





The Ghost of the GRAND GRAND

Teacher's Guide



by Carole Marsh



Editor: Sheila Phinazee • Art & Design: Lynette Rowe







P.O. Box 2779 • Peachtree City, GA 30269 Tel: (800) 536-2438 • Fax: (800) 871-2979 email: orders@gallopade.com www.gallopade.com



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- #2 THE MYSTERY ON THE FREEDOM TRAIL
- #3 THE MYSTERY OF BLACKBEARD THE PIRATE
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- #5 THE MYSTERY ON THE CALIFORNIA MISSION TRAIL
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- #44 THE MYSTERY AT AREA 51
- #45 THE AWESOME ATLANTA MYSTERY
- #46 THE BAFFLING BASEBALL MYSTERY
- #47 THE GREAT TRAIN MYSTERY
- #48 THE MYSTERY OF MIMI'S HAUNTED BOOK SHOP



A Word 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 joyful!) 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 Marsh



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The Ghost of the



Ag Fo ca M Di M

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.

YEARS

AGO .

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,

Carole Marsh



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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

villages on three mesas. Income comes from coal, oil, and

farming.

_ <u>Pa</u>	age # <u>Subject</u>	<u>EXPLORE!</u>	Native American Arts and Crafts
1	Science	Haze is a condition of moisture, dust, and smoke in the atmosphere. Haze makes it hard to see clearly.	Spider Woman and Navajo Weaving Navajo legend tells how Spider Woman taught the Navajo women to weave. In fact, to
	Geography	Traveling from Georgia by air, which states do Grant and Christina pass through?	honor her, Navajo weavers used to leave a small hole in the center of woven blankets similar to a spider-web hole.
1	Math	In 1540, the first Europeans arrived in the Southwest led by Spanish explorer, Francisco Vásquez de Coronado. How many years ago did they arrive?	<i>The Navajo Today</i> Many still tend sheep although mineral reserves have brought some good wealth. The Navajo believe good spirits come from the east; therefore doorways on
1	Vocabulary	"Futile" means ineffective or of no use.	many homes face the rising sun.
1	Weather	Humidity is dampness of the air. When humidity is high, warm weather feels even warmer and more stifling.	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
1	Recreation	What do you do for fun in the summertime?	Painted Desert and nearby areas.
1	Math	During daylight saving time, if it is 5:22 p.m. Navajo time, what time is it Arizona time? (6:22 p.m.)	The Hopi Reservation This 1.5-million-acre reservation was formed in 1882 and is surrounded by Navajo lands. The first Europeans found the
1	Science	Clocks and calendars were first used thousands of	Hopi living in pueblos on high mesas to avoid their enemies.
		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.	The Oraibi Village was built in 1100. It is one of the oldest continuously inhabited towns in the United States.
1	Culture	<i>Hopi</i> means "peaceful people." The Hopi Reservation is known for its pottery, basketry, kachina dolls, jewelry, and sand paintings.	You can still see dances and ceremonies that have been performed for hundreds of years. Sound recorders, sketchpads, cameras, and liquor are prohibited.
		The Navajo are known for rugs, blankets,	About 9,000 Hopi live in 12



Just for Laughs!

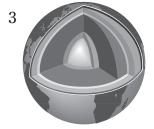
According to Mark Twain,

tapestries, sand paintings, and silverwork.

	History	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.	"Arizona's temperature remains at a constant 120 degrees in the shade, except when it varies and goes higher."
2	Vocabulary	"Gallant" means courageous and high-spirited. Gallant is also used to describe a courteous gentleman.	Average Arizona Temps(Fahrenheit)SeasonFlagstaffWinter42-15 degreesSpring56-26 degreesSummer77-46 degreesFall61-21 degrees
2	Writing	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?	Fall61-31 degreesSeasonGrand CanyonWinter43-20 degreesSpring30-31 degreesSummer81-50 degreesFall63-36 degrees
2	Career	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?	SeasonPhoenixWinter68-38 degreesSpring83-51 degreesSummer106-80 degreesFall86-56 degrees
2	Weather	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.	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.
3	Science	A telescope uses an arrangement of lenses, mirrors, or both to observe or photograph distant objects.	Man, Arizona sure is hot!
3	Career	An astronomer is a scientist who specializes in the study of the universe beyond the earth. They observe, calculate and form theories about the 800	Yeah, but it's a dry heat!

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 Writing Lowell Observatory's findings led to the discovery of Pluto, the ninth and farthest planet from the sun in our solar system.



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.

- 4 Vocabulary A "gorge" is a deep, narrow passage that has steep rocky sides. Gorges are found between mountains. (Gorge also means to eat too much!)
- 4 Language "Connoisseur" is a word from the French language. A connoisseur is someone who is well informed and has good taste especially for things in the arts.
- 4 Writing Papa uses a slang for the word money. Do you know any others besides "green"?
- 4 Antiques When people collect things like art, crafts, stamps, etc., they increase in value over time. Is



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Trading Post!

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 Reservation

Ak-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

Arizona

Canyon on the Colorado River. No other group was known to have completed this journey!

there anything you like to collect for fun?

		there anything you like to collect for full?	State Facts
4	Writing	Based on what has been read so far, what do you think is happening? How does the phantom warrior fit into the story?	Date of Statehood: February 14, 1912 Highest Peak: Humphrey's Peak 12,633 feet (3,851 meters)
5	Science	Limestone is a sedimentary rock which contains magnesium carbonate and quartz. Limestone is used for building and making cement.	Lowest Point: Colorado River—70 feet (21 meters) above sea level Total Area:
5	Language	"Dilly dally" means to dawdle or waste time by moving slower than necessary.	114,006 square miles (295,253 kilometers) State Tree: Paloverde
5	Safety	Handwashing is one of the simplest ways to protect your health. When is it time to wash your hands?	State Bird: Cactus Wren State Mammal: Ring-tailed Cat State Gemstone: Turquoise
5	Science	Sunset is when the sun disappears below the western horizon.	State Fossil: Petrified wood Thousands of years ago, dead conifer trees floated down
5	Sport	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.	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.
5	Feelings	What do you do when friends or family annoy you?	The Grand Canyon: . The Grand Canyon became a National Monument in 1908, and a National Park in 1919.
6	Manners	Why did Papa and Mimi tell the kids how to greet adults?	The Canyon is not the world's deepest canyon! It is, however, a great example of erosion.
6	Food	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?	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
6	Life	In light of Christina's feelings about their new	veteran of the war, and his team of several men and boats, rode through the Grand



		friends' lives, discuss the expression, "The grass is always greener on the other side."	F
7	History	Arizonans have participated in several wars: Mexican American War, Civil War, Spanish- American War, World War I, World War II, Korean War, Vietnam War, and the Persian Gulf War.	Each has ir and o such video recor sites
7	Medical	"Amputate" means to cut off a part of the body in surgery that cannot otherwise be saved.	that religi visito desig priva
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?	douk Hubl This locat 602-7
7	Math	If the police arrived at 8:30 p.m. and left at 11:45 p.m., how long did they stay? (3 hours, 15 minutes.)	Nave The I call t tribe have
8	Vocabulary	"Black market" means illegal business of buying and selling.	lands 28,80 squa majo
8	Sport	Discuss why each item included in the hiking backpack is important.	some conti New Nava
8	Food	Jerky is dried meat that doesn't need to be refrigerated.	Winc 602-8 Hopi
9	Science	A magnifying glass helps you to see by making smaller things larger and clearer. It is like using a simple microscope.	It has Nativ Ame live r tradit Hopi



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



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Visiting Reservations

h Native American nation its own history, culture, customs. Restrictions h as no photography, eotaping, or sound ording often apply. Some s or ceremonies (remember many of these are gious) are not open to ors. Also, stay on ignated paths and respect ate buildings. When in bt, always ask first!

bell Trading Post

National Historic Site is ted on the Navajo Nation. -755-3475

ajo Reservation

Dineh (what the Navajo themselves) are the largest e in North America and e the most reservation ds. The reservation covers 303 square miles (74,600 are kilometers), with the ority of lands in Arizona; ne of the reservation tinues over the borders to v Mexico and Utah. The ajo Nation's capital is dow Rock, Arizona. -871-4941

oi Reservation

as been said that of all the ive Americans in North erica, the Hopi probably most closely to their litional 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

Environmental

state law protects them as well. There are large problems in the southwest with heavy and illegal harvesting of cacti.

programs or wedding invitations!)

		programs or wedding invitations!)	Issues of Arizona
10	Vocabulary	Feverishly with great activity or emotion.	<i>Water</i> is Arizona's most valuable resource. Because of
10	Writing	A simile is a figure of speech where two unlike things are compared using the words "like" or "as." Can you think of another simile for the fog in the canyon?	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)
11	Museums	There are many types of museums like natural history, art, science, and more. What type do	because of decrease in the underground water table!
		you like to visit?	Endangered or Threatened Species
11	Science	Erosion is the wearing away of land or rock over a period of time by wind or water.	Due to heavy land use, this wildlife is in danger:
11	Career		Mammals: The jaguar, Sandborn's long-nosed bat,
		A paleontologist is someone who studies fossils. The Grand Canyon would be a good place for one	and the Hualapai Mexican vole.
		to work.	Fish: The Apache trout, the desert pupfish, the Yaqui
11	Vocabulary	"Panorama" means wide or almost unlimited view.	catfish, the loach, the minnow, the bonytail, the Colorado squawfish, the Gila topminnow, and the Little
12	Writing	Judging from Christina's reaction, what do you think a cow pie might be? (cow manure)	Colorado spinedance.
		timik a cow pie might be: (cow manure)	Reptiles: Desert tortoise
12	Writing	Do you think Papa's suggestion will help the environment? Why or why not?	<i>Birds:</i> The thick-billed parrot, the wood stork, the masked bobwhite quail, and Audubon's crested caracara.
12	Safety	Do you think what Grant did was worth the risk? What would you do?	<i>Plants:</i> The Arizona agave, the Arizona hedgehog cactus, the Cochise pincushion cactus, the
12	Biology	Even leaving a footprint can be harmful to some living things in the Grand Canyon, if Grant is not careful.	Tumamoc globeberry, the Arizona cliff rose, and the Navajo sedge.
		Microbiotic soil is a colony of tiny plants that live	Cacti Get Extra Protection Cacti have prickly stems for protection, but in Arizona,

stem

pleats

12	Biology	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.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.	What Is a successful to the second structure of the se
13	Language	Many words we use are originally from Spanish such as <i>burro, alligator, patio, and bronco</i> .	The cactus family is only one of several groups called succulent plants. Some other groups of succulents are
13	Science	A cactus is a member of a large plant family called <i>Cactaceae</i> . They are native to the hot and dry areas of the New World. Cacti have prickly stems that function as leaves. Some cacti have	daisies, lilies, milkweeds, and geraniums. There are even some types of grapes that are called succulents! Super Survival Skills
13	Science	pretty flowers and fruit that are edible. The agave plant family are considered to be hard	Over time, plants in the succulent family developed different ways to survive. Some are:
		working. They are grown for decoration, used in industries by fiber makers, and used in Mexico where they are harvested for distillers.	 Are compact in size and shape to reduce evaporation. Develop very sharp bristles or hooked spines.
13	Writing	Was Christina truthful? Why or why not? What would you have done?	 Make tough, thick skins to detract hungry animals. Produce yucky-tasting or poisonous juice.
13	Language	An interjection is a part of speech expressing 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.)	 Live higher on trees or hidden under rocks and crevices. Camouflage with surroundings; some even look
13	Language	"Coax" means to convince or persuade by pleading or flattery.	like rocks or pebbles!

13	Feelings	Speaking of anger management, how do you control your temper when it starts to flare up?	Rat Car
13	Biology	A scavenger is an animal that feeds on dead or decaying animals.	The cer me hav
	Biology	Animals that are extinct no longer exist.	blo or o ligł
14	Industry	Mining is a major industry in Arizona. In fact, Arizona leads the nation in the production of all metals except iron.	Sor like wh Rat
14	Culture	For hundreds of years, Havasupai Indians have lived in the bottom of the canyon in Supai Village. <i>Havasupai</i> means "people of the blue- green water."	tha wh pre of s cor sna seq
14	Biology	The snake, like crocodiles and lizards, is a reptile. Reptiles are cold-blooded so they need plenty of sunshine to make them warm.	Adi six Rat vip bet
	C)	All snakes are meat eaters. Some use fangs, which are hollow teeth, and kill their prey with their poisonous venom.	tha Thi Rat oth
14	Culture	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.	"rat Like avc hot noo the the tog roc
14	Culture	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.	All and for imp still Me ratt Am



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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 colors like 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.

tlesnakes are a type of pit er. Pit vipers have a pit tween the nostril and eye t works as a heat sensor. s helps the snake hunt. tlesnakes eat rodents and er small animals. Small ttlers" mainly eat lizards. e other snakes, rattlesnakes oid extreme cold or heat. In areas, they become cturnal, hiding away during day and active at night. In winter, they group ether in crevices and kslides 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 deadly rattlesnake.

16	Writing	How does the author create excitement as the kids follow the bad guy and the little girl?	Yo th sh
19	Vocabulary	"Aquamarine" is a transparent blue-green gemstone. The word also refers to the gem's blue-green color.	at Ph tri Ap co ca
19	Recreation	As you can see, there are many things to do at the Grand Canyon like hiking, fishing, camping, 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?	Sn Wa th Gl Le Ca Ar Ac
19	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?	P.C <u>wi</u> Th Th co an
19	Superstitions	Do you believe in ghosts?	1

Be sure to read Carole Marsh Mystery #14 The Mystery in the Rocky Mountains

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 <u>www.riveradventures.com</u>

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 <u>www.azraft.com</u>

Canyoneers P.O. Box 2997, Flagstaff, AZ 86003 1-800-525-0924 <u>www.canyoneers.com</u>



Discussion Questions

- 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.



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Hiking

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:

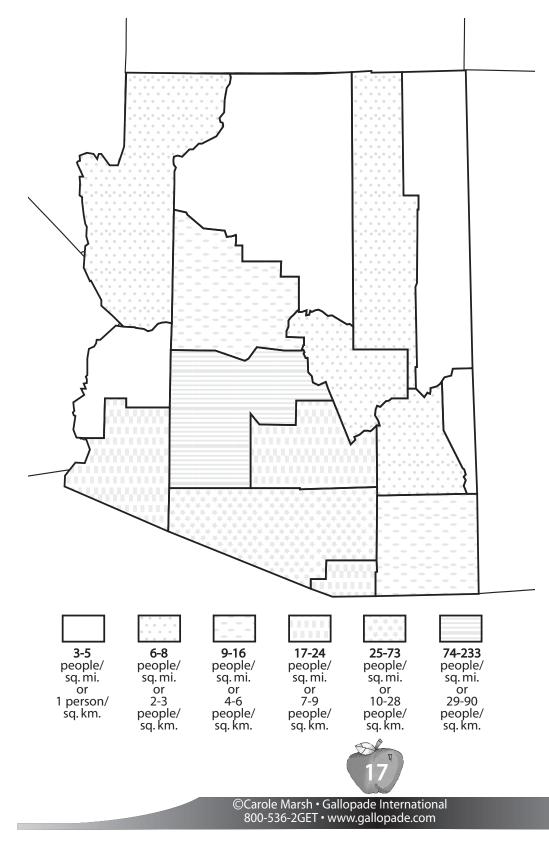
- Don't try to hike from rim to river and back in one day.
- Don't hike during the hottest times of the day, 10 a.m.-4 p.m.
- Take breaks in the shade.
- Drink lots of water or sports drinks.
- Wear a wet bandanna around your neck; splash your head and upper body with water.
- Do not swim in the river;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

Geography: Find It!

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



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 the Colorado.

Mathematics: Calculate It!

- 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 1 1/2 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.)



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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 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° Fahrenheit (2° 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.



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Children's Books

I 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

Vocabulary: Spell 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	thread, string popcorn and dried fruits like raisins and
ADVENTURE	cranberries to create edible necklaces.
ANXIETY	
GALLANT	Mesa Rock
ESCALATOR	Candy
BURRO	Supplies: •18 inches of string
RESCUE	(cut into 3 6-inch pieces) •3 mason jars or other
VILLAGE	heatproof jars •3 pencils
EXCURSION	Ingredients:
CHISELED	•6 cups sugar •1 1/2 cups water
PROFESSIONAL	•Food coloring
APPRENTICE	<i>Directions:</i> 1. Boil water in a medium
COMPETITION	saucepan.
GALLANT	2. Stir in 3 cups of sugar until it dissolves.
DELIRIOUS	3. Add remaining hot water, stirring until all sugar has
ATTENTION	dissolved. 4. Choose one color for each
	jar. 5. Stir in 3 drops of food
AUTHENTIC	coloring into each jar. 6. Tie a piece a string to each
REFLECTION	pencil. 7. Allow string to hang in the
КАҮАК	sugared water of each jar and rest pencil on top of jar.
ABANDONED	 Crystals will start forming within one hour and will
SUSPICIOUS	continue for several days. 9. If a layer solidifies on the
RESERVATION	water's surface, break it. 10.Candy is ready when water

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10.Candy is ready when water has evaporated.

Native American

"Pop" Art!

popcorn is a Native American tradition. Using a needle and

Making ornaments with

Note: Preparation of all dishes requires adult supervision.

Art: Create It!

- 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?
- 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.



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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: Cook It!

Arizona Eats! The cuisine of the state combines Native American, Mexican, and desert favorites. **Canvon Tortilla Soup** Ingredients Serves 4 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 $1 \ 1/2 \ cups \ salsa$ Fresh cilantro, chopped 1 avocado, diced Sour cream 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!



NOTE: The preparation of all dishes should be carried out with the supervision of an adult.



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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

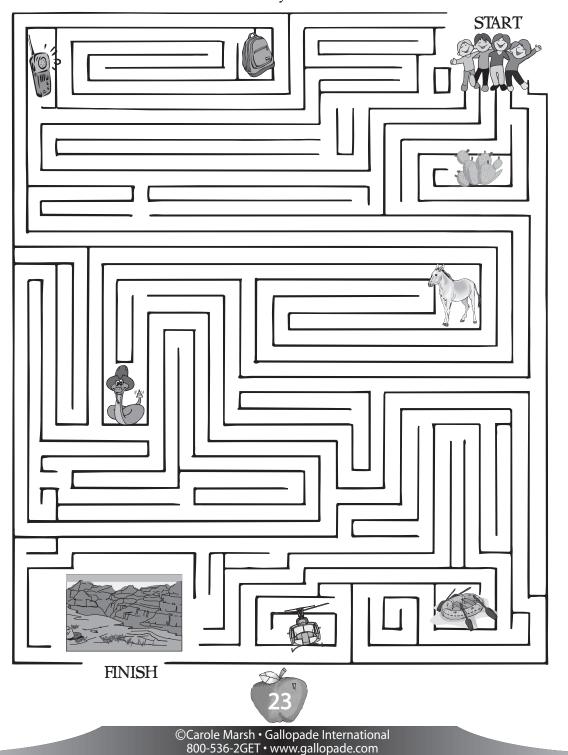
•Raisins, dried apples, or apricots

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!



Reproducible

The Ghost of the Grand Canyon Pair Up





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

GRAND POINT VANTAGE HAT NUGGETS DINING NATIVE ROOM **CANYON INDIAN COWBOY** RESERVATION WILD PHOTOGRAPHY **TRICK AMERICAN TURQUOISE** MOOSE

CHICKEN

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.

Materials

white clay small pans bristle brushes one gallon size plastic bags with ties soapy water buckets/dry towels/sponges paper towel clay tools blue tempera paint acrylic gloss medium paper fans



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.

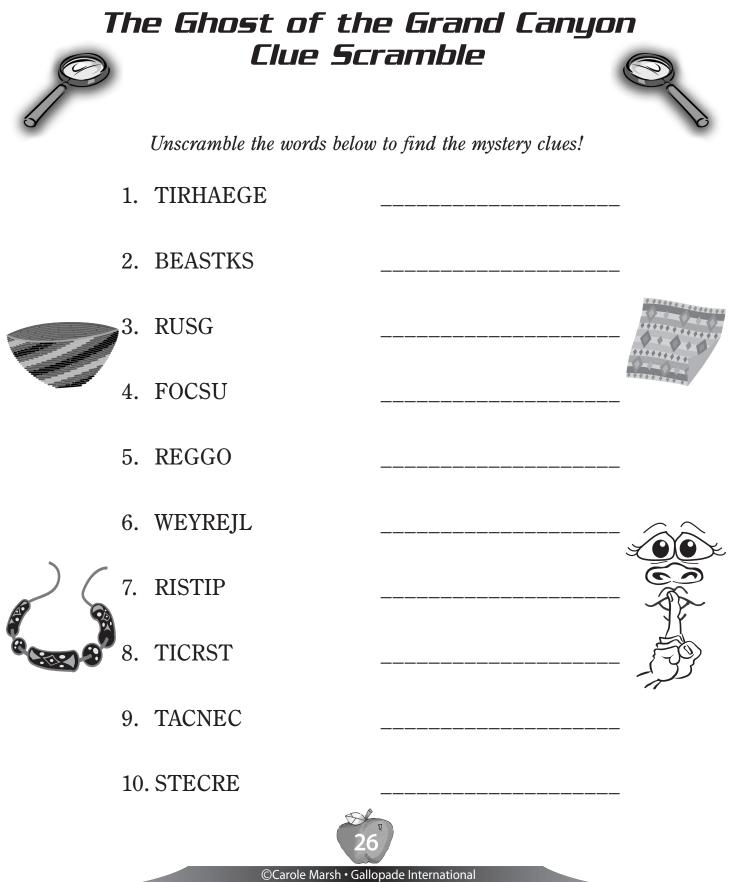
2. Wet some paper towel and drop into bag with coils. Gather ends of bag and seal. Make sure the whole bag is closed tight.

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.

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No.

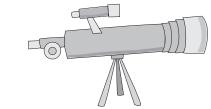
The Ghost of the Grand Canyon Word Search

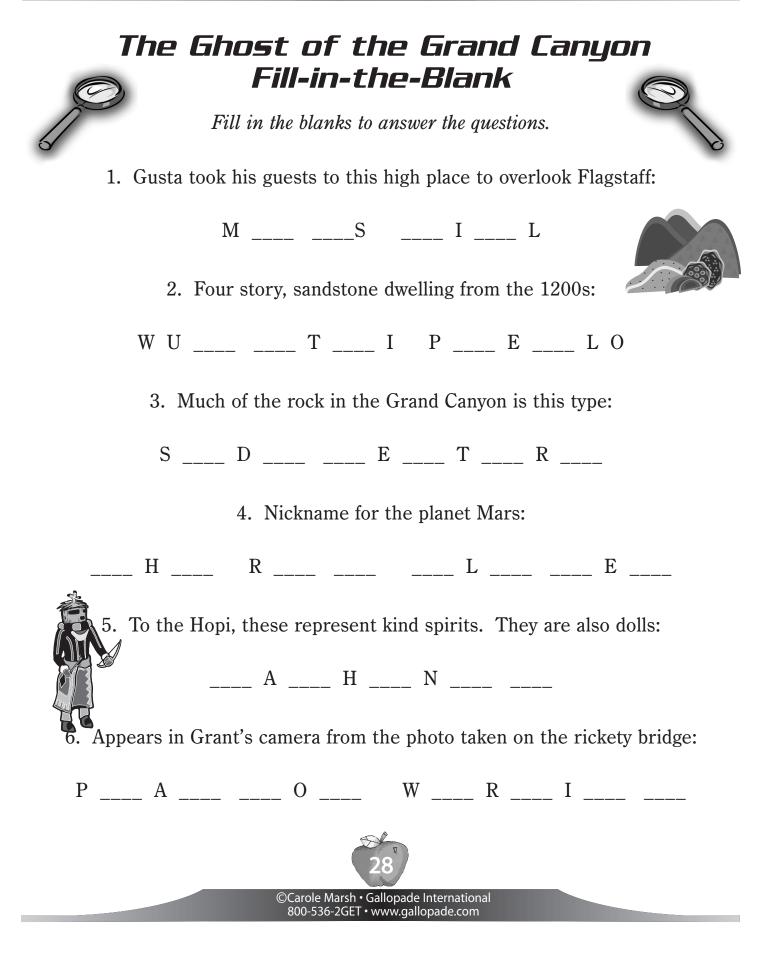


Search for the mysteriously hidden words below!

Y	Т	Ι	Ν	U	Т	R	0	Р	Р	0	Μ	Ι	0	S	Р	Т	
0	U	Т	E	R	S	Р	А	С	E	Х	N	J	Y	S	U	E	
L	0	Т	Р	В	Ι	Р	0	Η	В	Т	А	Ν	U	E	E	L	
G	L	Ι	Μ	Р	S	E	Q	Ζ	R	V	0	R	Η	R	В	E	
U	R	S	А	С	R	E	D	Ι	А	М	Ι	D	Ι	D	L	S	
Р	0	Т	Т	E	R	Y	G	Ν	E	V	Z	Р	Т	D	0	С	
L	С	С	F	R	S	U	0	R	E	G	N	А	D	А	S	0	
E	K	0	F	V	E	J	E	R	С	S	E	А	J	E	L	Р	
Х	S	Μ	F	D	E	С	Х	D	Μ	G	L	L	J	Η	Κ	E	
	CEREMONY			HEADDRESS			NAVAJO				POTTERY						
	ROCKS			TI	TIHU			DANGEROUS			HOPI						
	OPPORTUNITY			PUEBLOS			SACRED			GLIMPSE							
	INTRIGUED				JO	JTEF	R SPA	ACE	RI	RIVER				TELESCOPE			







The Ghost of the Grand Canyon Matching Characters



Match these mystery characters with their descriptions!



- 1. Mimi
- 2. Grant

A. was "missing" one morning

- B. named after a famous potter
- 3. Christina C. tomboy
- 4. Papa
- 5. Danielle

- D. mystery writer
- 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 1800s:



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:





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?

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







Math Activities

\$1,756 budget; 2. 34 years total; 3. Lessons began at 4:15s; 4. Depends on current year;
 5. 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; 8. 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; 5. 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

HOPI;
 LOWELL OBSERVATORY;
 SAN FRANCISCO PEAKS;
 EL TOVAR
 HOTEL;
 LITTLE COLORADO RIVER;
 SOPAPILLAS;
 JOHN WESLEY POWELL;
 UNIDENTIFIED FLYING OBJECT;
 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

