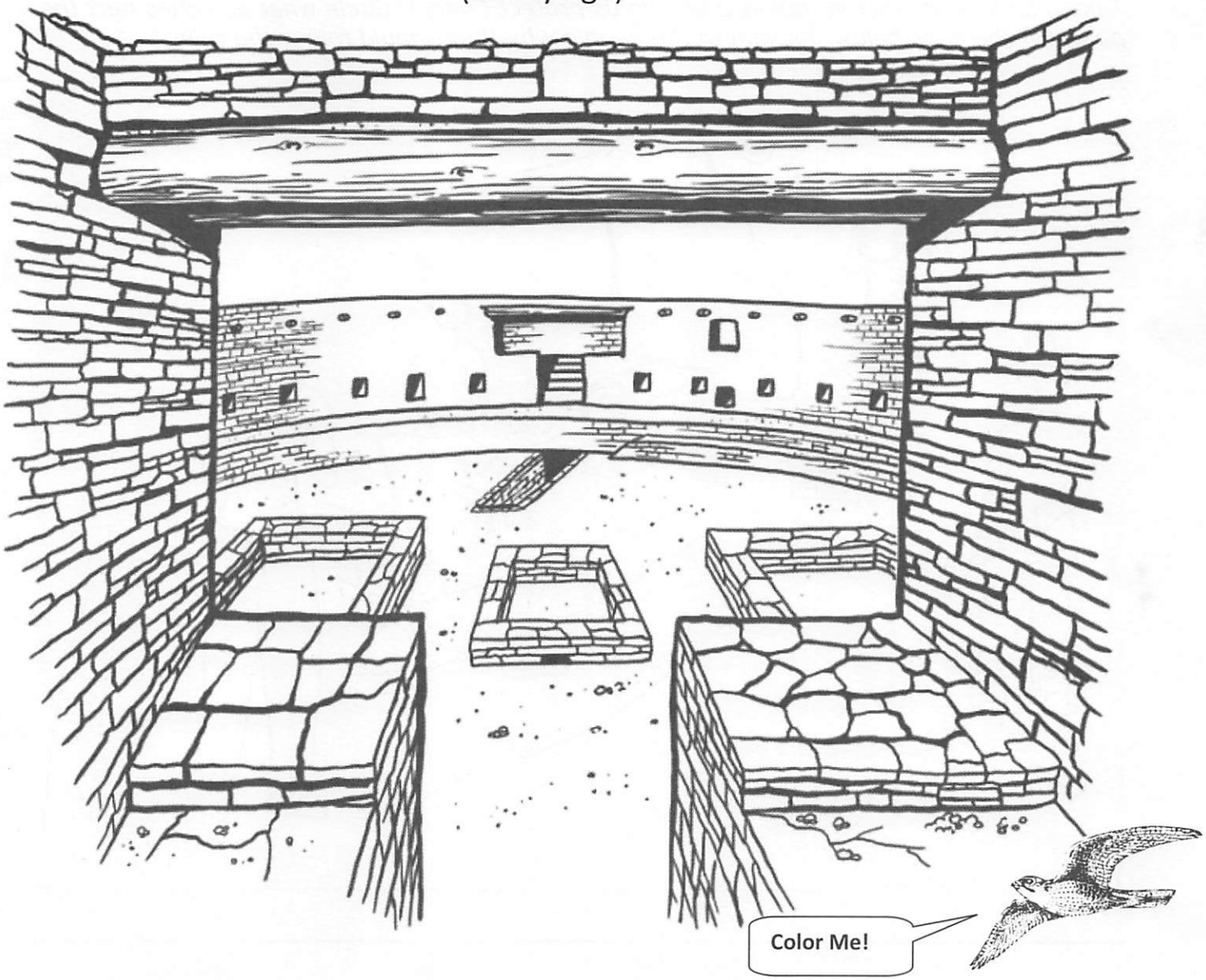
Become a Junior Ranger!

(at any age)



To become a Junior Ranger, complete this booklet (Ages 8-10 must complete 6 pages, Ages 11-14 must do 7 pages, ages 15 and over must finish 8 pages, or complete as many pages as you are able). Adults may help.

Explore the park, take a tour, see the sites and ask questions! When you're done, bring your booklet back to the Visitor Center. A ranger will check your booklet and award you your Junior Ranger badge!

My name is _____

PROTECT OUR PARK

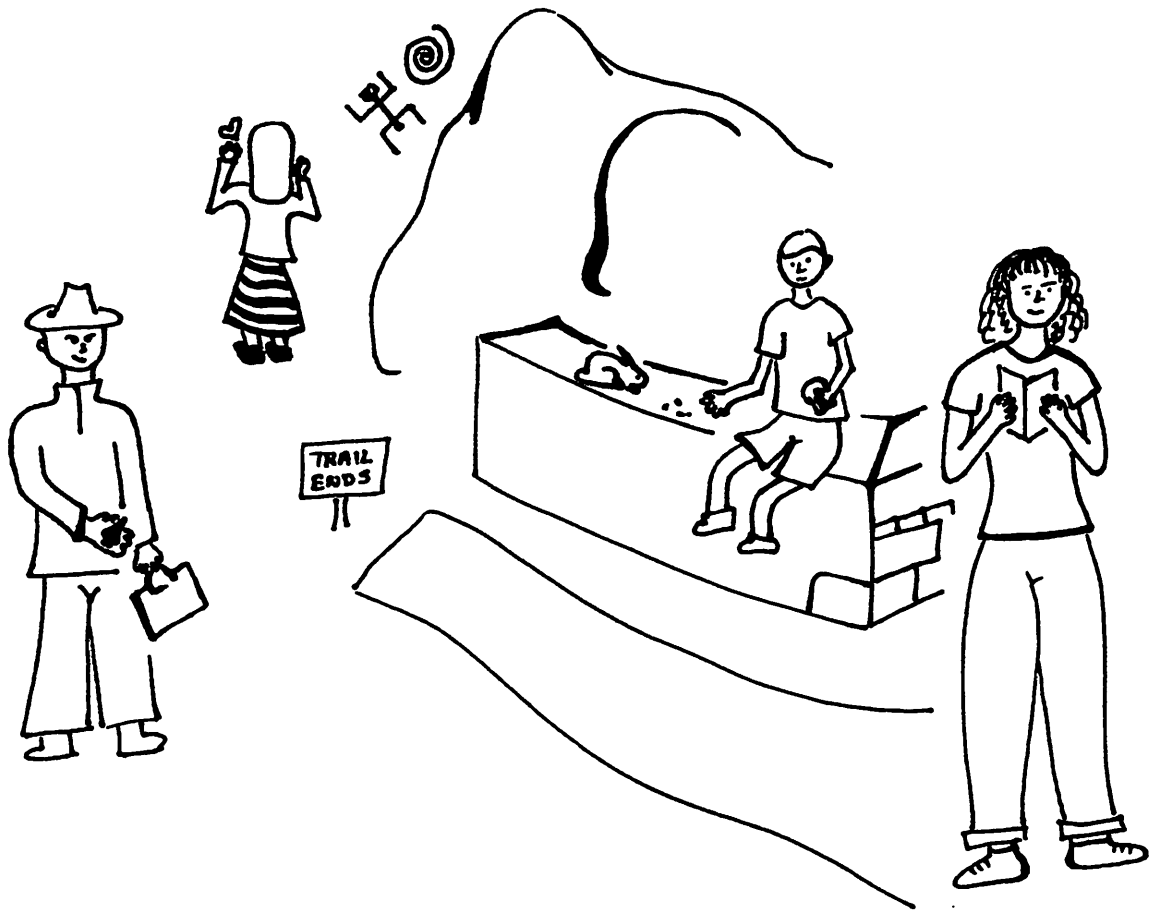
HELP US PROTECT OUR PARK!

Stay on _____.

Don't touch, lean on, sit on, or walk on the _____.

Leave _____ where you find it.

Take a look at the picture below and help us protect Chaco! Circle what activities hurt the park. On the lines below, explain to the people why they should follow the rules.



1_____

_____

2_____

_____

3_____

_____

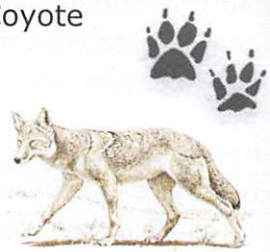
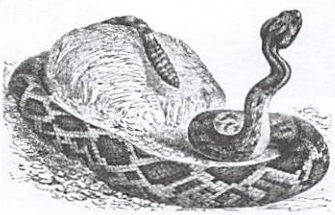
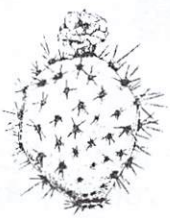
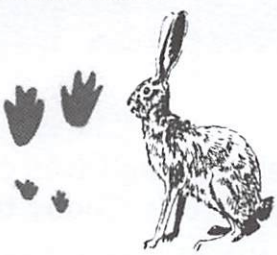
If you see someone breaking the rules, what should you do?

_____

ENVIRONMENT

Today Chaco has a semi-arid climate with only 7-9 inches of rain a year. Many plants and animals are able to survive here.

Circle the plants and animals you find on your visit. Can you make a straight line through 4 pictures? Star your favorite!

Greasewood	Mule Deer	Bat	Rabbitbrush
Elk	Antelope Ground Squirrel	Yucca	Lizard
Coyote 	Rice Grass	Add your own!	Raven
Pinyon Pine	Snake 	Prickly Pear Cactus 	Jack Rabbit 

HELP PROTECT THE ENVIRONMENT AT HOME

Reduce, reuse, _____.

Turn off the _____and_____ when you're done using them.

_____ or _____ instead of taking a car.

What else can you do to protect the environment?

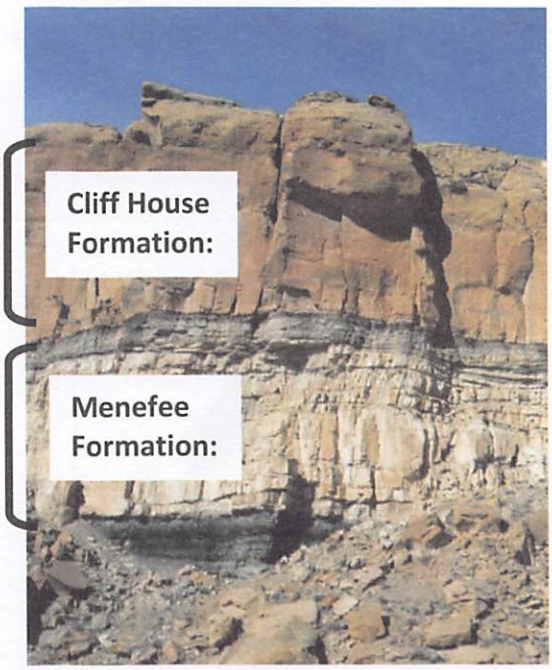
_____

CANYON GEOLOGY

The rocks you see today in the canyon were formed 75-85 million years ago when Chaco was at the edge of an inland sea. Sometimes the Chaco area was under water. At other times it was part of a marshy environment.

Look at the rocks behind the visitor center. The orange sandstone on top of the canyon is called the Cliff House Formation. It was created when Chaco was an ocean environment. Beneath that is the Menefee Formation, which has alternating dark and light layers. This was formed when Chaco had shallow waters or was a marshy environment with many plants.

What fossils would you expect to see in each layer? Look at the fossils below and place them in the correct rock layer.



Shark Teeth: These fish swim in ocean waters.

Clams: These animals live in the surf zone, where waves crash against the shore.

Petrified Tree Stump: Over time wood that used to grow millions of years ago became stone.

Shrimp Burrows: Shrimp-like creatures burrowed in the sand of the shallow ocean. Today, you can see their reddish tunnels.

Soft Shell Turtle: These turtles live in freshwater lagoons and ponds.

The canyon itself was created only 120,000 years ago as water began to erode away the rock. Today the canyon has many features.

Label the picture below with the different features.

Mesa: A long, flat-topped raised area with sides that form steep cliffs.
Butte: A flat-topped hill that is tall and narrow.
Talus: A pile of rocks and boulders at the bottom of a steep slope.
Wash or Arroyo: A seasonal river that helped carve out the canyon.

ARCHAEOLOGY

Chaco preserves many cultural sites. The people who lived at Chaco left behind clues that we use to learn about who they were and what they did. Archaeologists look at the objects people left behind to learn about the past.

Match the objects below to what they tell us ancient peoples were doing.

Mano and Metate

Trading

Hunting

Grinding Corn

Farming

Cooking

Sewing

Fire

Fire Starter

Spear point

Pottery

Macaw

Hoe

Bone Needle

Researchers also look at rock art designs to understand the Chacoans. Petroglyphs are etched into the walls and pictographs are painted onto the rock.

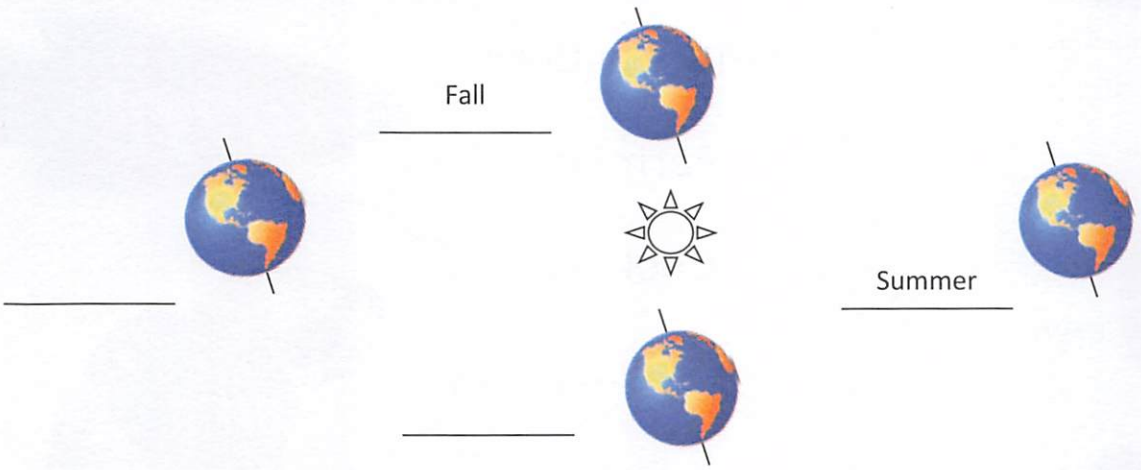
Draw some petroglyphs or pictographs that you find on your visit. Why do you think people made this rock art?

ARCHAEOASTRONOMY

Archaeoastronomers try to understand how the Chacoans designed their buildings to line up with the sun and stars. The Chacoans watched the sky closely. This was important for ceremonies or planting crops. The descendents of Chaco still celebrate important times of year like the solstices and equinoxes today.

The Solstices and Equinoxes are created by the tilt of the Earth. When the Northern Hemisphere is tilted towards the Sun, summer is here and the days are longer. Summer Solstice is the longest day of the year. When the Earth is tilted away from the Sun, we have winter. Winter Solstice is the shortest day of the year. On the Spring and Fall Equinoxes, there is an equal amount of daytime and nighttime.

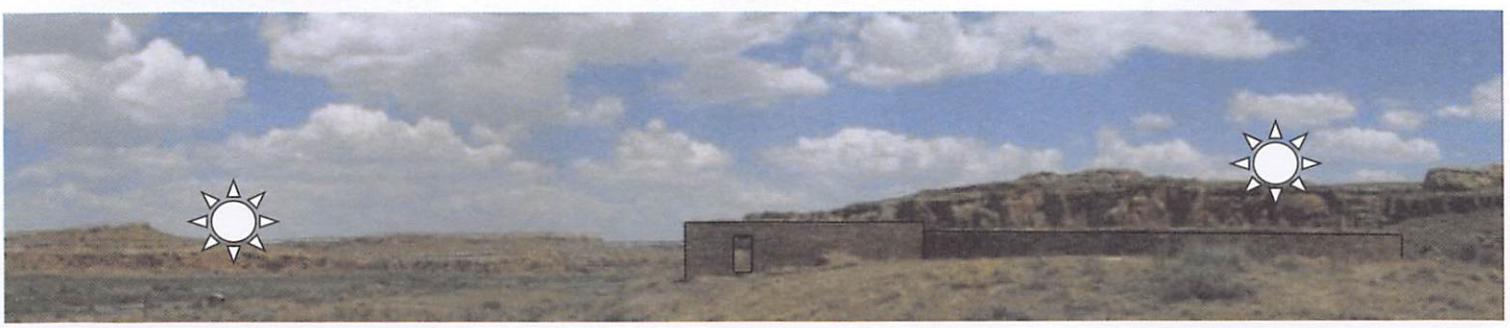
Look below and fill in the rest of the seasons.



It is because of the Earth's tilt that the Sun rises at different places along the horizon throughout the year. On the Summer Solstice the Sun rises furthest North along the horizon and on the Winter Solstice the Sun rises furthest South. You can see this in the picture below. The Chacoans would have known this. They seem to have lined up some of their buildings, like Casa Rinconada with these movements of the Sun. These places are called alignments.

Look at the picture below. Draw the Sun as it rises through the doors of Casa Rinconada on the Spring and Fall equinox. Did you visit Casa Rinconada?

Summer Solstice *Spring and Fall Equinox* *Winter Solstice*



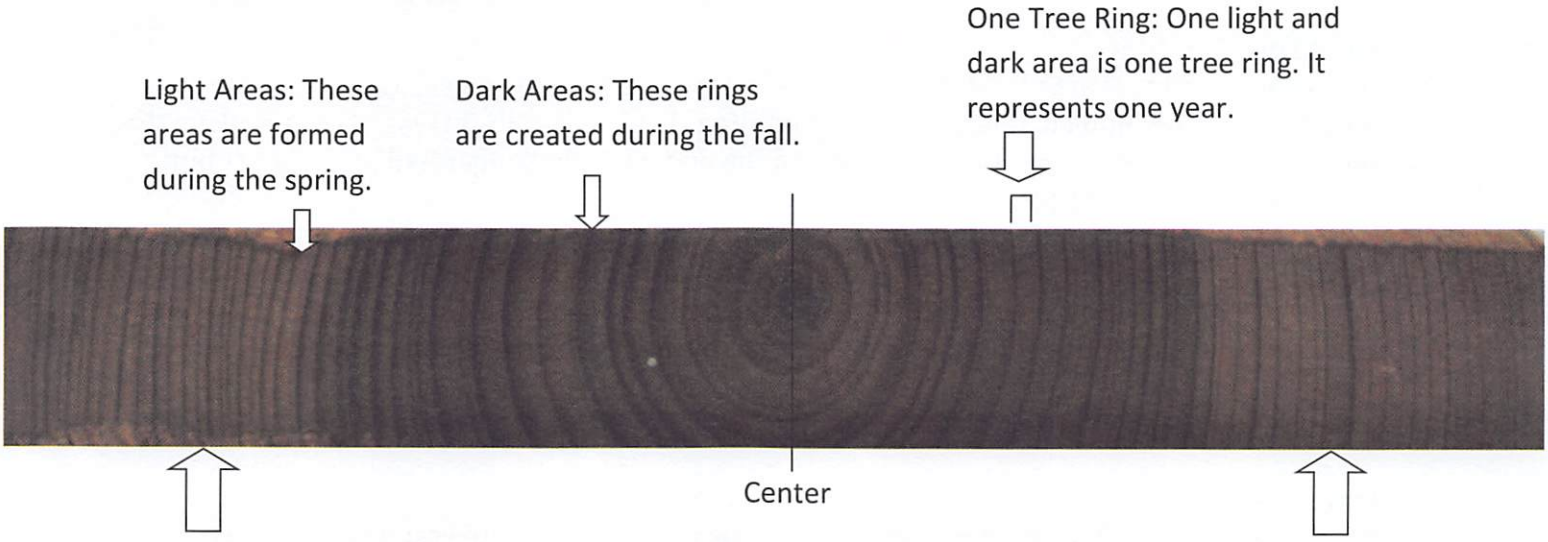
North *East* *South*

Help us protect the night sky! Outdoor lights are often too bright or are pointed up into the sky. This creates light pollution, which makes it hard to see the night sky and confuses many nighttime animals. Turn off lights and choose downward facing lights.

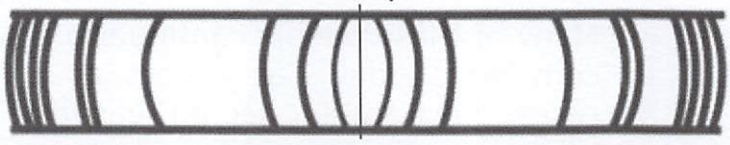
DENDROCHRONOLOGY

Throughout the Chacoan buildings, you can see many wooden logs that were used to create floors and ceilings. Many of these logs have survived because the weather is so dry. Today we can use these logs to learn many things.

Dendrochronology is the study of tree rings. Dendrochronologists use tree rings to help us date the wood we find and to learn about the climate. Today we take core samples from the logs by drilling a small hole.
Look carefully below to learn what this can tell us.



Look at the tree core sample below to answer the questions.

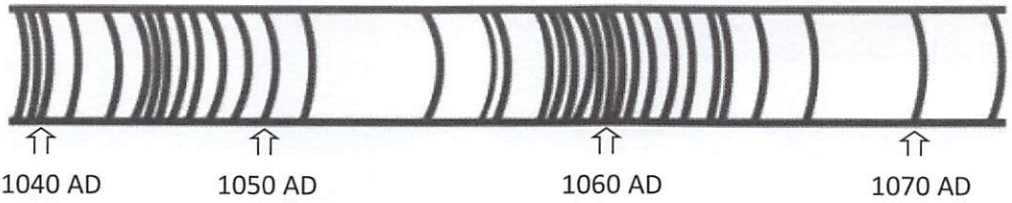


Count the tree rings from the center. How old was this tree? _____

How old was this tree when it got the most water and nutrients? _____

How old was this tree when it got the least water? _____

Now compare the core sample above to the long tree ring sequence below.



Dendrochronologists compared lots of core samples to make a long sequence, or series, of tree rings. Compare the core sample to the longer sequence.
During what years, did this core sampled tree live? _____

PEOPLE TODAY

There are over 20 indigenous groups who are the descendants of Chaco. They include people from Hopi, from Laguna, Zuni, Zia and Acoma Pueblos and even the Navajo, to name just a few.

These people have oral histories or stories about Chaco that have been passed down from generation to generation. Many of these stories are private, but below you can read two stories about why people left Chaco and migrated to different areas.

The Great Gambler

"The oral histories also tell us that the canon was a place of many vices...Gambling was a common pastime; indeed, it was through gambling that Naahwiilbiihi was able to enslave the people. He was a preeminent gambler, and in the end each challenger had nothing left but himself or herself to wager.

Thus, slowly, all challengers and their families became spoils of gambling and pawns of the Gambler...For these reasons, the development of a place like Chaco Canyon must not happen again....In the end, Naahwiilbiihi was defeated at his own games of chance and was forever banished.."

~ Richard Begay, "In Search of Chaco" pg. 56

Time to Leave

"Yupkoyvi had served its purpose, and now it was proper to lay it to rest. For the many descendants of the Hopi clans that once lived in and around Yupkoyvi, it will forever be their mother village. It is perhaps a distant, mysterious place beyond the horizon, but it is a place that lives in their hearts."

~ Leigh J. Kuwanwisiwma, "In Search of Chaco" pg. 47

Dancers from Laguna Pueblo

Many of these people continue to come here today – as visitors, as researchers and for sacred reasons. While they are here, it is important to remember their past and to respect the people who came before them.

Where are your ancestors from? How would you want people to treat the things they left behind? How do you think you should treat the places at Chaco?

_____

_____

_____

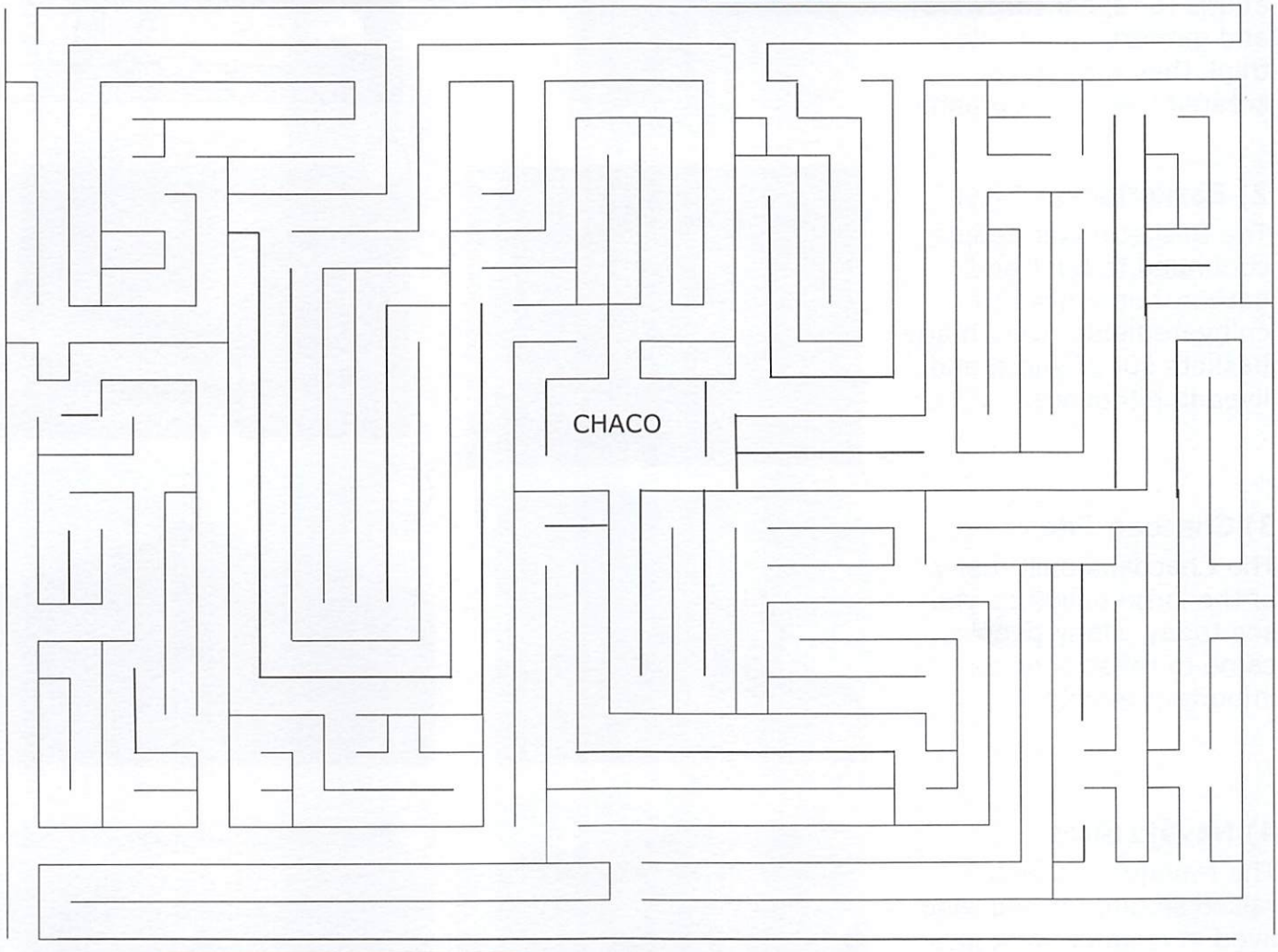
CHACO AT THE CENTER

Chaco was at the center of a larger civilization. There are over 100 other sites, called outliers that are related to Chaco. We think many people from these sites may have come to Chaco for important events.

Find your way through the maze from each outlier site into Chaco Canyon.

Aztec Ruins

Chimney Rock



Kin Bineola

Pueblo Pintado

How do you think people communicated with one another from these different outlier sites?

A LONG HISTORY

People have been living in the canyon for thousands of years. Over the centuries, the weather and people have worn away the buildings leaving what we see today.

Look at the "NOW" pictures below. What do you think those places would have looked like when those spaces were being used? Take the number from the "NOW" pictures and write it on the "THEN" picture.

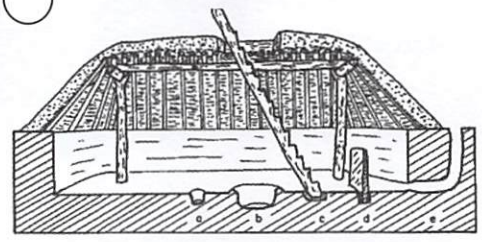
NOW

THEN

1) Hunter-Gatherer Sites

The first people to live in Chaco hunted animals using atlatls (or spear throwers) and gathered food. We think they may have created these pictographs.

1) Hunter-Gatherer



2) Basketmaker Sites

The Basketmaker people continued to hunt and gather, but started to cultivate fields. They made baskets out of yucca and lived in pithouses.

2) Basketmaker

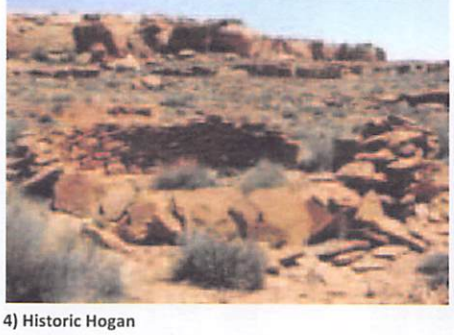
3) Chacoan Sites

The Chacoans built many of the large buildings you see today. Many people came to these sites for important events.

3) Chacoan Site Kin Klizhin

4) Navajo Sites

The Navajo, or Dineh, raised sheep, farmed, and lived in hogans. Navajo people continue to live in the area and you can see different types of hogans today.



4) Historic Hogan

Today

Draw your own picture of Chaco today. Who lives here?

MORE RECENT HISTORY

Fill in the blanks. Use information from a ranger program or from the "Brief History of Chaco" handout. When you're done, put the circled letter from each answer onto the numbered line below.

1) The Spanish were the first to put Chaco on the map in the late 1700's. That is where we get the name for the park today. Many of the site names here, like Pueblo Bonito, come from Lt. James Simpson and Carravahal. James Simpson recorded this area while he travelled on the Washington (_____) in 1849. He asked Carravahal, a guide, what the buildings here were called.

George Pepper

2) The first archaeologist to excavate, or dig, here was _____(_) Wetherill.

3) __(_)____ Pepper, found over 100 cylinder jars in one room at Pueblo Bonito. In the entire southwest we have only found 204!

4) In 1906, Edgar Hewett helped pass the (_____) Act. This protected archaeological sites for the first time in United States history.

5) In 1907, Chaco became a National _____(_)

Navajo Conservation Crew from the 1930s

6) In the 1920's, Neil Judd conducted excavations at Bonito. He was funded by the _____(_)___ and wrote articles for the National Geographic Society.

7) In the late 1930's the Civilian Conservation Corps worked at Chaco. One group created roads and worked on erosion control, while another group helped stabilize Chaco's buildings. These people saw Threatening __(_)__ fall and destroy 30-60 rooms at Pueblo Bonito. Our preservation crew continues to work, preserving Chaco.

8) In 1980, Chaco Canyon National Monument became Chaco Culture National Historical Park and in 1987 Chaco became a UNESCO (____) Heritage site.

Now used the circled letters from your answers above, to answer the questions below. Put the circled letter from each question onto the numbered line below.

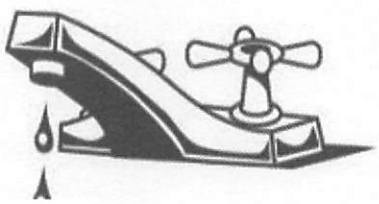
Why did people come here to the canyon? What did they do here? How many people came to Chaco? How big was Pueblo Bonito? How many Chacoan outlier sites are there? What did these people call themselves?

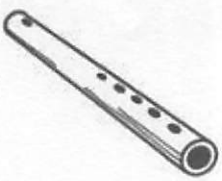
W ____	_____	_____	____	____	K _____	_____	_____
1	2	3	4	5	6	7	8

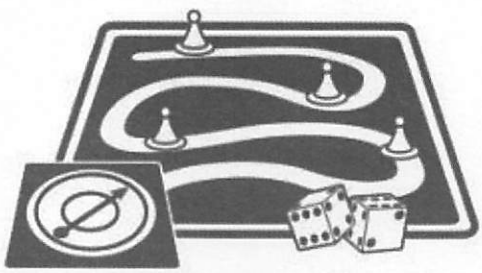
THEN AND NOW

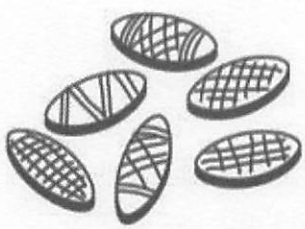
The people who lived here were not that different from us. They needed the same basic things like food and water. They also celebrated important events with one another.

Match the pictures of modern day objects with what people in the past would have used.









WHAT DO YOU THINK?

What sites have you visited in the park? Have you visited the site below?

What do you think these places were used for? Why?

Now imagine you are here 1000 years ago. Who are you? Are you a daughter, a father, or a grandmother? Do you live in the canyon or are you a visitor? What do you do? Are you a farmer, a mason, a leader, a spiritual leader, a trader, a potter, a weaver, a caretaker? What do you think of the canyon? Write a short story about yourself or a day in your life.

CROSSWORD: THE ULTIMATE CHALLENGE!

To find the answers use this booklet, the park brochure, or information from a ranger program. (This activity counts as 2 pages.)

Across

4) These Chaco descendents live at "Sky City" today.
7) ___ only photographs and memories from your visit to Chaco.
9) The study of objects former peoples left behind.
10) This spear thrower was used by Hunter-Gatherers.
11) These images are painted onto the rock walls.
12) The study of tree rings.

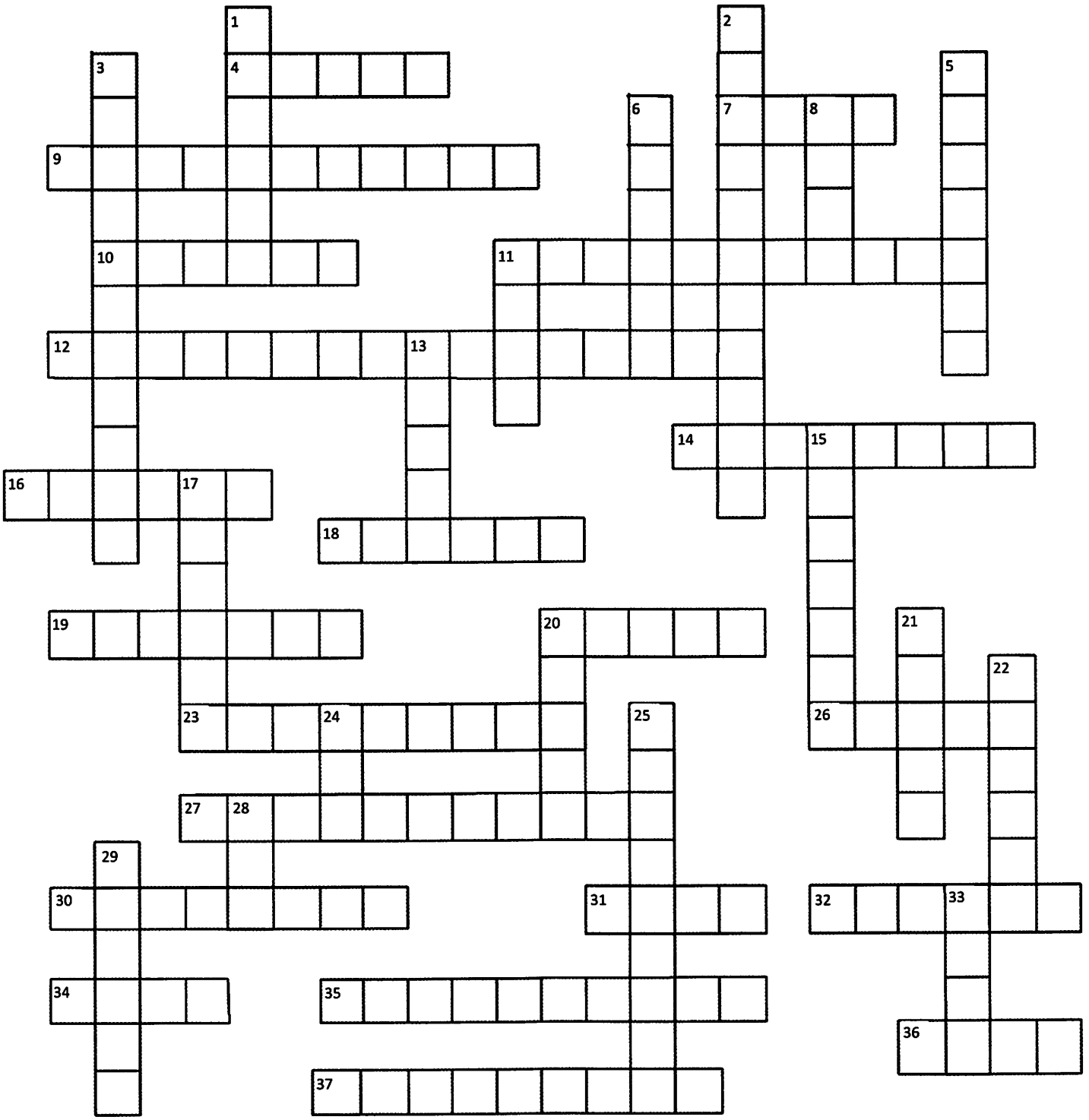
14) We call the people who built the Great Houses, the ___.
16) Pueblo ___ is Spanish for Beautiful village.
18) Chaco is at the ___ of many outlying communities and roadways.
19) On Spring and Fall ___, there is an equal amount of daylight and nighttime.
20) The people here ate corn, ___, squash and gathered other plants from the area.
23) This pictograph (right) is thought to represent an exploding star called a ___ in 1054.

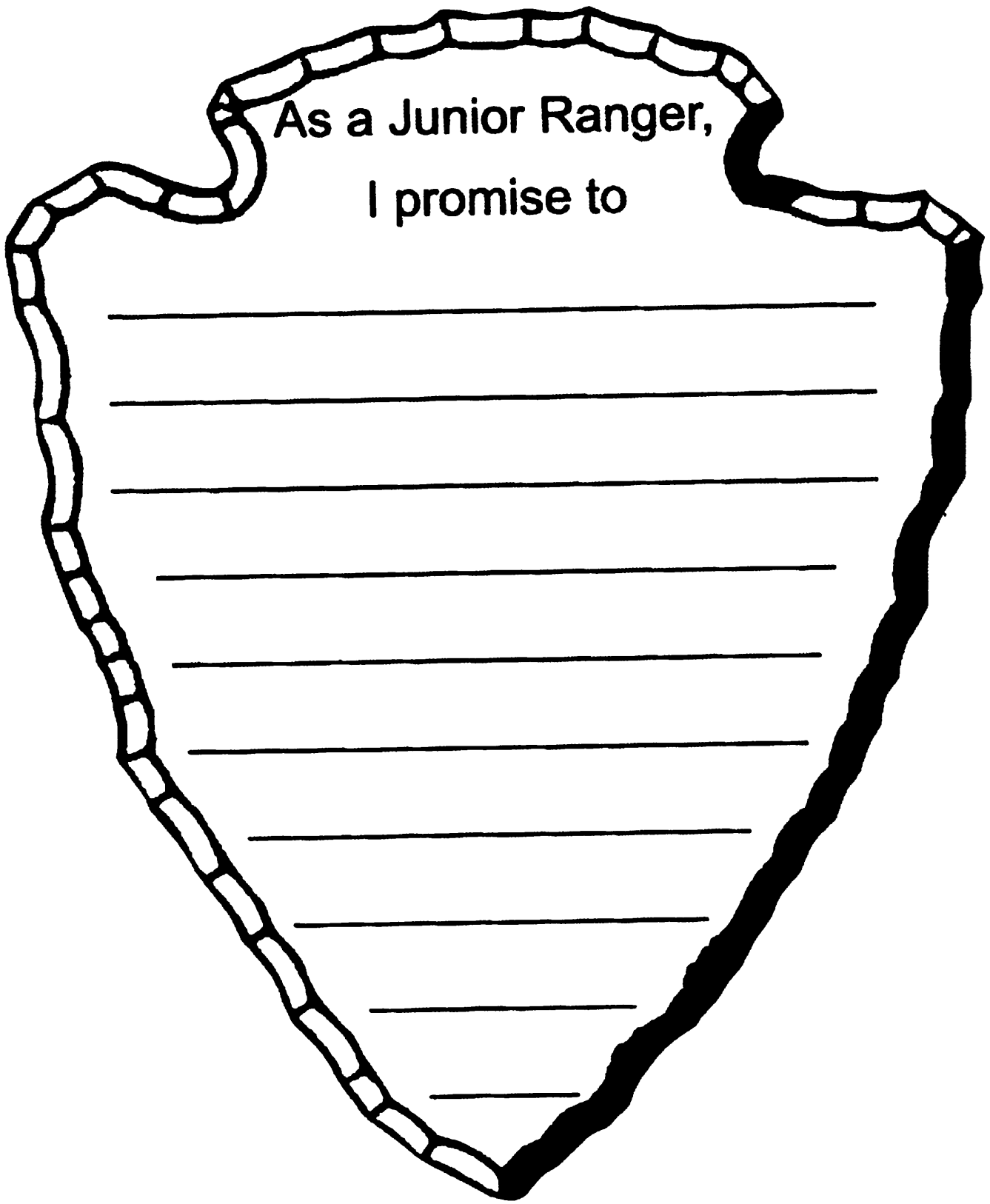
26) This plant was used to make baskets, sandals, and soap.
27) The ___ people lived in pithouses and are known for their baskets and sandals.
30) The Summer ___ is the longest day of the year.
31) Neil ___ (left) was an archeologist at Chaco during the 1920's.
32) A mano and ___ were used for grinding corn.
34) ___, wells, and possibly canals were used to control water.
35) Leave ___ where you find it.
36) These Chaco descendents live on three mesas in Arizona.
37) Chaco was at the edge of an ___ 75-85 million years ago.

Down

1) ___ is the Spanish word for "banded" which describes the only butte in the park.
2) These images are carved into the rock face.
3) ___ rock (right) fell on Pueblo Bonito in 1941.
5) Lieutenant James ___ scouted out Chaco Canyon in 1849 as part of a military expedition.
6) Kin ___ is the first archaeological site along Penasco Blanco trail. A later style Great House, it has McElmo style masonry which uses larger stones.
8) A ___ is a round room thought to be used for ceremonies.
11) The people here gathered nuts from the pinon ___ tree.
13) This black bird will steal your food!
15) ___ Rock is an outlier site of Chaco.
17) Stay on the ___!
20) The pottery found at Chaco is ___ and white.
21) Archaeologists have found traces of ___, or chocolate, on cylinder jars (right).
22) Several macaws and one ___ have been found at Chaco.
24) This is the largest mammal in the park.
25) One room at Bonito housed more ___, a blue green stone, than found anywhere else in the Southwest.
28) The Antiquities ___ was the first federal legislation passed to protect archaeological sites in 1906.
29) The Navajo, or Dine, people live in and use ___.
33) Pueblo ___ is directly north of Tsin Kletsin.

CROSSWORD: THE ULTIMATE CHALLENGE!



JUNIOR RANGER PLEDGE!

As a Junior Ranger, you have learned a lot about Chaco and what makes this a special place. Below, write how you promise to protect Chac