14. Stone Age Tools & Art

Rocks have different properties and textures. For instance, obsidian is smooth and makes flakes with razor-sharp edges, kaolin (clay) is soft and moist and easily shaped when first dug from the ground, and granite is coarse and heavy. Early humans and stone-age cultures have taken advantage of the properties of different rocks to make tools and art from them. These activities will guide you in making your own stone tools and art.

Activity 14.1: Rocks and minerals used as tools.
Make a list of rocks and minerals that have been used as stone tools and art. Describe the properties of each one on your list that made them useful to stone-age cultures. Collect some of the rocks or minerals on your list and show them to fellow club members.

Activity 14.2: Making stone tools.
If you have a source for rocks such as basalt or granite in the form of large, rounded cobbles, work with your youth leader to craft clubs, tomahawks, or a grinding stone. Or watch a master flint knapper craft an arrowhead.

Activity 14.3: Making stone tools and art from clay.
Try one or both of these activities. a) Roll clay into long ropes and coil it to make pots, cups, and other vessels. You can press patterns into the outside surface of your pot with your fingernails, feathers, or twigs and then bake it hard in an oven. b) Fashion beads from clay and bake them hard. Combine them with other natural materials such as wood, seeds, shells, and feathers and string them together to create necklaces and bracelets.

Activity 14.4: Making rock art.
Pick one of these art projects to try: a) Some cultures have left paintings in caves showing animals they hunted, their own hand prints, and mysterious zig-zags and squiggles. They made paints from ground minerals mixed with water, grease, or oil. Make your own paint and create a cave painting on a large, flat stone. b) Other cultures left behind petroglyphs, or images chipped into stone. Make your own petroglyph, using a hard, pointed rock to chip images onto the flat surface of a softer rock. c) Use sands of different colors to craft a temporary design on a sidewalk or floor, or make a more permanent artwork by making a design with white glue on plywood or cardboard and sprinkling sands of different colors into your pattern.

Activity 14.5: Recording and interpreting rock art.
If you live near a painted cave or a petroglyph site, visit it and photograph or sketch the patterns you see. Try to determine what the rock art may be telling of how Indians lived—the animals they kept and hunted, the ways they dressed, ceremonies they held, etc. Write your thoughts in your club newsletter or give a presentation at a club meeting.

Activity 14.6: Visiting a museum or Native American cultural center.
Take a trip to a museum, Native American cultural center, or college archeology department that has artifacts and learn about tools that Indians fashioned and the rocks and minerals they used.

14. Stone Age Tools & Art

□ 14.1 Rocks and minerals used as tools

□ 14.2 Making stone tools

□ 14.3 Making stone tools and art from clay

□ 14.4 Making rock art

□ 14.5 Recording and interpreting rock art

□ 14.6 Visiting a museum or Native American cultural center

To earn your Stone Age Tools & Art badge, you need to complete at least 3 of the 6 activities. Check off all the activities you've completed. When you have earned your badge, sign below and have your FRA leader sign and forward this sheet to the AFMS Juniors Program chair.

_____
Date completed

_____ _____
My signature Youth leader's signature

_____
Name of my club

Leader's preferred mailing address for receiving badge:

_____

_____

_____

Back-up page 14.1: Rocks and minerals used as tools.

Here are some examples of rocks and minerals that have been used by indigenous cultures around the world in crafting tools or making artworks:

- **Flint:** flakes easily, with sharp edges, making it good for knapping into arrowheads, spear points, and knives.

- **Obsidian:** another source for knapping into arrowheads, spear points, scrapers, and knives.

- **Agate and jasper:** two more sources of stone suitable for flaking and knapping.

- **Kaolin, or clay:** soft and malleable but bakes rock-hard when heated, thus making it perfect for crafting cups, bowls, and other vessels and for making beads.

- **Granite:** heavy and coarse, and thus good as a grinding stone or for making tomahawk or club heads.

- **Basalt:** also heavy and coarse and good as a grinding stone.

- **Tar:** at places with oil seeps, native cultures have exploited tar for things such as caulking boats or waterproofing bowls (note: tar is technically not a mineral, but it is a natural resource that has long been exploited by people).

- **Hematite:** ground to make red paint.

- **Azurite or lapis:** ground to make blue paint.

- **Malachite:** ground to make green paint.

An interesting book that goes into all sorts of materials used by stone-age peoples to craft tools for survival is David Wescott's *Primitive Technology: A Book of Earth Skills* (Gibbs Smith, Publisher, 2001). The materials he discusses include stone, wood, bone, natural fibers, fire, etc. He even includes a chapter on primitive art and music.

Note: *Kids who make a collection of rocks and minerals used to make stone tools can use this activity toward satisfying requirements for earning the Collecting badge simultaneously (Activity 5.1). If they give a presentation to share their collection and talk about how these rocks have been used as tools, they can also use that presentation toward earning their Communication badge, as well (Activity 7.1).*

Back-up page 14.2: Making stone tools.

a) ***Tomahawks & Grinding Stones.*** For tomahawks and grinding stones, seek heavy rocks that have been rounded and smoothed in a river bed, along an ocean beach, or in a deposit of glacial till. Tomahawks can be made by cutting a foot-long section of a tree branch, notching one end, inserting an oval or oblong stone, and securing it in place by wrapping and tying a length of thick leather string. For a grinding stone, seek a well-rounded, coarse-grained rock (granite, basalt, etc.) that will fit comfortably in the palm of your hand. Match this with a large, flat slab of rough rock (perhaps a foot in diameter), and set your kids to work grinding hard kernels of corn.

b) ***Arrowheads & Spear Points.*** Stone-age peoples craft arrowheads and spear points from rocks such as flint, agate, jasper, and obsidian. There are various techniques for crafting a point, from hard- and soft-hammer percussion to pressure flaking. Percussion involves striking flint or obsidian with antler, bone, or another rock. Pressure flaking involves poking at the flint or obsidian with the pointed end of an antler segment or other tools to chip off small flakes along the edges of an arrowhead or spear point.

WARNING!! Do not do a knapping exercise with kids! Knapping produces razor-sharp edges (sharper than scalpels) and can send sharp shards flying through the air. Eye protection is a must, as are thick leather gloves. Even then, one guarantee is that knapping will lead to cuts—and sometimes very nasty ones! Thus, this isn't the sort of exercise you want to do with young kids. Instead, this is better left as a demonstration performed by a trained expert well versed in the craft. I recommend you get a master knapper from your own club or a nearby club to provide a demonstration. Thousands of Americans practice this art form, connecting via newsletters and the Internet and gathering at regional "knap-ins" to share techniques and materials. You can get a sense of "who's who" in this community in John Whittaker's book *American Flintknappers: Stone Age Art in the Age of Computers* (2004). If you can't find a local knapper, you can still provide a demo for your kids via a video: "Flintknapping with Bruce Bradley, Ph.D." This terrific 45-minute video may be purchased on-line from the web site of the Mammoth Site of Hot Springs, South Dakota, through their on-line store at http://www.mammothsite.com.

Again, I stress the warning not to do knapping with kids! Even for adults, thorough preparation and great care is required in pursuing a knapping project, as emphasized in the safety chapter of any one of the several books that have been published on the art of knapping. You may wish to purchase one of these as a reference for your club library:

- Gravelle, *Early Hunting Tools: An Introduction to Flintknapping* (1995)
- Hellweg, *Flintknapping: The Art of Making Stone Tools* (1984)
- Patten, *Old Tools – New Eyes: A Primal Primer of Flintknapping* (1999)
- Waldorf, *Art of Flint Knapping, Fourth Edition* (1993)
- Waldorf & Martin, *Getting Started in Flint Knapping* (1998)
- Whittaker, *Flintknapping: Making & Understanding Stone Tools* (1994)

Back-up page 14.3: Making stone tools and art from clay.

Clay is the mineral kaolin, and it's been used throughout human history and prehistory because it's soft and easily shaped when moist yet bakes rock hard to create water-tight vessels and other tools. Using designs you find in books on North American Indians, lead your kids in fun activities fashioning pots, vessels, and beads from clay.

a) ***Pots and Vessels.*** In leading kids in this activity, first stock up on a big supply of modeling or pottery clay that's either self-hardening or that may be fire-hardened in a standard oven (or, if you have one available, a potter's kiln). Have kids start by flattening a circle of clay for a base, using their hands or a rolling pin. Next, have them make long "ropes" of clay by rolling a lump of clay between their palms. They then coil their clay rope around the base, building upwards and making and adding new lengths of clay rope as needed until they have a pot or vessel of just the right size they want.

Your kids then have several options. They can leave the pot just as it is. Or they can make hash-mark (///////) or X (XXXXX) patterns or other interesting designs all around their clay ropes by pressing into the clay with their fingernails, feathers, or twigs. Or they might massage the sides of their pots smooth with their fingers and paint a design on the outside. Then bake the pots hard in an oven or let them self-harden.

If you have pottery artists in your club, get together with them for more creative ideas and for more sophisticated techniques.

b) ***Beads.*** Have kids roll clay into small balls, ovals, cylinders, etc., for beads, and pierce holes in each bead with kabob sticks before baking them hard. Combine them with other natural materials such as wood, seeds, shells, and feathers and string them all together to create necklaces and bracelets.

Note: *You might consider applying this activity toward the Lapidary Arts badge, as well (Activity 4.4).*

Back-up page 14.4: Making rock art.

a) ***Cave painting.*** Near my home in southern California are cave paintings, or pictographs, left by Chumash Indians. The primary colors are red from hematite, black from charcoal or burnt manganese, and white from clay or diatomaceous earth. Indians ground such materials with mortars and pestles, then mixed the resulting powdery pigments with a binder (water, grease from animal fat, or oil from crushed seeds). Paint brushes were crafted from feathers, coarse hair or fur, or vegetable fibers bound together or inserted into cane tubes. Paint also was applied simply by finger. Work with your kids to make paint and use it to decorate large, flat rocks. Here are some minerals that have been crushed, mixed with oils or animal fats, and used in paints over the ages (as an alternative to oils or animal fats, you can use white glue diluted in water as your binder):

- green clay
- yellow clay
- yellow limonite
- brown clay
- red clay
- white clay
- white chalk
- white gypsum
- black charcoal
- blue azurite
- green malachite
- an earthy variety of red hematite

WARNING!! In some books, you may read that yellow and red paint pigments can be ground from **orpiment** and **realgar**. While this is true, **both are sulphides of arsenic and can be dangerous and even toxic.** ***Don't use these with your club's kids!***

b) ***Petroglyphs.*** Petroglyphs are images that have been chipped into stone and are often seen at cliff sites or covering large boulders in the American Southwest. In deserts, rocks often get coated with a dark crust called **desert varnish**. Native Americans chipped though this coating to create their petroglyph artworks, sometimes creating huge murals stretching across a cliff face. To help kids make their own petroglyphs, provide soft, flat rocks such as slabs of shale or sandstone. (If you don't have a source readily available that you can collect from the field, try a building supply store for flagstones. See if they have any broken ones they may be willing to donate for free.) You also can make a soft, flat surface with plaster. Lightly coat the surface of your rock or plaster slab with a red-brown or black paint to simulate desert varnish. Then give kids small, pointed rocks to chip images into the desert varnish.

c) ***Sand painting.*** The Navajo, Tibetan monks, and Australian Aborigines are just some cultures that craft intricate patterns using colored sands. These are not usually meant to be permanent artworks but instead living, flowing works, just as sand blows across the landscape in the wind. Your kids could make similar, temporary works by drizzling sand in desired patterns onto a sidewalk or a sheet of cardboard. Or, for a permanent work of sand painting, you can give them sheets of cardboard or plywood and have them make patterns with white glue over which they sprinkle sands of different colors. If you have a nearby source from gullies, beaches, or river beds, you can use natural sands, or you can purchase a variety of vividly colored sands from aquarium supply stores.

Back-up page 14.5: Recording and interpreting rock art.

If you live near a rock art site, organize a field trip. Make sure kids are respectful of the rock art and do nothing to deface it. These spots are sacred to Native Americans, and many have survived centuries in the elements. Help preserve them for centuries to come! If you don't have a spot near you, show kids a photo gallery of rock art sites from around the world at this web site: http://www.bradshawfoundation.com. If visiting a site, have kids bring sketch pads to copy their favorite images. They might also take photos, but nothing beats sketching in your own hand to get a true feel for the art and to force you to make a careful examination. Then hold a discussion with your kids about what they think various images and symbols left by the Indians may mean. The meanings behind most cave and cliff paintings and petroglyphs have been lost and may never be understood, but some images are clear and paint vivid stories, such as hunting for bighorn sheep or bison.

While most books about rock art focus on the Southwest, ancient rock art has been found throughout America. Here are some guidebooks that talk about rock art from coast to coast and that provide directions to rock art localities. See if you can find one near you.

- Arnold & Hewitt, *Stories in Stone: Rock Art Pictures* (Houghton Mifflin, 1996), images from the Coso Range of the California Mojave; for ages 12 and up.
- Coy, et al., *Rock Art of Kentucky* (University of Kentucky Press, 2004).
- Duncan, *The Rock-Art of Eastern North America* (University of Alabama Press, 2004), covers from the Atlantic Coast to the Ozarks, MN, IA, and MO.
- Farnsworth & Heath, *Rock Art Along the Way* (Rio Nuevo, 2006), covers UT, NM, CO, NV, AZ, CA.
- Francis & Loendorf, *Ancient Visions: Petroglyphs & Pictographs of the Wind River & Bighorn County, Wyoming & Montana* (University of Utah Press, 2002).
- Keyser, *Art of the Warriors: Rock Art of the American Plains* (University of Utah Press, 2004).
- Keyser, *Indian Art of the Columbia Plateau* (University of Washington Press, 2003).
- Keyser & Klassen, *Plains Indian Rock Art* (University of Washington Press, 2003).
- Lenik, *Picture Rocks: American Indian Rock Art of the Northeast Woodlands* (University Press of New England, 2002).
- Loendorf, Chippindale, & Whitley, *Discovering North American Rock Art* (University of Arizona Press, 2005).
- Patterson, *A Field Guide to Rock Art Symbols of the Greater Southwest* (Johnson Books, 1992), covers AZ, CA, NV, CO, UT, NM, TX.
- Sanders, *Rock Art Savvy: The Responsible Visitor's Guide to Public Sites of the Southwest* (Mountain Press, 2005), covers AZ, CA, CO, NV, NM, TX, UT.
- Sullivan & Sullivan, *Roadside Guide to Indian Ruins & Rock Art of the Southwest* (Westcliffe Publishers, 2006).
- Sundstrom, *Storied Stone: Indian Rock Art in the Black Hills Country* (University of Oklahoma Press, 2004).
- Whitley, *A Guide to Rock Art Sites* (Mountain Press, 1996), southern CA, NV.

Note: *This activity can be used to satisfy requirements toward earning the Field Trip badge (Activity 8.3) and the Communication badge (Activities 7.1 & 7.2) simultaneously.*

Back-up page 14.6: Visiting a museum or Native American cultural center.

Take your clubs' kids to a museum, Native American cultural center, or college archaeology department. Here, kids can see actual tools, artwork, and other artifacts crafted from rocks and minerals and other natural materials. By calling in advance to make arrangements, you may be able to have knowledgeable experts guide your group and—in museums and archaeology departments—perhaps even give a peak at research collections in back rooms not normally open to the public. Surf the web or check with your town's visitor center or chamber of commerce to explore possibilities, then call to see what sorts of collections are in your area and what arrangements might be made. For instance, spending less than two hours surfing the web on my computer this morning, I found the following that offer good possibilities for either brief morning or afternoon adventures or day trips within easy access of my hometown of Ventura, California, which for centuries has been inhabited by Chumash tribes.

For a brief morning or afternoon trip:

- The Museum of Ventura County, located in the heart of downtown, has exhibits of early Chumash culture from the time when Ventura was a village called Shisholop.
- The Albinger Archaeological Museum, located across the street from the Museum of Ventura County, displays Native American stone relics from 1600 to 100 BC.
- The Robert J. Largomarsino Visitor Center at Channel Islands National Park includes artifacts and publications about seafaring Chumash from our offshore islands.
- Our local community college, Ventura College, offers courses on archaeology and has knowledgeable experts who would be worth calling to see if they might meet with a group of kids and/or offer advice about other area resources.

For a longer day trip still within easy driving distance of Ventura:

- Chumash Painted Caves State Historic Park, near the San Marcos Pass above Santa Barbara, preserves fine examples of pictographs in a rock shelter.
- More pictographs can be viewed along trails in the Santa Monica Mountains National Recreation Area, which even offers third and fourth graders a program on the Chumash in their Satwiwa Native American Cultural Center.
- Oakbrook Regional Park Chumash Interpretive Center to my south provides an artifact exhibit, a rock art exhibit, and ongoing events and activities.
- Both the Santa Barbara Museum of Natural History and the Museum of Natural History of Los Angeles County offer great Native American displays.
- The Anthropology Department at the University of California, Santa Barbara, holds the Repository for Archaeological & Ethnographic Collections.
- UCLA has several relevant programs—an Anthropology Department, American Indian Studies Center, and an Institute of Archaeology—as well as their Fowler Museum of Cultural History with artifacts from native cultures worldwide.

Check your community for similar opportunities for an adventure with your club's kids!

Note: *This activity can be used to satisfy requirements toward earning the Field Trip badge simultaneously (Activity 8.3).*