# The Ghost of the chnsm 

## Teacher's Guide

by

## Carole Marsh



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\# 2 The Mystery on the Freedom Trall
\#3 The Mystery of Blackbeard the Pirate
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\#5 The Mystery on the Chlifornaa Mission Trall
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\# The White House Christuas Mystery
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\# 46 The Baffling Baseball Mystery
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\#48 The Mistery of Mimis Hajuted Book Shop

## A Ward from the Author

## Dear Teachers,



In 1979, I began writing children's mysteries set at historic sites that still existed—primarily so that kids could go and see what they had read about. Frankly, I found no more fun, educational, and stress-free (actually, just plain joyfu!!) activity to do with my then school-age children than to visit a fascinating historic site!

Many people believe that visiting the Grand canyon can be an educational experience. There's history, mystery, legend, lore, fun, fantasy, and much more!

Yes, Grand Canyon is a major, world-class tourist attraction, but it is also one gigantic history lesson! It is fascinating to learn how much the canyon has been changed by the ever-flowing Colorado River.


We learned a lot, but what we learned best is that kids and adults can learn together. Reading and going and seeing and doing is what education is all about, and most especially, that "adopting" a subject or place leads to a lifelong interest in an era, a place, the people, and all the fascinating facts that made up their lives. We learned that history is still "living" and is not lost on kids! In fact, it is quite a revelation!

Enjoy your Grand Canyon mystery adventure!

## Carole Marsk

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## $30^{\text {YenRs }}$ AGO ...

As a mother and an author, one of the fondest periods of my life was when I decided to write mystery books for children. At this time (1979) kids were pretty much glued to the TV, something parents and teachers complained about the way they do about video games today.

I decided to set each mystery in a real place-a place kids could go and visit for themselves after reading the book. And I also used real children as characters. Usually a couple of my own children served as characters, and I had no trouble recruiting kids from the book's location to also be characters.

Also, I wanted all the kids-boys and girls of all ages-to participate in solving the mystery. And, I wanted kids to learn something as they read. Something about the history of the location. And I wanted the stories to be funny.

That formula of real+scary+smart+fun served me well. The kids and I had a great time visiting each site and many of the events in the stories actually came out of our experiences there.

I love getting letters from teachers and parents who say they read the book with their class or child, then visited the historic site and saw all the places in the mystery for themselves. What's so great about that? What's great is that you and your children have an experience that bonds you together forever. Something you shared. Something you both cared about at the time. Something that crossed all age levels-a good story, a good scare, a good laugh!

30 years later,

## Carale Marsh

## Tourist Information

## Grand Canyon Chamber of Commerce

www.grandcanyonchamber.com

## Apache Stables

For horses, mules, guides, and campfire wagon-rides
www.apachestables.com

## Discovery Treks

Memorable adventures of the north and south rims of the Grand Canyon. Something for everyone.
6890 E. Sunrise Dr.
Suite 120-108
Tucson, AZ
1-888-256-8731

## Grand Canyon Railway

Be entertained by cowboy characters, strolling musicians, and a mock train robbery in a 1900s recreation.
233 N. Grand Canyon Blvd. Williams, AZ 86046
1-800-THE-TRAIN

## AirStar Helicopter Tours

Grand Canyon Airport, Hwy 64
Res@airstar.com

Grand Canyon Airplane Tours Grand Canyon Airlines Grand Canyon National Park Airport
1-866-2-FLY-GCA

## Petrified Forest National Park

Where some of North America's oldest fossils were found! See petrified wood, the Painted Desert, and go hiking and camping.
602-524-6228

## Page \# Subject

1 Science

Geography


1 Vocabulary

1 Weather

1
Recreation

1
Math

Science
1

Culture


## EXPLORE!

Haze is a condition of moisture, dust, and smoke in the atmosphere. Haze makes it hard to see clearly.

Traveling from Georgia by air, which states do Grant and Christina pass through?

In 1540, the first Europeans arrived in the Southwest led by Spanish explorer, Francisco Vásquez de Coronado. How many years ago did they arrive?
"Futile" means ineffective or of no use.

Humidity is dampness of the air. When humidity is high, warm weather feels even warmer and more stifling.

What do you do for fun in the summertime?

During daylight saving time, if it is 5:22 p.m. Navajo time, what time is it Arizona time? (6:22 p.m.)

Clocks and calendars were first used thousands of years ago. Both depend on the Earth's movements. A day is one spin of the Earth. A year is the time it takes for the Earth to travel around the sun.

Hopi means "peaceful people." The Hopi Reservation is known for its pottery, basketry, kachina dolls, jewelry, and sand paintings.

The Navajo are known for rugs, blankets,


## Native American Arts and Crafts

## Spider Woman and Navajo Weaving

Navajo legend tells how Spider Woman taught the Navajo women to weave. In fact, to honor her, Navajo weavers used to leave a small hole in the center of woven blankets similar to a spider-web hole.

## The Navajo Today

Many still tend sheep although mineral reserves have brought some good wealth. The Navajo believe good spirits come from the east; therefore doorways on many homes face the rising sun.

## Ceremonial Sand Paintings

Sand paintings by the Hopi and Navajo are part of healing and cleansing ceremonies. The artists, also considered healers, use colored sand from the Painted Desert and nearby areas.

## The Hopi Reservation

This 1.5 -million-acre reservation was formed in 1882 and is surrounded by Navajo lands. The first Europeans found the Hopi living in pueblos on high mesas to avoid their enemies.

The Oraibi Village was built in 1100. It is one of the oldest continuously inhabited towns in the United States.

You can still see dances and ceremonies that have been performed for hundreds of years. Sound recorders, sketchpads, cameras, and liquor are prohibited.

About 9,000 Hopi live in 12 villages on three mesas. Income comes from coal, oil, and farming.
tapestries, sand paintings, and silverwork.


2 Vocabulary

2 Writing

2 Career

2 Weather

3 Science

3 Career


St. Valentine's Day has origins in both Christian and ancient Roman tradition. Although there is some mystery about the details of the man named Valentine or Valentinus, he is recognized as a sympathetic, and romantic hero.
"Gallant" means courageous and high-spirited. Gallant is also used to describe a courteous gentleman.

Grant is using exaggeration by saying that the luggage "weighs a ton." Can you think of other exaggerations or expressions to describe luggage that is very heavy?

An apprentice is one who agrees to work for another for a specific amount of time in exchange for learning a trade, art, or business. What would you like to learn as an apprentice?

The sun shines more than $80 \%$ of the time in Arizona. In the summer, the lower areas are hot, but the mountains are cool and inviting. Arizona's average daytime temperature in July is 80 degrees Fahrenheit (27 degrees Celsius) during the day. Temperatures are in the 50s (10-15 degrees Celsius) in the evenings.

A telescope uses an arrangement of lenses, mirrors, or both to observe or photograph distant objects.

An astronomer is a scientist who specializes in the study of the universe beyond the earth. They observe, calculate and form theories about the

## Just for Laughs!

According to Mark Twain, "Arizona's temperature remains at a constant 120 degrees in the shade, except when it varies and goes higher."


## Average Arizona Temps (Fahrenheit)

Season Flagstaff
Winter 42-15 degrees
Spring $\quad 56-26$ degrees
Summer 77-46 degrees
Fall 61-31 degrees

| Season | Grand Canyon |
| :---: | :---: |
| Winter | 43-20 degrees |
| Spring | 30-31 degrees |
| Summer | 81-50 degrees |
| Fall | 63-36 degrees |
| Season | Phoenix |
| Winter | 68-38 degrees |
| Spring | 83-51 degrees |
| Summer | 106-80 degrees |
| Fall | 86-56 degrees |

## For the Record...

Lowest temperature recorded was -40 degrees Fahrenheit on January 7, 1971
 at Hawley Lake.

Highest temperature ever documented in Arizona was 127 degrees Fahrenheit on July 7, 1905 in Parker, Arizona.


## Trading Post!

composition, origin, motion, and dimensions of celestial bodies like stars and planets.

3 Science Mars is the 4th planet from the sun. In Greek mythology, Mars is the name of the god of war.

3

3


4 Vocabulary

Language

Writing

Antiques
The earth's crust is made up of rocks. Rocks consist of one or more minerals. There are three types of rocks:

Sedimentary rock is formed from layers of sand, mud, and seashells compressed together.

Metamorphic rock is rock that has been transformed by a lot of heat and pressure.

Igneous rock is formed when hot, melted rock from inside the earth cools down.

A "gorge" is a deep, narrow passage that has steep rocky sides. Gorges are found between mountains. (Gorge also means to eat too much!) language. A connoisseur is someone who is well informed and has good taste especially for things in the arts.

Papa uses a slang for the word money. Do you know any others besides "green"?

When people collect things like art, crafts, stamps, etc., they increase in value over time. Is


Hubbell Trading Post, the Navajo's oldest trading post, was founded in the 1870s by John Lorenzo Hubbell. Its founder devoted his life to the Navajo. Hubbell, who lived in both cultures, served on the Territorial Council, the State Senate, and owned 24 trading posts. You can still purchase Navajo jewelry, rugs, baskets, and groceries there, too.

## Other Arizona Indian Arts

 and Crafts, by ReservationAk-Chin: Basketry
Camp Verde: Basketry
Cocopah East and West: Ribbon shirts and dresses, beadwork, gourd rattles
Colorado River: Beadwork, wall clocks, basketry
Fort Apache: Beadwork, burden baskets

Fort McDowell: Basketry
Fort Mojave: Beadwork, basketry

Fort Yuma: Beadwork
Gila River: Maricopa pottery, Pima basketry
Havasupai: Beadwork, basketry
Hualapai: Dolls, basketry
Kaibab-Paiute: Leather beadwork, wedding baskets

Pascua-Yaqui: Deer dance statues, children's paintings
Salt River: Pottery, basketry
San Carlos: Beadwork, basketry, peridot jewelry

Tohono O'Odham: Blankets, Kiaha basket weaving, silverwork, blankets

Tonto Apache: Beadwork, basketry
Yavapai-Prescott: Basketry
there anything you like to collect for fun?

4 Writing

5 Science

5 Language

5 Safety

5
Science
Sunset is when the sun disappears below the western horizon.

5

$5 \quad$ Feelings

6 Manners

Life
Based on what has been read so far, what do you think is happening? How does the phantom warrior fit into the story?

Limestone is a sedimentary rock which contains magnesium carbonate and quartz. Limestone is used for building and making cement.
"Dilly dally" means to dawdle or waste time by moving slower than necessary.

Handwashing is one of the simplest ways to protect your health. When is it time to wash your hands? wern horizon.

Fishing and hunting are popular pastimes in Arizona. Game birds and animals include turkey, quail, squirrel, deer, elk, javelina (wild pig), antelope, bear, mountain lion, and buffalo.

What do you do when friends or family annoy you?

Why did Papa and Mimi tell the kids how to greet adults?

6


6
The kids had food popular in the southwestern region of the United States. Have you ever tried this cuisine? What foods are popular where you live?

In light of Christina's feelings about their new

## Arizona State Facts

## Date of Statehood:

February 14, 1912
Highest Peak:
Humphrey's Peak
12,633 feet (3,851 meters)
Lowest Point:
Colorado River-70 feet
(21 meters) above sea level
Total Area:
114,006 square miles (295,253 kilometers)

## State Tree:

Paloverde
State Bird:
Cactus Wren


## State Mammal:

Ring-tailed Cat
State Gemstone:
Turquoise
State Fossil:
Petrified wood
Thousands of years ago, dead conifer trees floated down river, landing in the Painted Desert. As time passed by, silt, sand, and volcanic ash buried the logs, preserved them, and turned them into stone.

## The Grand Canyon:

The Grand Canyon became a National Monument in 1908, and a National Park in 1919.

The Canyon is not the world's deepest canyon! It is, however, a great example of erosion. Layers of geological history are displayed for all to see!

Most people did not know about the Grand Canyon until after the Civil War. Major John Wesley Powell, a one-armed veteran of the war, and his team of several men and boats, rode through the Grand Canyon on the Colorado River. No other group was known to have completed this journey!
friends' lives, discuss the expression, "The grass is always greener on the other side."
$7 \quad$ Histor

Medical "Amputate" means to cut off a part of the body in surgery that cannot otherwise be saved.

7 Science Unidentified Flying Objects are abbreviated as UFOs. Some things in science are still mysteries. Do you think there are living beings from other planets who come to visit us on earth?

If the police arrived at $8: 30 \mathrm{p} . \mathrm{m}$. and left at 11:45 p.m., how long did they stay? (3 hours, 15 minutes.)

8 Vocabulary
"Black market" means illegal business of buying and selling.

8 Sport Discuss why each item included in the hiking backpack is important.

8 Food
$9 \quad$ Science
A magnifying glass helps you to see by making smaller things larger and clearer. It is like using a simple microscope.
$9 \quad$ Penmanship Even in the age of computers, it is still important to write neatly. Calligraphy is the fine art of handwriting that you can practice now. (You could even make extra money writing for special


## Visiting Reservations

Each Native American nation has its own history, culture, and customs. Restrictions such as no photography, videotaping, or sound recording often apply. Some sites or ceremonies (remember that many of these are religious) are not open to visitors. Also, stay on designated paths and respect private buildings. When in doubt, always ask first!

## Hubbell Trading Post

This National Historic Site is located on the Navajo Nation. 602-755-3475

## Navajo Reservation

The Dineh (what the Navajo call themselves) are the largest tribe in North America and have the most reservation lands. The reservation covers 28,803 square miles ( 74,600 square kilometers), with the majority of lands in Arizona; some of the reservation continues over the borders to New Mexico and Utah. The Navajo Nation's capital is Window Rock, Arizona. 602-871-4941

## Hopi Reservation

It has been said that of all the Native Americans in North America, the Hopi probably live most closely to their traditional way. Hopi Cultural Center Second Mesa, AZ
602-743-2401

## Havasupai Reservation

The last place in the United States where the mail is still delivered by mule! Located at the bottom of the canyon, amid waterfalls and towering plateaus.
Supai, AZ, 602-448-2961
programs or wedding invitations!) living things in the Grand Canyon, if Grant is not careful.

Microbiotic soil is a colony of tiny plants that live


## Environmental Issues of Arizona

Water is Arizona's most valuable resource. Because of the increase in agriculture, industry, and people, the state uses more water than is produced naturally from rain or melting snow. In fact, in some areas, the land has dropped 12 feet ( 36.6 meters) because of decrease in the underground water table!

## Endangered or Threatened Species

Due to heavy land use, this wildlife is in danger:

Mammals: The jaguar, Sandborn's long-nosed bat, and the Hualapai Mexican vole.

Fish: The Apache trout, the desert pupfish, the Yaqui catfish, the loach, the minnow, the bonytail, the Colorado squawfish, the Gila topminnow, and the Little Colorado spinedance.

Reptiles: Desert tortoise
Birds: The thick-billed parrot, the wood stork, the masked bobwhite quail, and Audubon's crested caracara.

Plants: The Arizona agave, the Arizona hedgehog cactus, the Cochise pincushion cactus, the Tumamoc globeberry, the Arizona cliff rose, and the Navajo sedge.

## Cacti Get Extra Protection

Cacti have prickly stems for protection, but in Arizona, state law protects them as well. There are large problems in the southwest with heavy and illegal harvesting of cacti.
together. It looks like bumpy black dirt on top of sand. It helps the environment by holding in moisture and slowing down erosion.

Be careful, Microbiotic soil can take 15 years to heal after one footprint.

12 Biology Grant and Christina are probably familiar with no-see-ums, the nickname for tiny, biting pests that are especially plentiful near the coastal areas of Georgia, Grant and Christina’s home state.

13 Language Many words we use are originally from Spanish such as burro, alligator, patio, and bronco.

13 Science A cactus is a member of a large plant family called Cactaceae. They are native to the hot and dry areas of the New World. Cacti have prickly stems that function as leaves. Some cacti have pretty flowers and fruit that are edible.

13 Science

13 Writing

13
Language An interjection is a part of speech expressing


13 Language
The agave plant family are considered to be hard working. They are grown for decoration, used in industries by fiber makers, and used in Mexico where they are harvested for distillers.

Was Christina truthful? Why or why not? What would you have done? excitement or emotion. These words can stand alone. What examples can you find on this page? Can you make up others? (Ex. Whoa! Ouch! etc.)
"Coax" means to convince or persuade by pleading or flattery.


## What Is a Succulent?

They are a great example of nature's creativity. Succulents are plants that have adapted to extreme environmental conditions. The word succulent is from the Latin word succos, which means juice. These inventive plants store water-a vital ingredient for survival. They store this water in their leaves, stems, and roots for long periods of time.

The cactus family is only one of several groups called succulent plants. Some other groups of succulents are daisies, lilies, milkweeds, and geraniums. There are even some types of grapes that are called succulents!

## Super Survival Skills

Over time, plants in the succulent family developed different ways to survive.
Some are:

- Are compact in size and shape to reduce evaporation.
- Develop very sharp bristles or hooked spines.
- Make tough, thick skins to detract hungry animals.
- Produce yucky-tasting or poisonous juice.
- Live higher on trees or hidden under rocks and crevices.
- Camouflage with surroundings; some even look like rocks or pebbles!


Biology Animals that are extinct no longer exist.
Industry Mining is a major industry in Arizona. In fact, Arizona leads the nation in the production of all metals except iron.

14 Culture

14


14
4 Culture

14


Speaking of anger management, how do you control your temper when it starts to flare up?

A scavenger is an animal that feeds on dead or decaying animals.

The Snake Dance is performed in August of every other year. It is one of the most important Hopi rituals. To many Native Americans, the snake represents lightning therefore, it often used in rain dances.

The Native Americans of the Grand Canyon have learned to make use of many of the natural resources. They make soap from yucca roots. They eat the candy-sweet, red buds of the prickly pear cactus. They also make sandals and weave baskets from the shaggy bark of the juniper tree.

## Rattlesnakes!

Rattlesnakes are found from Canada to South America. They can be from one foot (30 centimeters) to eight feet (2.5 meters) long. Some species have bands, but most are blotched with spots, hexagons, or diamonds on a light gray or light brown background.
Some are even other colorslike the Grand Canyon snake, which is pink!

Rattlesnakes have a tail rattle that makes a buzzing sound when shaken as a warning to predators. The rattle is made of segments that are loosely connected. Each time the snake sheds its skin, a new segment is added to the rattle. Adult rattlesnakes often have six to ten segments.

Rattlesnakes are a type of pit viper. Pit vipers have a pit between the nostril and eye that works as a heat sensor. This helps the snake hunt. Rattlesnakes eat rodents and other small animals. Small "rattlers" mainly eat lizards. Like other snakes, rattlesnakes avoid extreme cold or heat. In hot areas, they become nocturnal, hiding away during the day and active at night. In the winter, they group together in crevices and rockslides to hibernate.

All rattlesnakes have venom and are dangerous! Treatment for rattlesnake bites has improved but these bites are still serious and painful. The Mexican West Coast rattlesnake and the South American rattlesnake are the most dangerous because of their strong venom. In the United States, the diamondback is the most

picture-taking, and exploring. You could also catch a ride on river raft, a plane, a train, a helicopter, or a mule. What would you like to do at the Grand Canyon?
Writing How does the author create excitement as the kids follow the bad guy and the little girl?

Vocabulary "Aquamarine" is a transparent blue-green gemstone. The word also refers to the gem's blue-green color.

Recreation As you can see, there are many things to do at the Grand Canyon like hiking, fishing, camping,

Family Grant and Christina enjoy traveling and spending time with Papa and Mimi. Are there special things you like to do with your family and friends?

Superstitions Do you believe in ghosts?

## Rafting

You can take a whitewater trip through the Grand Canyon that is short or long. Most of them start at Lees Ferry. Some start at Phantom Ranch. Commercial trips down the river run from April until October. Most companies provide food and camping equipment!

## Smooth "Sailing"

Want a smooth river trip down the Colorado River? It begins at Glen Canyon Dam, traveling to Lees Ferry, where the Grand Canyon begins.
Aramark-Wilderness River Adventures
P.O. Box 717, Page, AZ 86040
www.riveradventures.com

## Whitewater Rafting Trips

These can last from one day to a month. Visitors may take a commercial trip or get a permit and use their own river craft.

- Motorboats allow visitors to see the whole canyon in less time.
- Paddle rafts are for the fit and adventurous visitor who have time to spare. A captain helps to steer while you help paddle.
- Oar boats up to 20 feet (6 meters) long carry five passengers and a boatman.
- Dories are colorful little boats with an exciting ride.
For permits contact:
Grand Canyon River Permits Office, Grand Canyon National Park, P.O. Box 129
Grand Canyon, AZ 86023
928-638-7843

Arizona Raft Adventures 4050 East Huntington Road Flagstaff, AZ 86004
1-800-786-7238
www.azraft.com
Canyoneers
P.O. Box 2997, Flagstaff, AZ 86003

1-800-525-0924
www.canyoneers.com

Nampeyo thought it was important for the girls to attend dance lessons. Why? Are your parents or caregivers strict with you about anything? Why?

* Why do rivalries exist between different groups like the Hopi and the Navajo? What do you think will help people to live together in peace?
* Are there things that just boys can do or just girls can do? Can boys and girls like the same activities without being called "sissy" or "tomboy"?

* Arizona is considered the Baby State because it was the last continental state to be added to the United States. Grant knows what it is like to be the baby of the family. Even if you are not the youngest, do people treat you differently because of your age? Do you believe you have too much or too little responsibility? How can you help your teachers, parents, or caregivers understand how you feel?
* Do you think it was right for the man to steal? What would you have done if you were in his shoes?
* The Supai Village is home of the Havasupai people in the bottom of the Grand Canyon. In many ways, they live the way other Havasupai people have lived for hundreds of years. What do you think their daily lives are like? How would you compare it to the way
 you live? Discuss advantages and disadvantages of both.
* Imagine being lost in the Grand Canyon. You have a backpack full of supplies like Grant and Christina's, except your walkie-talkie is broken! What would you do? What would you eat? How would you get help? Discuss survival skills.


Many hikers come to the Grand Canyon without desert experience. The Canyon has extreme desert-like conditions. Serious illnesses can result from desert hiking:
Heatstroke—Life threatening condition. The body's ability to regulate heat is overwhelmed.
Heat Exhaustion—Dehydration resulting from intense sweating. Hikers suffering heat exhaustion lose one or two quarts (liters) of water per hour.
Hypothermia-Life threatening condition, can happen in any season. The body loses its ability to keep warm due to exhaustion and exposure to windy, cold, or wet weather.
Hyponatremia (water intoxication)—Looks like heat exhaustion. Happens when the blood sodium level is too low from drinking too much water, not eating enough foods with salt, or when too much salt is lost through sweating.

## Tips to being a happy hiker!

Each year, hundreds of people need to be rescued in the Canyon. Here's how to stay safe:

- Don't try to hike from rim to river and back in one day.
- Don't hike during the hottest times of the day, 10 a.m. -4 p.m.
- Take breaks in the shade.
- Drink lots of water or sports drinks.
-Wear a wet bandanna around your neck; splash your head and upper body with water.
- Do not swim in the river; it is cold and dangerous.


## Drink and eat while hiking!

Many hikers do not notice how much they are sweating in desert conditions. Waiting to drink until you feel thirsty means you are already dehydrated. You can only absorb 1 quart (liter) of water per hour, so drink $1 / 2$ to 1 quart (liter) every hour while hiking. Also, eat a salty snack with each drink!

## Geagraphw: Find It!

1. Write the names of the states that border Arizona.
2. Use crayons or colored pencils to show population.




|  |
| :--- |
|  |
| $74-233$ |
| people/ |
| sq. mi. |
| or |
| $29-90$ |
| people/ |
| sq. km. |

## Isn't It Grand!

Grand Canyon in the 1900s
Copper, asbestos, and other minerals brought more people to the area. Pioneers made settlements on the canyon rim in the 1880s, but soon realized they could make more money from tourism than from mining. Visitors were so anxious to see the canyon, they made tough trips by stagecoach and stayed in mining camps turned into "hotels."

## Working on the Railroad

The Grand Canyon got a big boost in visitors once the railroad arrived in 1901. It stretched from Williams, Arizona to the South Rim. In 1905, the world class El Tovar Hotel was built on the edge of the canyon, where it still operates today. In 1922, the the Phantom Ranch was built in the Inner Canyon by a company that made a name for itself by providing good food and hospitality throughout the West.

## The Grand Canyon National Park includes more than

 1,218,376 acres (4,931 square kilometers). Five million people visit annually. Often the Grand Canyon is measured in Colorado River miles, which are 277 miles ( 446 kilometers).It takes two days, by mule or by hiking, to travel to the bottom of the canyon and back. Traveling by raft through the Grand Canyon takes two weeks or more. The Colorado River, longer than the Grand Canyon, flows from Colorado's Rocky Mountains to the Gulf of California in Mexico. Cataract Canyon and Glen Canyon are two other canyons formed by

## Mathernatics: Calculate It!

1. A budget is a list of expenses. Total this budget for the Grand Canyon Ghost Mystery trip: \$1200-airfare, \$300-meals, \$156-souvenirs, \$35-raft rental, and \$65-helicopter fuel.
2. Grant is 7 , Christina is 9 , Danielle is 10 , and Marisa is 8 . What is the total of their ages combined?
3. If dance lessons for Danielle and Marisa end at 5:45 p.m. and last for $11 / 2$ hours, what time did the lessons start?

4. According to legend, in 1876, pilgrims came to Flagstaff. If true, how many years ago would this have been?
5. The Black Mesa is 7,200 feet high. How many centimeters is this? (Hint: 1 foot equals 30.48 centimeters.)
6. If Grant finds 3, three-toed-dinosaur footprints, how many toes would there be in all?
7. The Grand Canyon is 200 miles ( 322 kilometers) long. If Papa flew his little plane from one end of the Canyon to the other at 100 miles (160 kilometers) per hour, how long would it take him?
8. If Grant weighs 40 pounds and Dani weighs 52 pounds, how much heavier is Dani than Grant?

9. Convert your answer to question \#8 into kilograms.
(Hint: 1 pound equals 0.45 kilograms.)


## Isn't It Grand!

(continued)

The Grand Canyon is geologically complex, and unique because of its different rock layers. Each type of rock reacts to erosion differently. Some types form slopes; others make cliffs. Some erode quickly; others do not. Various minerals create the colors we see in the Grand Canyon. Most of the rock layers contain iron, making the yellow, red, and green shades.

The erosion that created the canyon five or six million years ago even happens today. The canyon continues to change and grow, affected by rain, snow, the Colorado River, and other forces of erosion.

## Rim to Rim

The Grand Canyon can be divided into three main parts: the North Rim, the South Rim, and the Inner Canyon. Each part has unique vegetation and climate.

The Canyon's width and depth vary. The South Rim is 5,000 feet (1,524 meters) deep, from rim to river. The North Rim is 1,200 feet (366 meters)higher than South Rim. The highest points of the rim are 9,000 feet ( 2,743 meters) above sea level. The Canyon is 6,000 feet $(1,829$ $\mathrm{m})$ at its deepest point. The width of the canyon varies from 10 miles ( 16 kilometers) to 18 miles (29 kilometers).

The North Rim has colder temperatures. The North Rim gets 26 inches ( 66 centimeters) of precipitation a year, while the South Rim gets 16 inches ( 41 centimeters). The Inner Canyon is hotter and drier with temperatures $35^{\circ}$ Fahrenheit ( $2^{\circ}$ Celsius) hotter than rim temperatures.

## English: Write It!

1. Write the lyrics for a song to be used at a Hopi Indian dance ceremony. Your song can honor the rain, the earth, an animal, or something else that would be important to your community.

2. Write a descriptive story about exploring the Grand Canyon on a mule. Include as many senses as you can: sight, smell, taste, touch, and hearing.
3. Write five journal entries pretending you are Grant or Christina. Talk about the places you see and adventures you enjoy.
4. Recall each mystery clue after you finish reading the book. Write down the reasons why each clue makes sense, now that you know the ending of the story.
5. Write an ode to the Colorado River that is either silly or serious.
6. Write a newspaper story including interview information from the criminal and the little girl at the end of the story.
7. Write a narrative essay of life in the Grand Canyon from the perspective of one of the burros that was used long ago to explore the Grand Canyon. Tell how the burro got started as a guide, how the burro feels about his job, and what he thinks of the people he meets.
8. Write a biography of the lives of the girls after they came to live with Nampeyo. Compare and contrast their lives before and after they became part of the Hopi Nation.

## Children's

 BooksI See Something Grand by Mitzi Chandler

Grand Canyon
by Cari Meister
Grand Canyon: A Trail Through Time
by Linda Vieira
Letters from the Canyon by Kathleen McAnally

Brighty of the Grand Canyon
by Marguerite Henry
The Grand Canyon (Natural
Wonders of the USA)
by Michelle Lombers
A Grand Canyon Journey
by Peter Anderson
The Grand Canyon (Wonders of the World)
by Stuart A. Kallen
In Search of the Grand Canyon/Down the Colorado with John Wesley Powell
by John Wesley Powell
Puzzlers Guide to the Grand Canyon
by Kristy McGowan
Letters Home from the Grand Canyon
by Lisa Havorsen

## Walker of Time

by Helen Hughes Vick
Is My Friend at Home?:
Pueblo Fireside Tales
by John Bierhorst

The Hopi (New True Books)
by Ann Heinrichs Tomchek

## Vocabularty 5pell It!

Study the words below. All of them are taken from the mystery book. Fold the page in half and take a spelling test! Check your work in the dictionary and write its definition on a separate piece of paper.

## SYLLABLE

ADVENTURE
ANXIETY
GALLANT
ESCALATOR
BURRO
RESCUE
VILLAGE
EXCURSION
CHISELED
PROFESSIONAL
APPRENTICE
COMPETITION
GALLANT
DELIRIOUS
ATTENTION
AUTHENTIC
REFLECTION
KAYAK
ABANDONED
SUSPICIOUS
RESERVATION

## Native American <br> "Pop" Art!

Making ornaments with popcorn is a Native American tradition. Using a needle and thread, string popcorn and dried fruits like raisins and cranberries to create edible necklaces.

## Mesa Rock Candy

## Supplies:

- 18 inches of string (cut into 36 -inch pieces)
- 3 mason jars or other heatproof jars
-3 pencils

Ingredients:

- 6 cups sugar
- 1 1/2 cups water
-Food coloring


## Directions:

1. Boil water in a medium saucepan.
2. Stir in 3 cups of sugar until it dissolves.
3. Add remaining hot water, stirring until all sugar has dissolved.
4. Choose one color for each jar.
5. Stir in 3 drops of food coloring into each jar.
6. Tie a piece a string to each pencil.
7. Allow string to hang in the sugared water of each jar and rest pencil on top of jar.
8. Crystals will start forming within one hour and will continue for several days.
9. If a layer solidifies on the water's surface, break it.
10.Candy is ready when water has evaporated.

Note: Preparation of all dishes requires adult supervision.

## Art: Create ItI

1. Choose beads to create your own jewelry-make a necklace, bracelet, key chain, or even a beaded belt.
2. Use clay to create your own prehistoric cliff dwelling.

3. Paint your own beautiful sunset over the Grand Canyon. Include red, orange, and other colors.
4. Sketch an ancient village scene depicting life as a Hopi. How do the homes look? How are the villagers dressed? What are the men, women, and children doing in their traditional roles?
5. Use clay to create your own ancient pottery vessel. Think about how it might have been used-for decoration or practical purposes. Was it for everyday use or just for special
 ceremonies? Add carvings to your vessel to decorate it. When finished, ask an adult to bake it to make it hard.
6. Create a paper bag puppet of a burro: Supplies: paper bag, glue, construction paper, scissors, markers or crayons, yarn and/or felt, googly eyes Decorate your paper bag burro, allow it to dry, then use it to tell the "real" story of life in the Grand Canyon.
7. Illustrate your own comic book! Choose characters from the wildlife found at the Grand Canyon like mule deer, squirrels, porcupines, bighorn sheep, cougars, bobcats, coyotes, snakes, or ravens.


## Pottery Terms

Firing is the process of hardening or baking pottery. The traditional Native American method is to fire outdoors instead of in a kiln. In this way, different kinds of fuel are used, such as dried animal dung.

## Polychrome: A glazed or

 painted pottery surface made up of three or more colors.Potshard: (also seen spelled potsherd) A broken piece of pottery.

Coiling: The process of making the walls of a piece of pottery by making rope-like layers of clay.

Fire Cloud: Discoloration that results from burning-fuel making direct contact with pottery during the firing process.

## Layer by Layer

The Grand Canyon's layers were formed by the rushing Colorado River. We can see the different layers by their colors and textures (colors may change with light changes).

## Layers from bottom to top:

Archean-lowest, where the river currently flows, black.
Algonkian—bright red
Tapeats Sandstone—lavenderbrown
Devonian—small bits of lavender stone
Redwall-curves along the canyon, reddish-brown
Supai Formation-red sandstone
Hermit Shale—red rock shale Coconino Sandstone—sand colored
Kaibab Limestone-top layer, cream and gray

## Science: Coak It!

## Arizona Eats!

The cuisine of the state combines Native American, Mexican, and desert favorites.

## Canyon Tortilla Soup

## Ingredients

1 tablespoon olive oil
1 chopped onion
2 cloves of garlic, minced
3 celery stalks, chopped


4 cups of canned, unsalted chicken broth
6 oz. tortilla chips
Pepper and salt to taste
$11 / 2$ cups salsa
Fresh cilantro, chopped
Sour cream
1 avocado, diced
1 pound cooked chicken breast diced

## Directions

1. Cook onion in a large saucepan over low heat for 15-20 minutes, stirring constantly until golden brown.
2. Add garlic and cook another 5 minutes.
3. Add celery, chicken broth, salsa and simmer for 20 minutes.
4. Add tortilla chips and simmer until soft, about 5-10 minutes.
5. Add chicken and stir well.
6. Cook until soup is thoroughly heated.
7. Add salt and pepper.
8. Serve in bowls with a spoonful of sour cream, a sprinkle of cilantro, and a little avocado on top!


## Native American Mesa Flat Bread

Makes six servings.

## Ingredients

2 cups flour
1/2 cup powdered milk
1 tablespoon baking powder
1/2 teaspoon salt
2 tablespoons of vegetable shortening
3/4 cup water
Extra shortening for cooking

## Directions:

1. Mix shortening and dry ingredients in a mixing bowl using your fingers.
2. Use a fork to stir in water.
3. Divide dough into six pieces.
4. Roll dough into 8-inch circles that are $1 / 4$ inch thick.
5. Heat extra shortening in skillet until hot.
6. Using tongs, carefully add circle of dough and brown on both sides.
7. Drain between paper towels.
8. Serve as a side dish or make a main dish by topping with refried beans, lettuce, tomato, sour cream, and salsa!

## Greater Crater Mix

Just combine:
-Mini pretzels
-Soy nuts, peanuts, or corn nuts
-Sunflower or pumpkin seeds
-Chocolate, butterscotch, or carob chips
-Raisins, dried apples, or apricots
Then hit the trail!

## The Ghost of the Grand Canyon Maze

Help Christina, Danielle, Marisa, and Grant find their way out of the Canyon. Watch out for snakes!


## The Ghost of the Grand Canyon Pair עp

Match the words on the left with the correct words on the right!

GRAND

VANTAGE

DINING

NATIVE

INDIAN

COWBOY

WILD

TRICK

TURQUOISE

CHICKEN

POINT

HAT

NUGGETS

ROOM

CANYON

RESERVATION

PHOTOGRAPHY

AMERICAN

MOOSE

JEWELRY

## The Ghost of the Grand Canyon Native American Pottery Craft

There are 20 Pueblo villages left in the Southwest; there were at one time in history 200. Each of the 20 Pueblos is famous for art and/or crafts and each has a specialty. Nampeyo in The Ghost of the Grand Canyon made pottery.


## Directions

1. Roll clay chunks into coils. (It works well to roll the clay on a surface such as a table or a desk.) Next, roll coils up and place in bag.
2. Wet some paper towel and drop into bag with coils. Gather ends of bag and seal. Make sure the whole bag is closed tight.
3. Using more clay, make a round slab. Place this on a piece of paper towel. (This will be the base of the pot.) Add coil, pressing gently, pinch off and smooth together ends when it is wrapped around slab and they meet. Add some decorative finishes, such as $S$ shapes made from coils.
4. Continue adding coils in the same way. Projects must dry and be fired.

5. Paint acrylic gloss medium tinted with blue tempera on whole top and sides of coil pot. Do not paint the bottom. Make sure you get into all the crevices with the bristle brushes and acrylic medium. Clean and dry the brushes thoroughly. Gently fan pot till completely dry.


## The Ghost of the Grand Canyon Clue Scramble

Unscramble the words below to find the mystery clues!

1. TIRHAEGE
2. BEASTKS
3. RUSG
4. FOCSU
5. REGGO

6. WEYREJL

7. TACNEC
8. STECRE

## The Ghost of the Grand Canyon Word Search

Search for the mysteriously hidden words below!
$\begin{array}{lllllllllllllllll}\text { Y } & \mathrm{T} & \mathrm{I} & \mathrm{N} & \mathrm{U} & \mathrm{T} & \mathrm{R} & \mathrm{O} & \mathrm{P} & \mathrm{P} & \mathrm{O} & \mathrm{M} & \mathrm{I} & \mathrm{O} & \mathrm{S} & \mathrm{P} & \mathrm{T}\end{array}$ $\begin{array}{lllllllllllllllll}O & U & T & E & R & S & P & A & C & E & X & N & J & Y & S & U & E\end{array}$ $\begin{array}{lllllllllllllllll}\mathrm{L} & \mathrm{O} & \mathrm{T} & \mathrm{P} & \mathrm{B} & \mathrm{I} & \mathrm{P} & \mathrm{O} & \mathrm{H} & \mathrm{B} & \mathrm{T} & \mathrm{A} & \mathrm{N} & \mathrm{U} & \mathrm{E} & \mathrm{E} & \mathrm{L}\end{array}$ $\begin{array}{llllllllllllllllll}G & L & I & M & P & S & E & Q & Z & R & V & O & R & H & R & B & E\end{array}$ $\begin{array}{lllllllllllllllll}\mathrm{U} & \mathrm{R} & \mathrm{S} & \mathrm{A} & \mathrm{C} & \mathrm{R} & \mathrm{E} & \mathrm{D} & \mathrm{I} & \mathrm{A} & \mathrm{M} & \mathrm{I} & \mathrm{D} & \mathrm{I} & \mathrm{D} & \mathrm{L} & \mathrm{S}\end{array}$ $\begin{array}{lllllllllllllllll}P & O & T & T & \mathrm{E} & \mathrm{R} & \mathrm{Y} & \mathrm{G} & \mathrm{N} & \mathrm{E} & \mathrm{V} & \mathrm{Z} & \mathrm{P} & \mathrm{T} & \mathrm{D} & \mathrm{O} & \mathrm{C}\end{array}$ $\begin{array}{lllllllllllllllll}\mathrm{L} & \mathrm{C} & \mathrm{C} & \mathrm{F} & \mathrm{R} & \mathrm{S} & \mathrm{U} & \mathrm{O} & \mathrm{R} & \mathrm{E} & \mathrm{G} & \mathrm{N} & \mathrm{A} & \mathrm{D} & \mathrm{A} & \mathrm{S} & \mathrm{O}\end{array}$ $\begin{array}{lllllllllllllllll}\mathrm{E} & \mathrm{K} & \mathrm{O} & \mathrm{F} & \mathrm{V} & \mathrm{E} & \mathrm{J} & \mathrm{E} & \mathrm{R} & \mathrm{C} & \mathrm{S} & \mathrm{E} & \mathrm{A} & \mathrm{J} & \mathrm{E} & \mathrm{L} & \mathrm{P}\end{array}$ $\begin{array}{lllllllllllllllll}\text { X } & \text { S } & \text { M } & \text { F } & \text { D } & \text { E } & \text { C } & \text { X } & \text { D } & \text { M } & \text { G } & \text { L } & \text { L } & \text { J } & \text { H } & \text { K } & \text { E }\end{array}$

| CEREMONY | HEADDRESS | NAVAJO | POTTERY |
| :--- | :--- | :--- | :--- |
| ROCKS | TIHU | DANGEROUS | HOPI |
| OPPORTUNITY | PUEBLOS | SACRED | GLIMPSE |
| INTRIGUED | OUTER SPACE | RIVER | TELESCOPE |



## The Ghost of the Grand Canyon Fill-in-the-Blank

Fill in the blanks to answer the questions.

1. Gusta took his guests to this high place to overlook Flagstaff:

2. Four story, sandstone dwelling from the 1200 s:

3. Much of the rock in the Grand Canyon is this type:

$$
\mathrm{S}_{\ldots \ldots-} \mathrm{D}_{\ldots \ldots-} \mathrm{E}_{\ldots \ldots-} \mathrm{T}_{\ldots \ldots} \mathrm{R}_{\ldots}
$$

4. Nickname for the planet Mars:
$\qquad$ H $\qquad$ R ___ $\qquad$ L $\qquad$ E $\qquad$
5. To the Hopi, these represent kind spirits. They are also dolls:
$\qquad$ A $\qquad$ H $\qquad$ N $\qquad$
$\qquad$
6. Appears in Grant's camera from the photo taken on the rickety bridge:
P
A $\qquad$
$\qquad$ O W $\qquad$ R $\qquad$ I $\qquad$
$\qquad$

## The Ghost of the Grand Canyon Matching Characters

Match these mystery characters with their descriptions!

1. Mimi
A. was "missing" one morning
2. Grant
B. named after a famous potter
3. Christina
C. tomboy
4. Papa
D. mystery writer
5. Danielle
E. not afraid to speak up
6. Marisa
F. sopapilla lover
7. Nampeyo
G. golf fan

# The Ghost of the Grand Canyon Quiz 

Use the clues to recall some interesting adventures in the Grand Canyon!

1. Nampeyo belongs to this Indian Nation:
2. Site named after a telescope inventor from the 1800 s:
$\qquad$
3. Arizona's highest mountains:
4. Hotel built on the rim of the Canyon:
5. Small river that runs north toward the Colorado River:
6. Puffy, fried dough served with honey:
7. First man to travel down the Colorado River (He had one arm!):
8. UFO is an abbreviation for this:
9. Better than a horse for traveling into the Canyon:
$\qquad$


## The Ghost of the Grand Canyon True or False

## Mark each statement true or false.

Can you replace the word (or words) that is false in each statement?
$\qquad$ 1. In the beginning, Grant was not happy to be the only boy.
$\qquad$ 2. Dish made with sun-dried beef is called carne seca.
$\qquad$ 3. Kids in school never ask Christina for her autograph.
$\qquad$ 4. Grant has a new Polaroid camera.
$\qquad$ 5. Erosion is like an earthquake.
$\qquad$ 6. Christina felt anxious about crossing the rickety footbridge.
$\qquad$ 7. The Four Corners Navajo Park includes Utah, Arizona, New Mexico, and Colorado.
$\qquad$ 8. Grant is fashion conscious like Christina.
$\qquad$ 9. Originally, the Hopi lived on mesas for protection from Navajo and Apache Indians.
$\qquad$ 10. The agave plant is a weed that was food for ancient canyon people.

## Answer Key...



Math Activities

1. $\$ 1,756$ budget; 2.34 years total; 3 . Lessons began at $4: 15 \mathrm{~s} ; 4$. Depends on current year;
2. 219,456 centimeters; 6.9 toes; 7.2 hours; 8.12 pounds; 9.5 .4 kilograms

The Ghost of the Grand Canyon Pair Up
GRAND CANYON, VANTAGE POINT, DINING ROOM, NATIVE AMERICAN, INDIAN RESERVATION, COWBOY HAT, WILD MOOSE, TRICK PHOTOGRAPHY, TURQUOISE JEWELRY, CHICKEN NUGGETS

## The Ghost of the Grand Canyon Clue Scramble

1. HERITAGE; 2. BASKETS; 3. RUGS; 4. FOCUS; 5. GORGE; 6. JEWELRY; 7. SPIRIT;
2. STRICT; 9. ACCENT; 10. SECRET

## The Ghost of the Grand Canyon Fill-in-the-Blank

1. MARS HILL; 2. WUPATKI PUEBLO; 3. SEDIMENTARY; 4. THE RED PLANET;
2. KACHINAS; 6. PHANTOM WARRIOR

## The Ghost of the Grand Canyon Matching Characters

1.D; 2.G; 3.F; 4.E; 5.C; 6.A; 7.B

## The Ghost of the Grand Canyon Quiz

1. HOPI; 2. LOWELL OBSERVATORY; 3. SAN FRANCISCO PEAKS; 4. EL TOVAR HOTEL; 5. LITTLE COLORADO RIVER; 6. SOPAPILLAS; 7. JOHN WESLEY POWELL; 8. UNIDENTIFIED FLYING OBJECT; 9. MULE

## The Ghost of the Grand Canyon True or False?

1. T; 2. T; 3. F-sometimes; 4. F-digital; 5.F-not; 6.T; 7. T; 8. F-not; 9. T; 10. F-cactus
