

# Kasha-Katuwe Tent Rocks NATIONAL MONUMENT



New Mexico • Albuquerque District

BLM

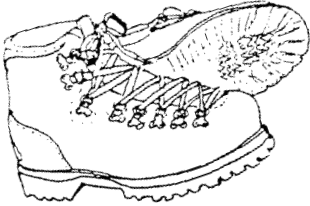
## **Public Lands Belong To You!**

**The Bureau of Land Management (BLM) is a federal government agency that takes care of more than 245 million acres of land. Most of these lands are in the western part of the United States. These lands are America's public lands, and they belong to all Americans. Public lands are almost equal in area to all the land in the states of Texas and California put together.**

**The BLM manages public lands for many uses. Public lands supply natural resources, such as coal, oil, natural gas, and other minerals. They also provide habitats for plants and animals. People enjoy the big open spaces on the lands. The lands also contain evidence of our country's past, ranging from fossils to Indian artifacts to ghost towns.**

To download this guide, visit our  
Kasha-Katuwe Tent Rocks National Monument  
web page at:  
[www.blm.gov/nm](http://www.blm.gov/nm)

# Before you Begin your Adventure...



## Things to Bring (along with an adult)

1. Plenty of water and a snack. (In summer months this area can get HOT and you will need lots of water.)
2. Sunscreen and a hat.
3. First Aid Kit.
4. A map of the area - always know where you are and where you are going.
5. Proper clothing - keep your eye on the weather and dress appropriately.

## Important Stuff!

- Before hiking, tell someone where you will be and when you will return.
- Stay on marked trails.
- Obey signs and ranger instructions.
- Take out what you bring in.





## The Oath of the BLM Junior Explorer

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(fill in your name)

As a Junior Explorer, I promise to:

- treat the earth and all living things with care and respect,
- be aware of how my actions can affect other living things and the evidence of our past,
- keep learning about the importance of nature and history, and
- share what I have learned with others!

# Welcome to Kasha-Katuwe Tent Rocks National Monument

This Junior Explorer Guide is YOUR official opportunity to get involved with the Kasha-Katuwe Tent Rocks National Monument. Let us take you on a tour of all the geology, history, fun facts, stories, and important information that surrounds this Monument.

You can work through the activities on your own or invite a sibling, parent, or an adult you know to join you. When you complete all of the activities inside this book, you will be qualified to be a Junior Explorer.

**Turn  
the  
page  
and  
start  
earning  
your  
credentials  
as a  
Junior  
Explorer!**



# People of the Past and Present

The air is cool and the sun is just peeking over the horizon as young Blue Sky and his father head out of the village. Today, Blue Sky will have his first hunt.

The pair walk for hours with wide eyes and quiet footing so as not to scare away any game. Finally, Father spots a young deer grazing on the low-hanging leaves of an aspen tree. Father motions Blue Sky to take aim. With all his might, Blue Sky pulls back the string of his bow, aims his arrow and lets it go. The arrow misses the deer and hits a large rock, breaking the arrowhead in half. The deer runs away.

Meanwhile, Blue Sky's mother and sister begin their day in the bustling village with much work to be done. Mother grinds corn (maize) with a metate and mano, storing the flour in a clay pot. The corn flour will be used later for porridge or "piki" bread. Sister makes clothing for the family using tools made from stone and bone.

Ancient people like these hunters and villagers lived in this area, and many of their descendants, like the Cochiti, still live close by today. Archaeologists study the ruins and artifacts left behind to understand how they once lived. Often, the only clues we have to the past are artifacts like the arrowhead, clay pot, and bone tools mentioned in this story. Sites and artifacts are special and should not be disturbed.

## WORD WATCH

**ARCHAEOLOGIST:** SCIENTIST WHO STUDIES PAST PEOPLE THROUGH THE REMAINS OF THEIR ACTIVITIES.

**ARTIFACTS:** THE MATERIALS DELIBERATELY PRODUCED OR USED BY PAST PEOPLES.

**SITES:** PLACES WHERE ANCIENT PEOPLE LIVED OR TOOK PART IN AN ACTIVITY SUCH AS HUNTING.

The earliest human presence in this area was probably around 4,000 years ago - The Archaic Period.

Hunter-gatherers roamed the landscape in search of food. Gradually, plants such as corn and squash were planted and people began to make permanent settlements. These are the Pueblo people.

Pictured below is an ancient tool used for grinding corn. The larger stone is called a "metate" and the smaller stone with which to grind is called a "mano."

What group of people lived (and still live) in this area?

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What animals do you think they hunted?

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What did they make with ground corn?

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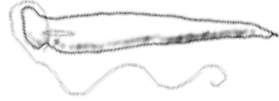


Bow & Arrow

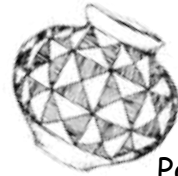


Axe

Awl & Thread



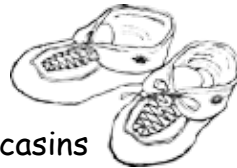
Rawhide



Pot



Deer

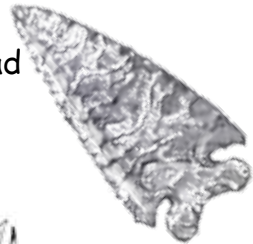


Moccasins



Metate & Mano

Arrowhead



Corn/Maize



# Charting

Use your imagination and travel back through time! Past people used things from nature to make food, clothing, and tools. Place the artifact's name (from the left) into the appropriate boxes to complete your chart.

**CLOTHING**

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**TOOLS**

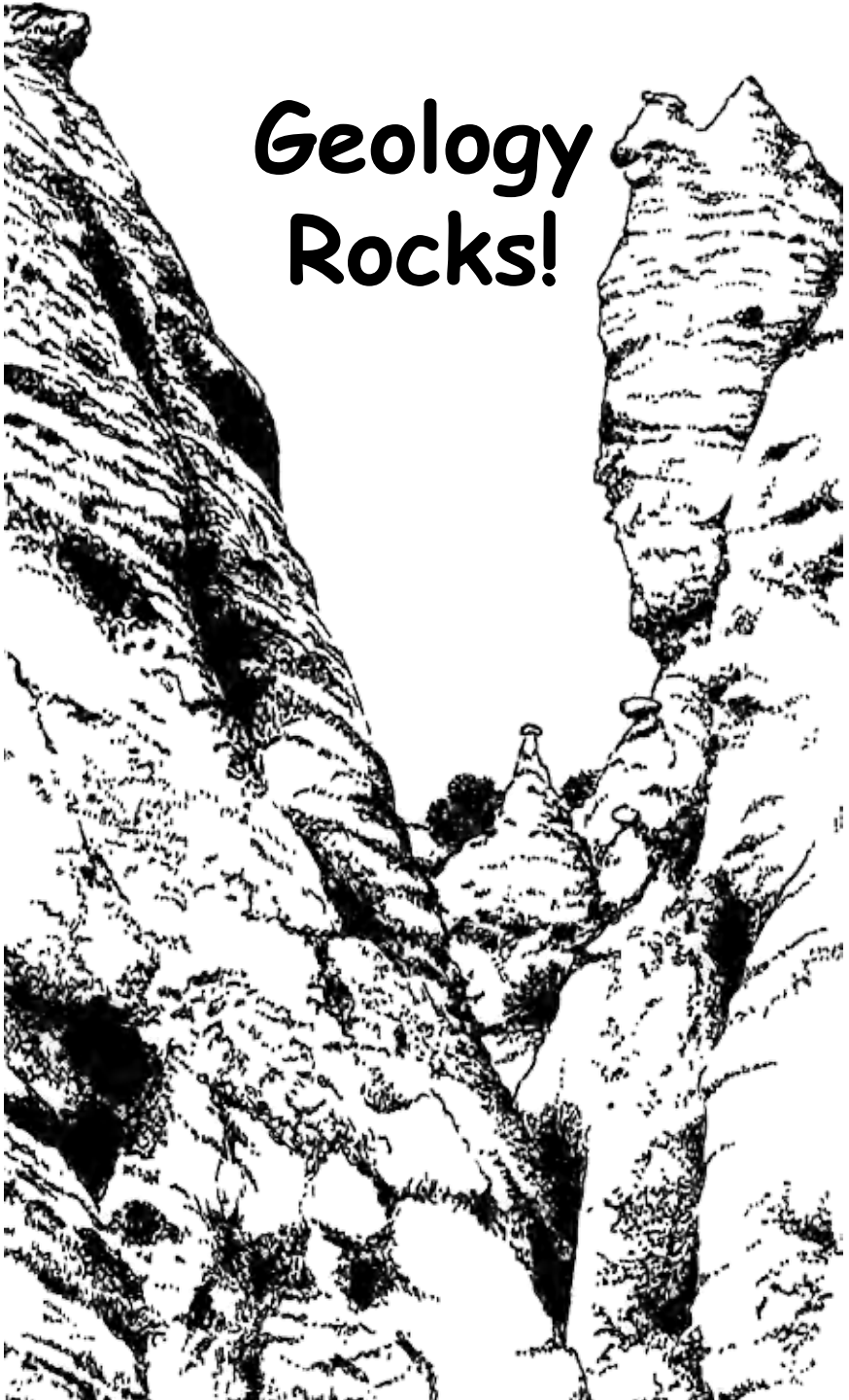
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**FOOD**

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# Geology Rocks!







## Did You Know?

A geologist is a scientist who studies the Earth's structure and history. Much of a geologist's work focuses on the study of rocks and minerals.



Igneous rock

Sediment

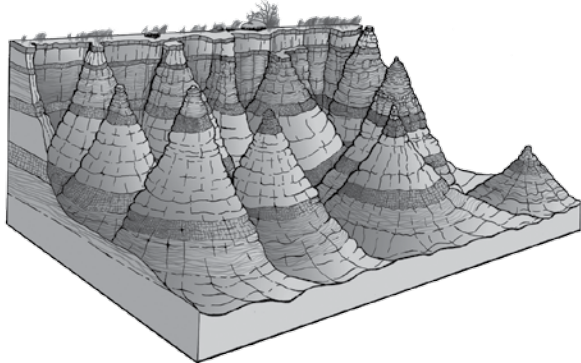
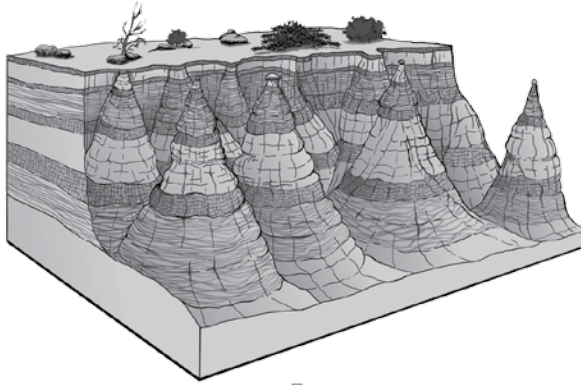
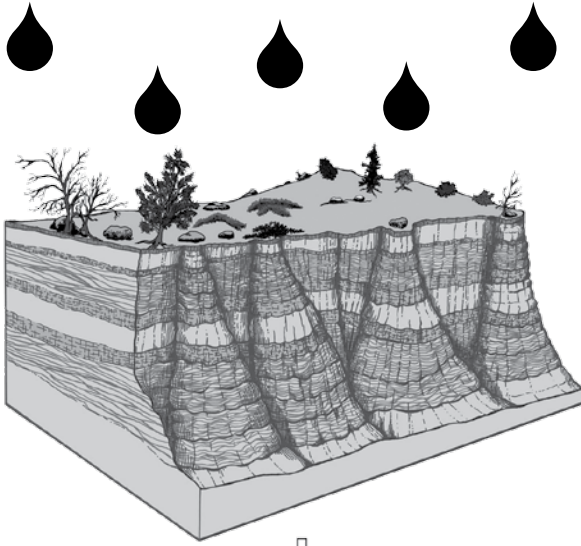


Sedimentary rock

## WORD WATCH

**ROCK:** A ROCK IS COMPOSED OF ONE OR MORE MINERALS. MINERALS ARE NONLIVING MATERIALS FOUND IN NATURE AND THAT ARE CHEMICALLY THE SAME ALL THE WAY THROUGH. COPPER, DIAMOND, GOLD, LEAD, PYRITE, MICA, AND QUATRZ ARE ALL MINERALS.

**PYROCLASTIC:** ARE ROCKS COMPOSED SOLELY OR PRIMARILY OF VOLCANIC MATERIALS.



## How is a Hoodoo made?

**A**n important part of this area's geologic story is the formation of the actual cone-like, vertical tents or "hoodoos."

The "hoodoos" are products of volcanic eruptions and erosion.



(See the diagram to the left.)

These eruptions happened 6 to 7 million years ago leaving pumice, ash and tuff deposits over 1,000 feet thick. If you look closely, you will see small, black, glass fragments in these layered deposits. These fragments are obsidian or "Apache Tears."

Softer rocks, like the ones found in this area, are more easily worn away by the effect of weathering. Some "hoodoos" have a boulder on top. These caprocks protect the soft pumice and tuff (volcanic fragments) below them. The tents that have lost their hard, resistant caprocks will wear down more quickly than those that have one.

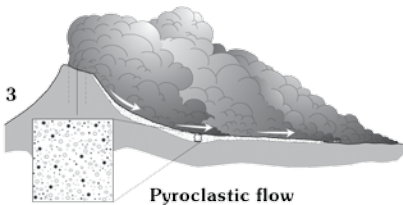
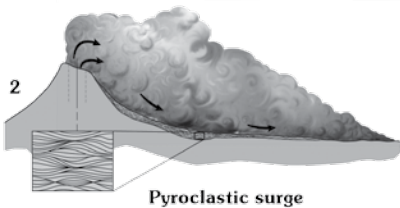
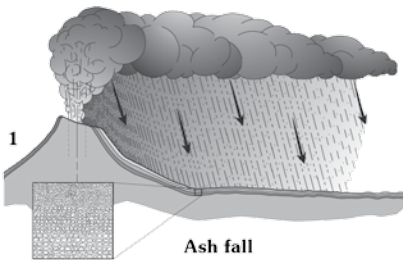
Over time, erosion by wind and water have cut into these deposits, creating what you see here today.

The weathering and erosion can cause many different shapes and sizes of rock formations to develop. Water freezing and thawing can cause cracks or breaks in rocks. Wind can carry sand or pebbles. The sand and pebbles carried by the wind can hit rock surfaces and wear the rock into shapes such as arches, pillars or cones. Ice, wind and running or moving water can cause erosion in rocks, eventually carving out canyons such as the slot canyon in this Monument.

# Down to the Nitty Gritty!

The rocks found in this area are called the Peralta Tuff. This was formed during a time when volcanoes were very active. At least 20 small volcanoes in the area erupted repeatedly, producing large quantities of volcanic ash, pumice, and other material.

**3** different layers are represented within the Peralta Tuff.



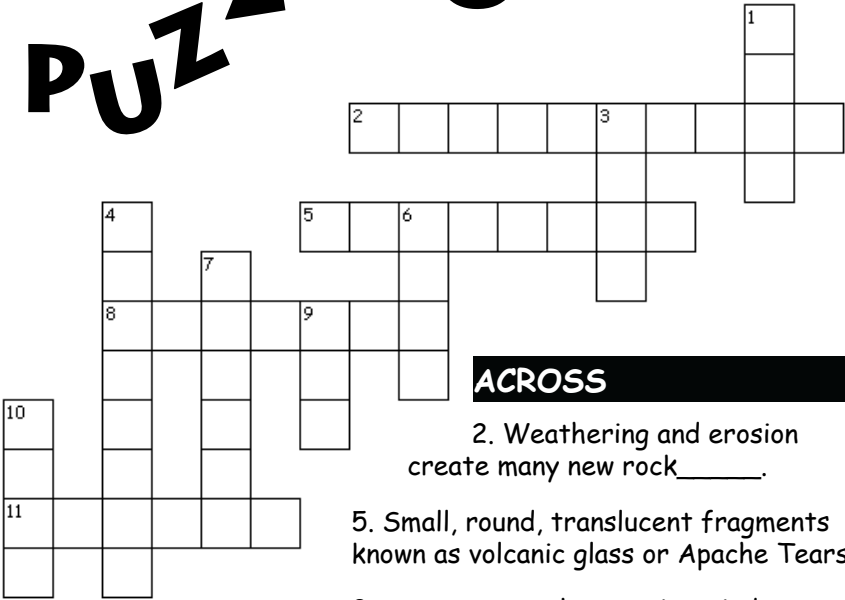
**Ash fall deposits:** These deposits form flat or parallel-bedded layers that follow a volcanic explosion.

**Pyroclastic surge deposits** are typically "layers" that result from reworking volcanic material, mostly by water currents, but also by wind.

**Pyroclastic flow:** This layer is a result of a massive flow of a turbulent mixture of hot gases and unsorted pyroclastic material (volcanic fragments, crystals, ash, pumice, obsidian, and glass shards).



# PUZZOLOGY



★ Hint - the answers can be found in this guide!

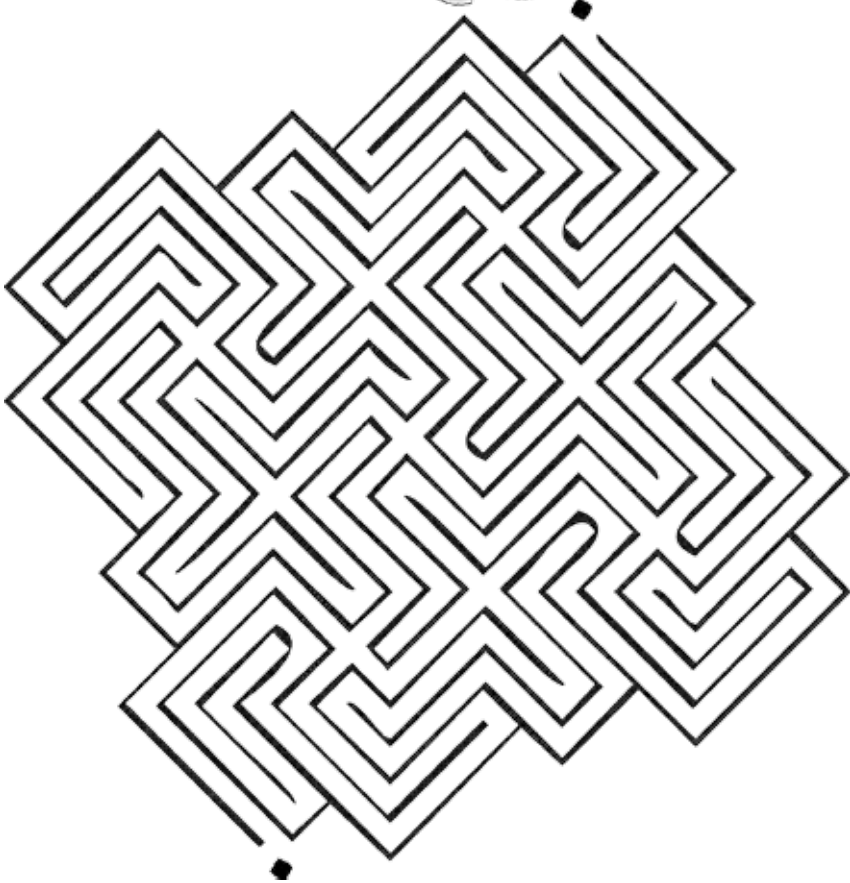
## ACROSS

- 2. Weathering and erosion create many new rock\_\_\_\_\_.
- 5. Small, round, translucent fragments known as volcanic glass or Apache Tears.
- 8. \_\_\_\_\_occurs when moving wind, water, or ice wears away weathered rocks.
- 11. A \_\_\_\_\_is carved by running water.

## DOWN

- 1. \_\_\_\_\_carries sand and pebbles through the air.
- 3. To \_\_\_\_\_is to melt ice.
- 4. Water \_\_\_\_\_and thawing can cause cracks and breaks in rocks.
- 6. \_\_\_\_\_is a small particle carried through the air that wears away rock surfaces.
- 7. A \_\_\_\_\_is a cone-like, vertical structure created by erosion.
- 9. When water freezes it turns into\_\_\_\_\_.
- 10. A \_\_\_\_\_is a combination of minerals.

Help Seymour Antelope find his way to the trailhead.



# Using Your Senses

In this activity, you will use 4 of your 5 senses to explore the area around you.



## HEARING

Close your eyes, and listen carefully. Write down all of the sounds you hear. Remember to include human-made sounds, too.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## SMELL

What do you smell around you? What scents are present in the air? Sniff a tree. Does it smell like wood, syrup, flowers, vanilla? Write down whatever your nose detects.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## TOUCH

Look carefully around the area and find items that have the following textures. Write down the object that matches the texture.

Soft \_\_\_\_\_ Brittle \_\_\_\_\_

Smooth \_\_\_\_\_ Crunchy \_\_\_\_\_

Rough \_\_\_\_\_ Gritty \_\_\_\_\_

## SIGHT

Look around the area and write down the things you see.  
Remember to look up and look down.

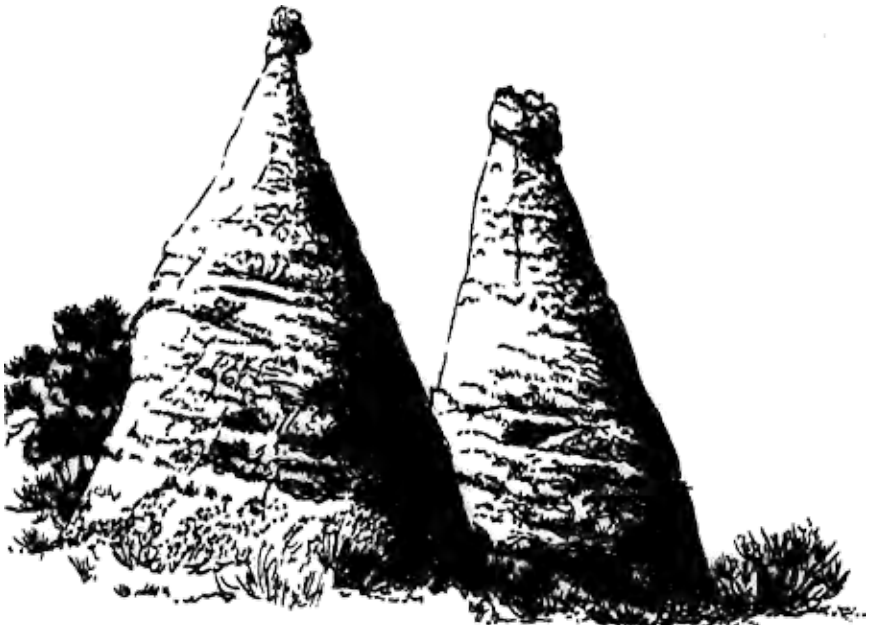
1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_


4. \_\_\_\_\_


5. \_\_\_\_\_




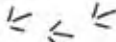
# Be a Wildlife Detective

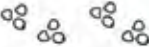
As you walk the trail, listen and look for signs of wildlife. Check off the clues below if you find them.


Bird feathers 

Bird singing or calling 

Spider web 

Bird tracks 

Animal track 

Insect buzzing 

Draw a picture of an insect you found in the area.



# Word Search

R M T F S N I S A C C O M O L M A H Q G W B T I A E J E K D  
F D S O A Y A P U M I C E F H R A M I B A T F S H R G I U G  
D W I R Z Q Z I W C V T A Q R E F I O Z T Z A U K O L P O W  
C Z G M U I M U D P I O M O H U T E Z Z E Q T N I S K C O R  
N N O A C B E D S I I M W D S L G A K E R K K G T I Y J G Y  
R D L T G X B I R Y S H Z O A G R C T X T Z W N V O J D T E  
P A O I T N Q A N Y E B B Z U D Q Q Q A D D E R B N Q N D A  
B V E O N Y N U A A H Y O I Q E C I F S M M X S T H A D L M  
T M H N E G Z H D Z V L A B S X J B X X N Y M O E O U Z B F  
F T C X M O S W F L E H Z B V B V J M O S H N A X M A W M V  
A D R E I A K M F U K J G N T A M R R B Y A I T N B B P X A  
S C A J D A Z U W J V W E Y S P F I L Q C O O D O O H N R I  
Z H D F E D D F N W E S L C S M V X H L M H K I X Q O X R S  
D A S B S O K Z C B I D G Z O N V H O R G S D Z E Y L O Y S  
A M O X J Y H X C R G O U B E B I V A Y U L G Y N A G K A O  
X C E U H W N A Z V O J X M P J S U Q Q X L H A W T O K E Y W  
K E L C A P R O C K U N O L U A S F D G M R C K N U U E E H  
E V B J D U Y M G U Y K R Q C X I F B G C A R V I Q G W J M  
E D O C W N D L W E M L Z E F Z O A D L Z P W C T I W R N R  
W E A T H E R I N G O I E V D H H A T Z U W L Q U T G K O X  
M X U M D F C Y Y H G L R A D Z Z R D Y B P C A U G C R N O  
Y Z F W J A N S M N X L O C L D S D M X G I W F H M K G J X  
C L T L D R M C E Z Z Z K G S C E P G H G Q F F F H L P E N  
X O C I I P N O N K O O C W I B S Y Y F I A W E K Z V F Z Y  
K J C D U B U A J L A I X P K S X L O J X A I W H J B L H Y  
D T H H S H B L R S L R F T O T Z P Z Y W C C V Q R W J Y  
F N E Z I Q Z T Y U L R L D K H M N Z P M U K P V Z Q Z S J  
K C I L I T M E O A F T V N G L U B P S D S W J Z E V S N W  
B M Z W E C I S T E Q U Q I A F R Q E A Y X H Y R L K K U U  
W F I S W A L S U N P P E K X D N Z T G T V Q I M V L X D E

## FIND THE HIDDEN WORDS

Archeologist  
Arrowhead  
Ash  
Canyon  
Caprock  
Cave  
Cochiti  
Environment  
Erosion

Formation  
Geologist  
Hoodoo  
Igneous  
Maize  
Metate  
Moccasins  
Obsidian

Pumice  
Rock  
Sediment  
Squash  
Tuff Volcano  
Water  
Weathering  
Wind



# Congratulations!



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your name here

has completed the Junior Explorer Activity Guide  
and is now an official  
Junior Explorer for  
**Kasha-Katuwe Tent Rocks National Monument**







# BLM

**Department of the Interior  
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**BLM/NM/GI-13-01-8367**



Leave No Trace: Plan ahead and prepare - Travel and camp on durable surfaces - Dispose of waste properly - Leave what you find - Minimize campfire impacts - Respect wildlife - Be considerate of other visitors.