antler used to uproot wild plants to harvest their roots and bulbs. [Lessons 3C, 4A]

"Dog Days"

Term used by some Montana Native Americans to refer to the time before the use of the horse (pre-A.D. 1750), when dogs were used to pull the travois. [Lessons 2D, 5A]

drive line

A line of rock piles ("rock alignment") leading to a buffalo jump. Often found in pairs to create a converging funnel towards a cliff, i.e., "drive line." The piles may once have held sticks and hides to scare the buffalo, or been covered with the smell of predators, or been given magic by shamans, or simply been used by hunters in determining where to steer the buffalo herd towards the jump. (See: buffalo drives and jumps.) [Lesson 4B]

drying rack

A framework of wood used to dry strips of raw meat in the sun to preserve it for later use, like " beef jerky." [Lesson 4C]

E

Early Prehistoric Period

see: Paleoindian/Early Prehistoric Period.

ecofact(s)

The non-artifactual, natural remains found at archaeological sites such as seeds, animal bones, and plant parts. Along with artifacts, ecofacts help archaeologists to reconstruct the way of life of prehistoric people and the environmental conditions of the past. [Lessons 1A, 4D]

An image or representation of a figure, whether it is human or another animal. [Lesson 3B]

era

A period of time, generally hundreds, thousands, or millions of years, known for some characteristic or event; for example, *prehistoric era*: the time before written history. [Lesson 2C]

Positive values or moral principles to live by. [Lesson 1C]

ethnobotany

The knowledge and study of traditional plant use, or how people from different cultures learn about and use plants today. [Lesson 4A]

ethnographer/ethnography

An anthropologist who makes a written description of a culture based on firsthand observations of and interaction with living people; part of cultural anthropology. [Lessons 1C, 5A]

ethnographic analogy

Inferring or reconstructing the use or meaning of an ancient site or artifact based on information from ethnographic sources. [Lesson 1C]

evolution

The slow transformation of living organisms over time. Some anthropologists liken human culture to a living organism and also speak of "cultural evolution." [Lesson 2A]

excavate/excavation

To dig; in archaeology, to dig systematically and carefully by removing layers of earth to expose, record, and recover buried artifacts and features. [Lesson 1C]

excavated pit

Pit created by excavating the soil (i.e. digging). Used in a variety of ways by prehistoric people, including cooking, storage, and disposal. Excavated pits were commonly used as ovens in Montana prehistory. [Lesson 4C]

exoskeleton

Hard outer shell; external hard supporting structure such as scales and nails. [Lesson 2A]

experimentally replicated

A means of aiding the study of archaeological artifacts and features by attempting to duplicate or recreate the artifact or feature today in an experiment; for example, modern flintknappers. [Lesson 1C]

extinct

No longer existing or active; died out or ended. [Lesson 2A]

F

fauna

A collective term for the animals of any geographical region or geological era. [Lesson 2A]

faunal analysis

The study of animal remains from an archaeological site to understand past hunting and dietary practices, as well as the environmental conditions at the time of the site occupation. (See: zoologist.) [Lesson 4D]

feature

A non-portable, built-in part of a site; for example, a living floor, a roasting pit, a tipi ring, or a post hole. [Lesson 1A]

figure content

Method of dating rock art by comparing designs within a given cross dating area, assuming that similar designs were made during the same period of time. [Lesson 3F]

fire drill

In archaeology, a fire drill is a wooden stick for making fire by rapidly spinning it in a wooden block with a hollow; the hollow holds tinder that will ignite from friction. [Lesson 4C]

fire hearth

An open fire, sometimes surrounded by rocks, for cooking and providing warmth. Can be recognized at an archaeological site by burnt earth, charcoal, ash, and/or fire-cracked rock. [Lesson 4C]

flexible

Bendable; able to adjust and change as necessary. (See: adapt/adaptable.) [Lesson 5C]

flintknapper

One who is capable of flintknapping. [Lesson 3A]

flintknapping

The art and skill of making chipped stone tools. Sometimes simply referred to as "knapping" to emphasize that stones besides flint could be used to create chipped stone tools (e.g. obsidian, basalt, quartzite, etc.). [Lesson 3A]

flora

Plants native to a particular geographical area or geological era. [Lesson 2A]

floral analysis

The analysis of preserved plant remains (especially carbonized seeds and stems) from an archaeological site to understand the plant collecting and cooking behavior of prehistoric people, as well as the environmental conditions at the time the site was occupied. Sometimes referred to as "paleoethnobotany." [Lesson 4D]

flotation

The use of fluid suspension to recover tiny plant and bone fragments that float to the top when samples of archaeological sediments are put in water. [Lesson 4D]

A group of wild plants, predominantly herbs, but not grasses. Many forbs were used as food and medicine, or in rituals by prehistoric people of Montana. [Lesson 4B]

The remains or imprints of plant or animal life from a previous geological period, preserved in rock formations. Paleontologists study fossils, for example, dinosaur bones. Archaeologists study artifacts and ecofacts, most of which in Montana are not old enough to have become fossils. [Lesson 2A]

G

generations

A step in a family history (genealogy) that includes individuals born about the same time (siblings and cousins). The average time of a generation for humans is about 25 years. Assuming people first came to Montana 12,000 years ago, there have been about 480 generations of people living here to the present. [Lesson 2D]

geographers

Scientists who study the earth's form and its physical divisions into seas, rivers, mountains, plains, etc. [Lesson 3F]

geologic time scale

The chronology or order of events in the geologic history of the earth, represented by the strata (layers) of rock. The geologic time scale is very long (over 2 billion years) compared to the archaeological time scale for humans, which goes back to a few million years ago. [Lesson 2A]

geologist

A scientist who studies geology. [Lessons 3F, 4D]

geology

The science that deals with the origins and history of the earth and its life as recorded in rock layers. [Lesson 2A]

glacials

The times in the earth's history of lower annual temperatures and increased ice formation when many glaciers formed in the mountains and on land. Geologists estimate that there have been at least 17 glacial periods in the last million and a half years. Humans are thought to have arrived in the New World from the Old World at the end of the last glacial, about 12,000 years ago. (See: interglacial.) [Lesson 2B]

glacier

A large mass or sheet of ice formed from snow that accumulates and does not melt. Glaciers move slowly down slopes and valleys from mountains or spread outward on land surfaces during glacial periods. [Lesson 2B]

Great Basin

The large geographic region in the western United States typified by linear mountain ranges, internally drained valleys, and desert. Encompasses Nevada, eastern California, southeastern Oregon, southern Idaho, and western Utah. The Great Basin is thought to represent a culture area and homeland of Shoshonean groups. [Lesson 3D]

grid

A network of uniformly spaced horizontal and perpendicular lines like graph paper (x-axis, y-axis) used to keep track of artifact locations across space. Archaeological site excavations often use a metric grid oriented to the Cartesian coordinate system, i.e. north-south and east-west. [Lesson 1C]

H

habitation

Home; a dwelling or residence place. [Lesson 5C]

hafted

Joined or attached to another object, as a stone knife to a bone handle or a stone projectile point to an arrow. [Lesson 3A]

half-life

The period of time required for one-half of the quantity of a radioactive isotope to decay and form a stable element, as in the decay of carbon-14 to nitrogen-14. A statistical constant (approximately 5,700 years) that provides the measurement scale for radiocarbon (carbon-14) dating. [Lesson 3F]

hammerstone

Any stone (generally an unmodified cobble) used to strike off flakes from a core to make stone tools. (See: flintknapping.) [Lesson 3A]

hand-axe

A large chipped stone tool, bifacially flaked (flaked and shaped on both surfaces), generally with a rounded butt-end (held in the hand) and a pointed working end. Typical tool type of the Paleolithic period in the Old World after 500,000 B.P. [Lesson 3A]

hearth

See: fire hearth.

heat treatment

A technique of heating stone in a pit or hearth to make it easier to be flaked by a flintknapper in making stone tools. Chert was commonly heat treated before it was used to make projectile points. [Lesson 3A]

hematite

A reddish, iron-ore mineral (Fe_2O_3) found in nature as a crystal or in a red earthy form ("ocher") that was commonly used as pigment for body paint and in making pictographs. [Lesson 3E]

heritage

Legacy, tradition, or birthright; the past; something that is handed down from generation to generation. The right to free speech is part of the American heritage. [Lesson 1D]

hide containers

Bags or pots made of cured animal skins (hides) for use in cooking. (See: stone-boiling.) [Lessons 3-D, 4C]

hieroglyphics

Picture-writing; a system of writing using pictures or symbols to represent words, syllables, or sounds; used by the ancient Egyptians and translated by archaeologists. [Lesson 3E]

Historic Sites Act

A federal law passed in 1935 to provide a policy for the preservation of archaeological sites as well as historic buildings and objects "for the inspiration and benefit of the people of the United States." [Lesson 1D]

history

The study of the past through written records. In Montana, history follows "prehistory" as the time when Europeans first came and wrote about the people and events here, i.e. 1805 with Lewis and Clark. [Lesson 1B]

Holocene Epoch

The period of time on the geologic time scale from the end of the last glacial or Ice Age (see: Pleistocene) about 10,000 years ago through today; also known as the Recent. Almost all of the known archaeology of Montana belongs to the Holocene Epoch. [Lesson 2B]

Homo sapiens

The scientific genus and species names of modern humans. (Homo = "man"; "sapiens" wise.) [Lesson 2C]

household

Those who live or dwell under the same roof; a family; of or pertaining to home life, i.e. domestic. [Lesson 5C]

hunters and gatherers

People who depend on wild animals and plants for food to survive. Archaeologists believe that the early ancestors of all humans lived as hunters and gatherers. The people of Montana remained hunters and gatherers throughout prehistory. There are very few hunting and gathering societies left today. [Lessons 2C, 2D, 4A]

hydration rind

A thin band of water absorption that occurs around a stone tool or flake edge. As the band grows wider over time, it is theoretically possible to determine the age of a stone artifact by measuring the width of the band. Applied especially to obsidian artifacts. (See: obsidian hydration dating.) [Lesson 3F]

I

Ice Age(s)

The period of time when glaciers repeatedly expanded (see: glacials) and contracted (see: interglacials) across the earth's northern continents. There were probably several Ice Ages in Earth's long history. The most recent Ice Age began about 1.5 million years ago and ended 10,000 years ago (see: Pleistocene Epoch). [Lesson 2C]

igneous

Volcanic; formed by the extrusion of magma and activity of volcanoes. One of three major rock types studied by geologists (see: sedimentary; metamorphic). Basalt and obsidian are two igneous rocks that were often used by prehistoric people for making chipped stone tools. [Lesson 2A]

immigrate

Move into and make a new home; to come to a country or new land of which one is not a native and establish permanent residency. [Lesson 2C].

incised

Cut into; engraved; lines carved on an object with a sharp, strong edge. [Lesson 3B]

inhabited

Lived in; having inhabitants or people who occupy a place on a regular basis. [Lesson 1D]

inorganic

Non-living or non-biological, such as rock and minerals; not composed of plant or animal matter. [Lessons 1B, 3A]

interglacials

Warm periods between glacial periods. Interglacials cause the ice sheets and glaciers to melt and become smaller. Some geologists and paleoclimatologists believe that the Holocene or Recent Epoch is, in fact, an interglacial period and that the Ice Ages have not ended. Generally, glacials lasted longer than interglacials. [Lesson 2B]

invertebrate

An animal that lacks a spinal column, for example, an insect. [Lesson 2A]

Iron Age

A period of time in Old World prehistory referring to the early widespread adoption and use of iron metallurgy; in Europe between about 1000 B.C.–300 B.C. [Lesson 2C]

J

K

knapping

See: flintknapping.

L

Late Prehistoric Period

The period of prehistory in Montana from about A.D. 500 to the beginning of the proto-historic period about A.D. 1750. During this period, Montana prehistoric hunters and gatherers used the bow and arrow and many groups specialized in buffalo hunting. Horses were not yet in use during this period. [Lessons 1A, 2D]

Laurentide

Name given to the continental ice sheet during the Ice Ages that spread over north-eastern Canada and the northern United States from the Atlantic coast west to Alberta. In the last glaciation, the Laurentide ice sheet pushed the Missouri River south to its current course through Montana. [Lesson 2B]

laws

Rules passed by local, state, and federal government. There are several national laws concerning the protection of archaeological resources on federal lands and the Montana State Antiquities Act deals with archaeology on Montana state land. [Lesson 1D]

lean-to

A shelter with a single sloping roof, often made out of wood poles leaning against a rock outcrop. Probably represent temporary shelters. [Lesson 5B]

legacy

Bequest; something passed down and received from ancestors or predecessors of the past. (See: heritage.) [Lesson 1D]

legends

A story about the past passed on in writing or through story-telling (oral history) from generation to generation. Legends often cannot be verified and tell of both historical events and beliefs of a people. [Lesson 2D]

lichen

A slow-growing type of plant made up of an algae and a fungus growing together on a solid surface, such as a rock. Lichen on some rock features like tipi rings and cairns suggests that they are old, but exactly how old is difficult to determine. [Lesson 5C]

lifeway

Life; how a group of people in a society or a culture lives—including their subsistence, shelter, art, beliefs, etc. [Lesson 5A]

Of, relating to, or made of stone. (From the Greek, *lithos.*) [Lesson 3A]

looting

Robbing or taking illegally. In archaeology: excavating without a permit or permission, usually for private gain. (See: pothunter.) [Lesson 1D]

lump-modeled

In pottery-making technology, refers to the simple hand-shaping of a pot or other vessel from a single lump of clay (contrast with: coiling). [Lesson 3D]

M

magma

Very hot, molten rock in the earth's core that sometimes reaches the surface through fissures and then cools to become igneous rock; lava. [Lesson 2A]

mammal

Class of higher vertebrate animals that includes humans (class Mammalia). Characterized by mothers who nourish their young with milk from mammary glands and by skin that is usually covered, in whole or in part, with hair. [Lesson 2A]

(Spanish *mano* = hand) Grinding stone, specifically the hand-held smooth stone used to grind dried plants (like corn or wild plants) into flour on a grinding slab or "metate." [Lessons 3C, 4A]

mantle

Cover or cloak; in geology, it is the fluid layer of unconsolidated rock material that lies below the continental and oceanic crust and above the hot, molten core of the earth. [Lesson 2A]

mastodon

A general term given to various forms of elephant-like animals (order Proboscidea) that lived primarily between 30 and 10 million years ago. Gave rise to the elephants, including mammoths. The last direct descendant of the mastodons (genus *Mammut*)—a leaves-and-twigs browser sometimes hunted by Paleoindians— became extinct at the end of the Pleistocene epoch along with mammoths (genus *Mammuthus*) and other Ice Age megafauna. [Lesson 2B]

medicines

A substance or preparation used in treating illness or disease. Wild plants provided much of the medicine used by prehistoric people. [Lesson 4A]

megafauna

Large animals. Among Ice Age mammals, refers to those larger than 90 pounds in body weight, about the size of a wolf. Much of the megafauna in North America became extinct at the end of the Ice Age, including mammoths, mastodons, giant sloths, wooly rhinoceros, horses, and camels. Other megafauna, like bison, survived but evolved to a smaller size. [Lesson 2B]

Mesolithic

Middle Stone Age; a period of time recognized in Old World prehistory as the transition from the Paleolithic (Old Stone Age) to the Neolithic (New Stone Age). In Europe and the Near East, the Mesolithic occurs between about 10,000 B.C. to 5000 B.C. in most places. The period marks the transition from hunting megafauna to cultivating plants and animals (see: agriculture). Similar to the Archaic Period in the New World. [Lesson 2C].

metamorphic

In geology, one of three major types of rocks (see: igneous and sedimentary). Metamorphic rocks were once igneous or sedimentary rocks whose mineral structure is changed over long periods of time by pressure and heat. Quartzite is a metamorphic rock derived from sandstone. [Lesson 2A]

metate

(Spanish) Grinding slab or basin, usually with a flat or slightly concave surface. Used in conjunction with a "mano" to grind dried plants (e.g. corn) into flour for cooking. [Lessons 3C, 4A]

Middle Prehistoric Period

see Archaic or Middle Prehistoric Period.

microscope

A scientific instrument used for seeing very small objects that cannot be seen by the eye alone. Uses lenses to make enlarged images. Archaeologists sometimes use microscopes to examine the edges of stone tools and to identify small plant remains and pollen. [Lesson 4D]

microscopic

Very small; an object that can only be clearly seen under a microscope. [Lesson 3F]

midden

Trash area; in archaeology, middens are deposits of discarded artifacts and ecofacts such as food remains (bones, plants, shells) and broken stone tools. Like modern garbage dumps, middens are rich sources of archaeological objects. [Lesson 1A]

migration

A move out or away from one home to another, generally over a long distance. (See: immigration.) [Lesson 2C]

mobility

The capability and extent to which something moves; in archaeology, mobility refers to how often, when, and where prehistoric groups moved their homes. Archaeologists believe that most hunters and gatherers had "high" mobility, i.e. that they moved often (see: nomadic). [Lesson 1B]

N

natural trap

A natural place on the land where hunters could trap and surround animals and kill them; for example a dead-end canyon, a bog, a snow drift, or sand dunes. [Lesson 4B]

Neolithic

New Stone Age; a period of time recognized in Old World prehistory characterized by the early cultivation of plants (see: agriculture) and domestication of animals. Stone tools were still used as in the preceding Mesolithic and Paleolithic. The Neolithic begins as early as 8000 B.C. in the Near East, but later in Europe as agriculture spread across the continent. In North America, many Indian groups began using agriculture to grow food in the Late Prehistoric Period (after A.D. 500) and can be considered "neolithic"; however, in Montana, groups remained hunters and gatherers throughout prehistory. [Lesson 2C]

net

An open mesh of fabric or cordage twisted, knotted, or woven at regular intervals; thought to have been used by prehistoric people of Montana (especially western Montana) to catch fish. Pieces of nets are rarely preserved; however, sometimes Montana archaeologists find "net weights"—grooved stones used to hold down the nets in water. [Lesson 3B]

New World

Land in the Western Hemisphere: North, Central, and South America and the neighboring islands. A term first used by Europeans following the exploration by Christopher Columbus in the 16th century A.D. (See: Old World.) [Lesson 2A]

nomadic

Describes a group that moves regularly from place to place within a defined territory in order to obtain natural resources such as food, water, and stone. Hunters and gatherers are typically nomadic or semi-nomadic. (See: mobility.) [Lessons 1A, 2D, 4A]

non-perishable

Something that will not spoil or decay over time; generally inorganic. Stone is a non-perishable material that is often preserved at Montana archaeological sites. [Lesson 1B]

non-renewable

Does not recreate itself or come back once it is gone. Archaeological sites are considered non-renewable resources because once they are excavated by archaeologists or looted by pothunters, they are gone forever. All that remains are the artifacts and what information was recorded during excavation. [Lesson 1D]

O

obsidian

A glassy volcanic (see: igneous) rock formed from cooling lava under special conditions. Occurs naturally in limited areas, like Obsidian Cliff in Yellowstone National Park. Usually black and very shiny, obsidian was a prized stone for making sharp tools. [Lesson 3A]

obsidian hydration dating

The technique of dating how old obsidian artifacts are by measuring how much water has been absorbed along the fresh edges. (See: hydration rind.) [Lesson 3F]

occupation

Residential place; inhabitation; a place occupied or lived in by people (see habitation, inhabited). [Lesson 1C]

occupied

Lived in (see: inhabited). [Lesson 1D]

oceanic crust

The outer layer of the earth's surface under the oceans. [Lesson 2A]

Old North Trail

A trail or system of Indian trails that followed the eastern side of the Rocky Mountains (see: Rocky Mountain Front) from Canada through Montana and to the south. Described in some tribe's oral history stories. Remnants of old trails can still be seen along the Rocky Mountain Front, some of which may be part of the Old North Trail. [Lesson 2C]

Old World

Land in the Eastern Hemisphere; includes the continents of Europe, Asia, and Africa. The archaeological record of the Old World is much more ancient than that of the New World. Stone tools in Africa have been found that are over 2 million years old. Most archaeologists believe that the first humans traveled from the Old World to the New World along the Bering Land Bridge between 15,000 and 12,000 years ago during the Ice Age. (See: New World; Beringia). [Lesson 2A]

organic

Of or relating to living organisms (plants and animals). Organic artifacts include those made of wood, fibers, bone, horn, hide, etc. (See: inorganic.) [Lessons 1B, 3B]

origins

First beginnings; source; ancestry. [Lesson 2A]

P

paddle and anvil technique

Manufacturing technique for hand-made pottery to thin, shape, and smooth the walls of the pot by paddling the outside of the wall with a wooden paddle while holding your hand inside the pot to serve as an anvil or striking platform. [Lesson 3D]

Paleoindian/Early Prehistoric Period

(10,000 B.C.–6,000 B.C.) The initial and oldest period of prehistoric people in Montana and the rest of the New World. Begins with the end of the Ice Ages (see: Pleistocene) during which Paleoindians hunted now-extinct megafauna like mammoth. Sometimes referred to as the period of "Big Game Hunters," followed by the Middle Prehistoric Period (see: Archaic), when people ate a more varied diet of smaller animals and plants. Some authors also use the term "Paleoindians" to refer to all Indian people and ancestors before the time of history. [Lessons 1A, 2D]

Paleolithic

Old Stone Age. Term used to describe the earliest and longest period of hunters and gatherers in the Old World, beginning with the oldest known stone tools (see: pebble tools) over 2 million years old to the end of the Ice Age about 12,000 years ago. The Paleoindians who migrated to the New World were Late Paleolithic hunters and gatherers from the Old World. [Lesson 2C, 3A]

paleontology

The scientific study of the earth's history of all living organisms as revealed in fossils, including dinosaurs. Often confused with archaeology, the study of the human past as revealed by artifacts. [Lesson 2A]

palynologists

Scientists of palynology, the study of plant pollen. In some environments (lake sediments, bogs, caves), microscopic plant pollen can be preserved for hundreds of thousands of years. Different plant species can be identified by their unique shape and size of pollen. By determining what plants were growing at different times, palynologists can help archaeologists understand ancient environments and climates and how these changed over time during the Ice Ages. [Lesson 4D]

Pangaea

(Greek: "all land") The ancient "supercontinent" that existed over 200 million years ago in Earth's history before the continental plates moved apart, forming separate continents and oceans. [Lesson 2A]

Panthalassa

(Greek: "all sea") The ancient ocean that existed over 200 million years ago and surrounded the supercontinent known as Pangaea. [Lesson 2A]

parching tray

A woven basket, typically flat, used for drying seeds and other plant materials for use as food or medicine or in ceremonies. [Lesson 3D]

parfleche

(Canadian French: *"par"* = of, *"fleche"* = skin/hide) A small carrying case or bag made of rawhide, often with a strap. Used to transport food, clothing, and personal items. [Lesson 3B]

pebble tools

The oldest known Paleolithic stone tools, between 500,000 and over 2 million years old. Very simply made by striking one or two "flakes" from a "core" and using the flakes and/or the core as an all-purpose cutting, chopping, and scraping tool. Sometimes referred to as the "Oldowan Industry" from the first discoveries by the Leakeys at Olduvai Gorge in Africa.

pemmican

(Cree: *pimikan*) A mixture of dried lean meat pounded fine and mixed with fat and usually wild berries or other fruit. A traveling ration and one means of storing food over the winter months. Like dried beef jerky. [Lessons 3C, 4A]

pentagonal

Five-sided; a geometric form (polygon) with five angles and five sides. (See: cribbed log structure.) [Lesson 5B]

percussion flaking

A method of flintknapping ("knapping") involving the striking of a core with a stone, antler, or wooden percussor (i.e., "striker"; see: hammerstone) at the right place to remove or detach flakes. Most early stages of stone tool manufacture involved percussion flaking to roughly size and shape the tool. (See: pressure flaking.) [Lesson 3A]

periods

A time frame; a broad unit of time. Montana prehistory is divided up into three periods: *Paleoindian/Early Prehistoric Period* (10,000 B.C.–6000 B.C.), *Archaic/Middle Prehistoric Period* (6000 B.C.–A.D. 500), and *Late Prehistoric Period* (A.D. 500–A.D. 1800). Some major changes in prehistoric lifeways (technology, subsistence, and settlement) are thought to have occurred for each period. However, mostly these periods are simple divisions of time to help archaeologists order events and sites in time. (See: chronology.) [Lesson 2D]

perishable

Does not preserve; liable to decay or rot over time. Many artifacts and ecofacts originally made of organic materials (wood, bone, plant fibers, etc.) are perishable and will not preserve at most archaeological sites for very long. (See: non-perishable.) [Lessons 1B, 3B, 5B, 5C]

petroglyph

Rock art that is chiseled, pecked, or carved (see: incised) onto the stone. (See: pictograph.) [Lesson 3E]

photosynthesis

Chemical process by which plants are able to produce carbohydrates in chlorophyll-containing tissues exposed to sunlight. Oxygen (O_2), needed by animal life, is a byproduct. [Lesson 2A]

pictograph

Rock art that is painted onto the stone, usually without use of a brush. (See: petroglyph.) [Lesson 3E]

pigment

A coloring substance, generally rendered to powder and mixed with a fluid or paste to form a paint. Used in making pictographs, face paint, and decorations. Common natural materials used as pigments include ochre for red (see: hematite) and charcoal or manganese for black. Animal fat often served as the binding paste. [Lesson 3E]

pithouse

A home built partly underground by ancient peoples. Usually round or oval with a floor dug two to three feet below the surface. The walls were made of sticks and posts; the roof was probably made with branches, sod, or hides. [Lesson 5B]

pishkin

(Blackfeet: *pis'kins*; also *"pishkun"*). See: buffalo jump. The Blackfeet word for buffalo jump, "pis'kin" has been translated as "kettle of blood"—perhaps referring to the many buffalo butchered at the base of the cliff following a successful hunt. [Lesson 4B]

plate tectonics

The scientific model of the earth's surface that holds that the crust is made up of major and minor plates that move independently. Usually, the movement is gradual, as in an area of mountain building where two plates collide. Sometimes it is sudden, as in the shifting along geological faults that results in a zone of earthquakes. (See: continental drift.) [Lesson 2A]

Pleistocene Epoch

The Ice Age(s); more specifically, the most recent Ice Age on Earth beginning about one and a half million years ago and ending 10,000 years ago. Characterized by many cycles of glacial advance and retreat. Human evolution and development occurred primarily in this time and within this environmental setting. [Lesson 2B]

porcelanite

A fine-grained, gray or reddish metamorphic rock created from the baking of claystone by naturally burning coal seams. Sometimes known as "clinker" because of the ringing sound it makes when struck. Used extensively by prehistoric knappers in southeastern Montana where this rock type is abundant. [Lesson 3A]

pothunters

Term used broadly to refer to looters who dig illegally to remove artifacts from archaeological sites, destroying the context, scientific importance, and value of the site. Derives from the practice of looters looking for whole pots in burials at prehistoric pueblos of the southwestern United States, sometimes using bulldozers. [Lesson 5C]

pottery

Earthenware or clayware pots, dishes, or vases made from fired clay. Sometimes referred to generally as "ceramics" by archaeologists. [Lesson 3D]

poultice

A soft, moist substance applied as medicine for burns, sores, and cuts. [Lesson 4A]

prehistory

The time before written records in an area, which varies from place to place. Most archaeological work in the United States is at prehistoric sites; however, more recently archaeologists also have been excavating historic sites ("historic archaeology"). In Montana, prehistory is from about 12,000 years ago to 250 years ago. [Lesson 1B]

pressure flaking

The technique of chipped stone tool making that involves using an antler tine (or tip of wood or bone) to apply pressure to the edge of a piece to remove very small, very thin flakes. Often used when finishing a knife or projectile point to create a sharp and regular edge. (See: percussion flaking.) [Lesson 3A]

prickly pear cactus

(Opuntia sp.) Any of a large number of cacti with yellow flowers and flat paddle-shaped segments with spines. Produces a small, dark-red or purplish, pear-shaped fruit that is edible. Charred prickly pear seeds have been recovered from prehistoric archaeological sites in Montana. [Lesson 3C]

primary documents

First-hand written documents; for example, a diary or a journal. [Lesson 2C]

probability

Chance; likelihood. [Lesson 1C]

processed

Prepared; made ready for use. [Lesson 4A]

professional

One who works in an activity, such as archaeology, as a career or full-time job (not as a hobby), using the principles and ethical standards of the practice achieved through formal training and experience. [Lesson 1D]

projectile points

An artifact (usually chipped stone) used to tip an arrow, dart (see: atlatl), or throwing spear. Sometimes referred to as "arrowheads," although only projectile points less than 2,000 years old were used in Montana to tip arrows (see: bow and arrow). Projectile points may be un-notched or notched with indentations at the base to facilitate hafting. Archaeologists use the size and shape of projectile points as an indication of their age. In general, projectile points become smaller over time. [Lesson 3A]

protein/protein molecules

Basic part of all living cells and important part of the diet of animals; obtained from eating plants and animals (meat). Consists of naturally occurring, complex combinations of amino acids that contain carbon, hydrogen, nitrogen, oxygen, and sometimes other elements. [Lessons 4A, 4D]

Protohistoric

Period of transition from prehistory to history. In Montana, about A.D. 1750–A.D. 1800. This is when native groups first began to get European technology and goods (for example: horses, guns, metal knives, etc.). Often this happened before they ever saw a European person because they obtained these items by trade or stealing from other Indian groups who had them. [Lesson 1A]

public land

Land that belongs to a local, state, or federal government. Most laws to protect archaeological sites in the United States apply only to public (and not private) lands. [Lesson 1D]

Q

quarry

Place where people obtained raw materials, particularly stone for use in making stone tools (i.e., "lithic quarry"). [Lesson 3A]

Quaternary Period

Time period on the geologic time scale that includes both the Pleistocene and Holocene epochs, or about the last one and one half million years. [Lesson 2B]

R

radioactive elements

Unstable elements (such as uranium) that decay over time as the nuclei of their atoms disintegrates, releasing alpha, beta, and sometimes gamma rays. This decay occurs at a regular rate (see: half-life) and can be used, as is the case with radioactive carbon-14, to determine how old something is (see: carbon-14; radiocarbon dating). [Lesson 3F]

radiocarbon dating

Absolute dating method of determining how many years old an organic artifact or ecofact is by measuring the decay of "radiocarbon" (see: carbon-14) in it. The older the material, the less radiation is left to be released and measured by scientific instruments. Useful for dating objects up to 100,000 years old. Also known as "carbon-14 dating." [Lessons 3F, 4D, 5C]

recent

Modern; not very ancient. [Lesson 1A]

relative dating

Ordering of events in relation to each other but not to a specific time or number of years ago. Tells whether something is younger or older than something else, but not how old it is or how many years separate the two things. (See: absolute dating; superimpositioning.) [Lessons 1C; 4D]

reptile

(Class Reptilia) Vertebrate, air-breathing animal that crawls or moves on its belly or on small short legs and typically with a body covered with scales or bony plates. For example, snakes, lizards, alligators, crocodiles, and turtles. [Lesson 2A]

research design

Plan for doing research. A strategy for gathering information ("data") about a subject and determining the meaning of the results, as in a scientific experiment. Many archaeological research designs include the following steps: 1) formulation of questions ("hypotheses"); 2) implementation of questions ("test implications"); 3) data acquisition (fieldwork); 4) data processing (cataloging and coding); 5) analysis (study of data patterns); 6) interpretation (explanation of data according to questions); and 7) publication (writing of methods and conclusions). [Lesson 1C]

rock art

Ancient images painted (see: pictograph) or carved (see: petroglyph) on a stone surface, often a cliff, cave, or rockshelter wall. [Lesson 3E]

rockshelters

A wide, but shallow cave; a protected area created by a rock overhang. Provided a natural shelter for prehistoric camps. [Lesson 5B]

Rocky Mountain Front

The land along the eastern edge of the Rocky Mountains; where the plains meet the mountains. [Lesson 2C]

S

scrapers

Tools used to scrape something. Used, for example, to remove fat from the underside of an animal skin, bark from a piece of wood, or in working leather. Usually made of stone, sometimes bone. Stone scrapers are characterized by a steep, blunt working edge formed by "unifacial" (single-sided) knapping. Different types of scrapers are often described in terms of the shape and/or position of the cutting edge, i.e. side-scraper, end-scraper, snub-nosed scraper, thumbnail scraper, etc. Stone scrapers may have been attached to wooden, bone, or antler handles that were replaced as needed (see: hafted). [Lesson 3A]

sedimentary

One of three major types of rocks (see: igneous; metamorphic) formed by sand, silt, or clay settling in layers in water and hardening to rock after tens of thousands of years. [Lesson 2A]

shaman

A "medicine man" or "seer" who uses his knowledge of nature and the supernatural and his ritual powers to cure illness or to interpret strange phenomena. Rarely, these powers were also used to cause harm. Shamans probably were responsible for creating much of the symbolic prehistoric rock art we see today. [Lessons 3E, 5B]

shelter

Home; a place to live protected from the sun, wind, rain, and snow. [Lesson 1A; see: Theme 5]

sherds

(also "shards") Broken pieces of pottery. [Lesson 3D]

short grass plains

The dry country, as in eastern Montana, characterized by low grasses and other plants [see: forbs] but few trees except along rivers and near springs. Excellent grazing for buffalo. [Lesson 4B]

shovel testing

Digging a series of small holes with a shovel at an archaeological site to determine if and where buried artifacts are present. [Lesson 1C]

Siberia

Northeastern province of Russia. Connected to Alaska during glacial periods of the Ice Ages when sea levels were lower (see: Beringia/Bering Land Bridge). Most archaeologists believe that the first people of the New World migrated from the area of Siberia into Alaska during the last glacial period. [Lesson 2C]

sinew

Animal tendon that was used as a cord or thread for sewing and tying things together, as in attaching a projectile point to a shaft (see: hafted). [Lessons 3A, 3B]

site

A term used extensively by archaeologists to refer to places where prehistoric or historic people used to live or work and at which they left behind artifacts. Sites may be very big, like a Maya temple, or very small, like a few stone tools left at a butchering camp. [Lessons 1A, 1C]

site director

Supervisor of archaeological excavations at an archaeological site. Responsible for preparing plans (see: research design) and overseeing work. Generally a professional archaeologist with many years of education, training, and experience. [Lesson 1C]

site form

A brief report that initially describes an archaeological site. Included is information about the site location, its elevation, its size, what kinds of artifacts were seen or collected, what the environment is like, who owns the land, a sketch map, and any other important data. Site forms are written when a site is first discovered and, in Montana, are filed with the Site Records Office at the University of Montana, which issues each site a unique number. [Lesson 1C]

size

Physical dimensions or bulk of an object; number or quantity. Size is a common attribute used by archaeologists in analyzing and interpreting artifacts, ecofacts, and features. [Lesson 5C]

society

Community of people having common traditions and institutions who regularly live and work together to survive. Humans are very social animals. [Lesson 1B]

spear

A hunting weapon consisting of a long shaft of wood with a sharp tip. Could be thrust or thrown. Often spear points of stone were hafted to the end to make the sharp tip. [Lesson 4B]

spear points

A sharp tip—in prehistory, usually made of chipped stone—that was attached to a thrusting or throwing spear (see: projectile point; hafted). The earliest projectile points made by Paleoindians in Montana (10,000 B.C.–6000 B.C.) are thought to have been used on spears because of their large size. [Lesson 3A]

statistical data analysis

Mathematical study of quantified information ("data"; see: analysis). In archaeology, often involves the comparison of new data with existing information to reveal patterns of similarities and differences in artifacts or features that may relate to human culture and behavior. [Lesson 1C]

steatite

A variety of talc, a grayish-green or brown soft stone, that could be carved to make pots and other items. Also known as "soapstone." Found in southwestern Montana. [Lesson 3D]

sterile

Empty. In archaeological site excavation, refers to layers of earth (see: strata) that contain no evidence of human activity (artifacts, ecofacts, or features). [Lesson 1C]

steward

Caretaker; manager. In some places, volunteer site stewards visit archaeological sites regularly to help protect them from vandalism and looting. [Lesson 1D]

stone

Rock; a hardened inorganic material that forms much of the earth's crust. Stone provided the raw material for much of prehistoric technology, and stone tools are among the best preserved artifacts of prehistoric people. [Lesson 3A]

Stone Age

The long period of human prehistory when stone was the major raw material used for making tools; before the development of metal technology ("metallurgy"). The Stone Age begins with the earliest stone tools over 2 million years ago and continues to about 3000 B.C. in some parts of the Old World, or much later elsewhere. In the Old World, it is divided chronologically into the Paleolithic (Old Stone Age), Mesolithic (Middle Stone Age), and Neolithic (New Stone Age). [Lesson 2C]

stone axes

Axes made of stone. Large stone tools for chopping wood and breaking bone, as well as serving other cutting and scraping functions, as needed. Grooved ground stone axes (stones shaped by pecking and grinding as opposed to chipping) appear in the Late Prehistoric Period and were probably hafted to wooden handles. [Lesson 3C]

stone-boiling

Prehistoric cooking method that was done by heating cobblestones and placing them in a container with the liquid or substance to be cooked. This was done for containers that could not be placed directly in or over a fire (see: hide containers). [Lessons 3D, 4C]

stone drill

A chipped stone tool for making holes in wood or bone. Typically a drill is a small, narrow shaft of chipped stone with a round cross-section that looks like a modern drill bit. May have been hand-held or attached to a handle (see: hafted). [Lesson 3A]

stone knives

A chipped stone tool for cutting. Looks like a large projectile point (especially a spear point) but is typically wider, thicker, and less pointed at the tip. Hand-held or attached to a wooden or bone handle (see: hafted). Sometimes called a "blade." [Lesson 3C]

stone tool manufacture

The making of stone tools, either by chipping (see: flintknapping) or grinding a piece of natural stone into a desired shape and size. [Lesson 3F]

stone tool technology

A technology based on stone tools. Includes the getting of raw materials, the manufacture of the tool, and the use and the maintenance of the tool until it is lost or thrown away. [Lesson 3A]

stratum/strata

(*singular:* stratum; *plural:* strata) In geology and archaeology, these are layers of earth or rock, distinguishable by color, texture ("feel"), and composition (contents). Archaeological sites often have buried strata that contain artifacts. [Lessons 1C, 4D]

stratification

The accumulation of materials (earth, artifacts, ecofacts, features, etc.) in layers or strata, usually horizontally stacked with the oldest material at the bottom and the youngest at the top (see: superimpositioning). [Lesson 4D]

stratigraphic layers

Levels of earth or archaeological deposits (see: strata) that are in undisturbed order, with the oldest at the bottom and the youngest at the top (see: superimpositioning). [Lessons 1C, 5B]

subsist

To live, especially to support with food and sustenance in order to survive. [Lesson 1A; see: Theme 4]

subsistence

Existence and the means to survive, especially the need for food. [Lessons 2D, 4A; see: Theme 4]

superimpositioning

(also: superpositioning) To place on, over, or above something; to stack in layers. There is a geological and archaeological rule known as the *"Law of Superposition"* which states: "In any pile of sedimentary deposits which have not been disturbed by folding or overturning, the strata on the bottom were deposited first." This principle is also applied to rock art where one design is drawn on top of another, the lower design being the older of the two (see: relative dating). [Lesson 3E]

supernatural

Extraordinary; so unusual or abnormal as to defy the laws of nature; attributed to an invisible, unseeable force or individual (see: shaman). [Lesson 3E]

survey

In archaeology, a survey is a systematic search for the location of archaeological sites in an area—where they are located and where they are not located. Often this is the first fieldwork step in an archaeological investigation of a region. Sometimes known as an "inventory." [Lesson 1C]

survey strategy

The plan for how to survey or look for archaeological sites in an area. A survey strategy is based on what you already know and what you want to learn (see: research design). [Lesson 1C]

symbolic

Something that uses "symbols": signs or pictures that stand for or represent something else. For example: a stop sign, a cross, a baseball team logo. Many rock art designs ("motifs") are thought to be symbolic. [Lesson 3E]

T

taiga

A swampy, sub-arctic coniferous (evergreen) forest area that begins to the south of where tundra ends. Made up mostly of fir and spruce trees. Found in Alaska and Canada today, but was much farther south and widespread during the Ice Ages. Generally not thought to be a productive area of plants and animals for hunters and gatherers. (See: tundra.) [Lesson 2B]

technology

The manufacture and use of material objects (tools) to cope with daily life. By providing for food, shelter, safety, and expression, human technology and culture are what separate us from the other animals. [Lessons 1A, 3A; see: Theme 3]

theory

An idea of how and why something is or works. A theory cannot be proven, but can be supported by facts and evidence. [Lesson 1A]

thermoluminescence

(*thermo* = heat; *luminescence* = light) Light energy (phosphorescence) given off by an object that was made by heat by gradually reheating the object to a high temperature in a laboratory setting. Can be used to determine approximately how old an object is: older baked objects give off more light energy. Usually applied as a relative, rather than absolute, dating technique. [Lesson 3F]

tipi

(also, tepee; Dakota Sioux: *ti:* to dwell, *pi:* to use for) A Plains Indian conical tent made of skin coverings on a pole framework. [Lesson 5A]

tipi rings

A ring or circle of rocks thought to have been used to hold down the covering or the liner of a prehistoric tipi. Tipi rings are a common archaeological site in northern Montana on the "Hi-Line", but they also exist elsewhere in Canada, southern Montana, and other Plains states. Also known as a "stone circle." [Lesson 5A]

toolstone

Rock that could be used for making stone tools. Chert, basalt, obsidian, porcelanite, and quartzite were stones useful for making chipped stone tools. Granite and sandstone were often used in making ground stone tools. [Lesson 3A]

tooth eruption schedules

The timetable for which different teeth ("baby" or permanent) appear in an animal's mouth. This may vary with individuals, but on average can be used to determine how old a young animal is and sometimes at what time of the year it died, based on the birth of most animals (like buffalo) in the springtime of the year. [Lesson 4D]

topographic map

A map that shows the elevations of the land surfaces in an area, usually along with other features like streams, lakes, springs, roads, and buildings. On most maps, lines called "contour lines" show elevation. On some maps, topography may be shown three-dimensionally. [Lesson 1C]

territory

The area in which a group makes its living, often keeping others from using the same area without permission. [Lesson 3E]

Buying, selling, exchanging, or bartering goods between different groups. Archaeologists know that trading went on among ancient people because they find artifacts that must have been made in faraway places. Trade items in Montana prehistory include ocean shells and obsidian. [Lesson 3B]

traditions

Cultural continuity through time. The passing down of ways of life from generation to generation, including beliefs, settlement and subsistence behaviors, and technology. Traditions are the past kept alive in the present. [Lesson 2D]

transects

Lines or strips. In archaeological surveys, archaeologists often walk in parallel lines or paths about 100 feet apart looking for artifacts on the ground surface. [Lesson 1C]

transit

A highly accurate field telescope with a compass for making a map and establishing an excavation grid at an archaeological site (see: grid). [Lesson 1C]

travois

(Canadian French) A carrying device used by Plains Indians consisting of two long trailing poles bearing a platform or net for holding the load. Dragged behind on the ground by people or dogs, and later (after about A.D. 1750) by horses. The two poles could be tipi poles. [Lessons 2C, 2D, 4A]

tundra

The treeless plain within the Arctic Circle that is marshy in the summer and frozen in the winter. The subsoil is permanently frozen ("permafrost"), but the surface soil supports mosses, forbs, and lichens. Common environment in the Ice Ages near the edges of glaciers. [Lesson 2B]

U

V

vandalize/vandalism

To willfully and maliciously destroy or deface something that does not belong to you. Illegal activity punishable as a crime. [Lesson 1D]

vertebrate

Animal that has a spinal column ("backbone"), including mammals, birds, reptiles, amphibians, and fish. [Lesson 2A]

W

weir

A fence, net, or other enclosure set in a stream to catch fish. [Lesson 3B]

wickiup

(Fox: *wikiyap* = dwelling) A domed or conical-shaped shelter made of stacked wood poles, bark, brush, or reed mats. Sometimes looks like a tipi without the hide covering. [Lesson 5B]

Wisconsinan Glaciation

Name given by researchers in North America to the period of the most recent glacial advance in the last Ice Age, beginning about 100,000 years ago and ending 10,000 years ago. In Europe, the same period is called the "Wurm." [Lesson 2B]

wooden corrals

Fenced enclosures or pens made with wooden poles and brush and used by hunters to trap animals. [Lesson 4B]

woolly mammoth

(Mammuthus primigenius) Species of mammoth that evolved in Eurasia some time between 500,000 and 300,000 years ago and spread widely across the northern hemisphere until its extinction about 10,000 years ago. Principal species of mammoth hunted by Paleoindians who, some researchers believe, contributed to the great beasts' extinction. Mammoths are characterized by a high domed skull and long, twisted tusks that curve inward. The average adult mammoth weighed between four and six tons and stood nine to eleven feet tall. [Lessons 2B, 4B]

X

Y

yearly subsistence round

The regular and repeated movement of people to different places at certain times of the year in order to hunt different animals and gather different plants as they become available. Common among nomadic or semi-nomadic groups who often move camps in different seasons of the year in a "seasonal round." [Lesson 4A]

Z

zoologists

Scientists who study animal biology and behavior—in the wild, and not only in zoos. (See faunal analysis.) [Lessons 3F, 4D]

Extension: In The News. . .

In the News . . . is a collection of newspaper articles clipped, pasted on paper, trimmed again, and then laminated. Students are able to write on the newspaper articles with water-soluble pens to locate information, and then rinse away their marks.

Categories to consider in collecting and arranging articles:

1 ~ archaeology
2 ~ origins, earth
3 ~ origins, fossils
4 ~ origins, Ice Age
5 ~ origins, humans
6 ~ origins, environment
7 ~ technology, stone
8 ~ technology, atlatls
9 ~ technology, art
10 ~ subsistence
11 ~ shelter

Articles are teaching tools and may be used in a variety of ways:

~ to locate sites and events geographically
~ to write a report based on who, what, where, when, how, why
~ to write a persuasive speech
~ as starting point for research
~ in reading instruction
~ as main idea

EXTENSION: EXPLORING TIME THROUGH CALENDARS

(Adapted from *Discovering Archaeology in Arizona*)

There are many ways of showing time. Even scholars can't agree on one approach. The first century of the Christian era began in A.D. 1, the second in A.D. 101, and so on. In order to avoid the specific reference to Christianity, some writers use **C.E.** (Common Era) instead of **A.D.** and **B.C.E.** (Before the Common Era) instead of **B.C.**

A.D. In ancient calendars, years were generally numbered according to the year of a ruler's reign. About A.D. 525, a Catholic monk named Dionysius Exiguus suggested that years be counted from the birth of Christ. The number of years are preceded by the Latin words *Anno Domini*, which mean "in the year of the Lord." It is usually abbreviated A.D. and is still used today. Today, scientists believe that Dionysius was wrong about the year of Christ's birth. Most believe the year of Christ's birth was a few years earlier.

B.C. The year before A.D. is called B.C. (Before Christ).

B.P. Some archaeologists prefer not to use A.D. and B.C. to show time. In part because of radiocarbon dating and other dating methods which measure time from the present, they use "Before the Present" or "B.P." For example, 100 B.C. would be 2005 B.P. That is A.D. 1995 + 100 B.C. = 2005 B.P. Many archaeologists have adopted the use of B.P., even though they are not involved in dating methods, since A.D. and B.C. are so specific to Western culture. What might be a problem with using this designation? [Hint: today is tomorrow's yesterday—the present is always moving!]

Years Ago This is used to show how many years ago some event occurred. Paleontologists use it to show things that happened millions of years ago.

Ancient Calendars

A *calendar* is a system for showing the year and dividing it into smaller units. Calendar systems were created thousands of years ago. Sometimes people kept track of the solar year by standing in one special spot and watching the sun rise daily. They watched specific landmarks or special stone markers on the horizon to see when the sun would reach them. As the sun's movement in the sky changed with the seasons, this told them what time of year it was. Scientists have also found ancient notched sticks that might have been used for counting and marking the passage of each lunar (moon) month. Not all calendars were based on the moon and sun. The Mayans, for example, divided the year arbitrarily into eighteen twenty-day months, with a five-day period at the end.

The earliest complete calendars were probably based on observations of the moon. The moon's phases occur regularly and are easily watched. Early people began a new month when they first saw the new crescent moon. The time between a new moon and the next new moon is about 29 1/2 days. Because of this, lunar calendar months

contain either 29 or 30 days. Twelve lunar months total 354 1/3 days and form a lunar year. How much shorter than a solar year is a lunar year?

Since farmers are dependent on warm weather, a solar calendar works better for them. To make their calendars accurate for the sun, early farmers made combination lunar-solar calendars by adding an additional "leap" month to keep the seasons occurring at the same time of year every year.

Today, in the United states we use the **Gregorian calendar**. The Gregorian calendar was first introduced in A.D. 1582 by Pope Gregory XIII who worked with an astronomer named Christopher Clavious (A.D. 1537-1612). The average length of a Gregorian year is close to that of the solar year—about 365 and one-fourth days. Although some of the Gregorian calendar is based on the movement of the sun and the moon, the calendar is controlled by specific rules that define it rather than depending on observation. This keeps dates at the same time each year, which was important for many Catholic religious holidays and celebrations, like Easter.

Names of the Roman Months

In every Western European language, the names of the months are derived from their Roman (Latin) names. The months in English, for example, are:

January
for *Janus,* Roman god of beginnings and endings.

February
from *Februalia,* a time for religious purification.

March
named for *Mars,* the Roman god of war.

April
from Old English words *April, aperil,* and *averil* derived from Old French and Latin words. Probably also linked to the Etruscan word *apru*—April—and the Greek word *aphro*—short for *Aphrodite*, the goddess of love.

Maia, the Roman goddess of plant growth.

from the Latin word *Junius,* which probably came from *Juno*, the Roman goddess of women and marriage.

honors *Julius Caesar.*

August
the first Roman Emperor, *Caesar Augustus,* chose this month for himself.

The names of the rest of the months are based on the Latin (Roman) numbers for their original place in the calendar:

September
from Latin *septem* meaning seven. It was originally the seventh month.

October
from *octo*—eight.

November
novem—nine.

December
decem—ten.

Days of the Week

The Babylonians used a seven-day period of time, which today is known as the week, that had nothing to do with astronomy, This "week" was adopted by the Jews. The Romans also adopted the week and associated the cycle of seven days with the sun, the moon, and the five known planets. Thus, their names became attached to the days of the week:

Sunday
Dies solis, Sun's day

Monday
Dies lunae, Moon's day

Tuesday
Martis dies, Mar's day (the Roman god of war)

Wednesday
Martis dies, Mercury's day (the Roman god of commerce and messenger to the gods)

Thursday
Jovis dies, Jupiter's day (the Roman god of the sky)

Friday
Veneris dies, Venus's day (the Roman goddess of love, associated with the Greek Aphrodite)

Saturday
Dies Saturni, Saturn's day

Although the English words Sunday and Monday clearly derive from their Latin roots, the English words for the rest of the days of the week come indirectly from Germanic and Scandinavian peoples who substituted the names of their own gods who were similar to the Roman gods Mars, Mercury, Jupiter, and Venus. This resulted in the modern:

Tuesday
from *Tiu's* or *Tiw's* Day

Wednesday
from *Woden's* (or *Wotan's* or *Odin's*) day

Thursday
from *Thor's* day

Friday
from *Frigg's* (or *Fria's*) day

Other Calendars

The **Hebrew** calendar in use today begins at the Hebrew date of Creation, about 3,760 years before the Christian era. The week consists of seven days, ending with the Sabbath (religious day) on Saturday. The year consists of twelve lunar months—**Tishri**, **Cheschvan**, **Kislev**, **Tebet**, **Shebat**, **Adar**, **Nisan**, **Iyar**, **Sivan Tammus**, **Ab**, and **Elul**—which are either twenty-nine or thirty days long. Because a year is eleven days longer than twelve lunar moths, a thirteenth month, **ve-Adar**, is added seven times during every nineteen-year cycle.

Muslims begin their calendar at the day and year when Mohammed fled from Mecca to Medina (July 16, A.D. 622 by the Gregorian calendar). There are twelve lunar months of thirty or twenty-nine days, making the year only 354 days long. Because of this the months move backward through all the seasons, completing a cycle every thirty-two and a half years. The months are: **Muharram**, **Safar**, **Rabi I**, **Rabi II**, **Jumada I**, **Jumada II**, **Rajab**, **Shaban**, **Ramadan**, **Shawwal**, **Zulkadah**, and **Zulhijjah**.

EXPLORING TIME: WORKSHEET

Name:_____

Read the background information and then figure your birth date and year from the following calendars.

MONTHS

Gregorian (Basis: Sun) Month/Days	**Jewish (Basis: Moon) Month/Days**	**Islamic (Basis: Moon) Month/Days**	**Hindu (Basis: Moon) Month/Days**
January 31	Tishri Sept-Oct 30	Muhrram Sep-Oct 30	Caitra Mar-Apr 29-30
February 28-29	Heshvan Oct-Nov 29-30	Safar Oct-Nov 29	Vaisakha Apr-May 29-30
March 31	Kislev Nov-Dec 29-31	Rabi I Nov-Dec 30	Jyaistha May-Jun 29-30
April 30	Tevet Dec-Jan 30	Rabi II Dec-Jan 29	Asadha Jun-Jul 29-30
May 31	Shevat Jan-Feb 30	Jumada I Jan-Feb 30	Dvitiya Asadha
June 30	Adar Feb-Mar 29-30	Jumada II Feb-Mar 29	(leap years)
July 31	Adar Sheni	Shaban Apr-May 39	Sravana Jul-Aug 29-30
August 31	(leap years)	Ramadan May-Jun 30	Dvitiya Sravana
September 30	Nisan Mar-Apr 30	Shawwal Jun-Jul 29	Bhadrapada Aug-Sep 29-30
October 31	Iyar Apr-May 29	Dhuu al-Quadah Jul-Aug 30	Asvina Sep-Oct 29-30
November 30	Sivan May-Jun 30	Dhu al-Hiijjah Aug-Sep 29-30	Karttika Oct-Nov 29–30
December 31	Tammuz Jun-Jul 29		Margasirsa Nov-Dec 29-30
	Av Jul-Aug 30		Pausa Dec-Jan 29-30
	Elul Aug-Sep 29		Magha Jan-Feb 29-30
			Phalguna Feb-Mar 29-30

YEARS

Chinese Animal Years and Times, 1972-2007

Shu (Rat) 1971, 1984, 1996
Lung (Dragon) 1976, 1988, 2000
Hou (Monkey) 1980, 1992, 2004
Niu (Ox) 1973, 1985, 1997
She (Serpent) 1977, 1989, 2001
Chi (Cock) 1981, 1993, 2005
Hu (Tiger) 1974, 1985, 1998
Ma (Horse) 1978, 1990, 2002
Kou (Dog) 1982, 1994, 2006
T'u (Hare) 1975, 1987, 1999
Yang (Sheep) 1979, 1991, 2003
Chu (Boar) 1982, 1985, 2007

My Gregorian birthday is _____

My Jewish birthday is _____

My Islamic birthday is _____

My Hindu birthday is _____

My Chinese year sign is _____

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