

The Mystery in the


## Teacher's Guide <br> by <br> Carole Marsh



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\# 2 The Mystery on the Freedom Trall \#3 The Mystery of Blackbeard the Pirate
\#4 The Mystery of the hlamo Ghost
\# 5 The Mystery on the California Mission Trale
\# 6 The Mystery of the Missing Dinoshurs
\# The White House Christuas Mystery
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\# 46 The Baffling Baseball Mystery
\# 47 The Great Train Mystery
\#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 the Rocky Mountains are an amazing sight to see - and they're right! Visiting the Rocky Mountains and seeing them for the first time are an unforgettable experience. To see those snow-capped peaks jutting out from the flatness of the Great Plains is a breathtaking sight.

Yes, the Rocky Mountains are a major, world-class tourist attraction, but they are also a gigantic history lesson! It is fascinating to learn about the Native
 Americans, the early explorers, the first miners, and how the geography of the land changed their way of life.

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 Rocky Mountain mystery adventure!!

## Carale Marsh

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The Mystery in the modish

## $30^{\text {YenRs }}$ 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. (For example, we really did stick our toes in the cold ocean, climb Jockey's Ridge, and see Flyer for ourselves!)

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



## Colorado Visitor Information

## Colorado Tourism Office

Official Colorado State Travel \& Tourism Website www.colorado.com
or call 1-800-COLORADO

Official State of Colorado Site www.colorado.gov

Rocky Mountains Recreation<br>www.rockies.com

## Sangre de Cristo Arts and Conference Center / Buell Children's Museum

210 N. Sante Fe Avenue
Pueblo, Co 81003
www.sdc-arts.org
719-295-7200

## Pro Rodeo Hall of Fame and Museum of the American Cowboy <br> Colorado Springs, CO <br> 719-593-8847

Kit Carson County Carousel
Fairgrounds and 15th Street
Burlington, CO 780807
719-348-5562

## Cripple Creek Mine Tour

P.O. Box 339

Cripple Creek, CO 80813
719-689-2466

## Old Hundred Gold Mine

Underground tours for all ages. Open Mid-May to Mid-October P.O.430,Silverton, CO 81433

1-800-872-3009

## Denver Zoo

23rd Avenue, Denver, CO 80205
303-376-4800
www.denverzoo.org

## Ocean Journey

700 Water Street, Qwest Park
Denver, CO 80211
www.oceanjourney.org
1-888-561-4450

## Chapter Subject

1

1
Life awake? Why?
 stand or newstand. Why or why not? mountainside. young stars?

Geography What states do they fly over traveling from Georgia to Colorado?

Have you ever been on a plane? If you were on a trip, what would you do? Sleep or try to stay

Geography Denver is called the Mile High City because it is a mile above sea level.

Recreation Skiing is a popular sport in Colorado. Because of

Vocabulary Acoustics relates to the quality of sound

Science Echos-Created by the repetition of a sound by the reflection of sound waves.

Vocabulary A kiosk is a small structure like a refreshment

Manners Is it a good idea to talk with food in your mouth?

Science An avalanche is a fall or slide of a large mass of snow, rock, or other material down a

Pop Culture Who is Lizzy McGuire? Who are your favorite

Geography Look at the map. Which states border Colorado?


Colorado State Facts


## Colorado Population:

4.3 million residents and is the third fastest growing state in the United States.

## Area:

104,100 square miles ( 269,598 square km)

## Capital:

Denver

## Nickname:

Centennial State or Silver State

## Date of Statehood:

August 1,1876

## Highest Elevation:

Mt. Elbert 14,433 feet

State Flower:
Columbine

## State Bird:

Lark bunting

## State Insect:

The Colorado Hairstreak Butterfly

## State Motto:

Nil Sine Numine (Nothing Without Providence)

## State Gemstone:

The Aquamarine

## State Animal:

The Rocky Mountain Bighorn Sheep

## State Fossil: <br> Stegosaurus

(Wyoming, Nebraska, Kansas, Oklahoma, New Mexico, Utah, Arizona)

3 Vocabulary An abbreviation is a shortened form of a word or phrase. Find the abbreviations on page 13. SUV, CD, and DVD. What are their full names? Sport Utility Vehicle, Compact Disc and Digital Video Disc.

3 Safety

3 Science

3 Math

3 Geography

3 Vocabulary
The phrase "like a banshee" is an expression that means to run wild. Can you think of other expressions? Example: Wild as boars.

3 Vocabulary A valet is a person at a hotel or restaurant who parks your car for you. It can also be a personal servant or attendant.


Why was it important for the kids to be quiet while Papa was driving?

Fog is condensed water vapor in mass like a cloud close to the ground.

If a mile is 5,280 feet, how many feet is 2 miles? ( 10,560 feet) What about 10 miles? ( 52,800 feet) above the earth's surface.

Palatial means large and spacious-like a palace.
The Victorian Era was during the reign of Queen Victoria of England in the 19th century. Buildings and homes built during this period were very ornamental or fancy, inside and out.

Like most of Europe, England drank coffee. Tea


## Effects of

## Altitude

## On People...

Headaches, shortness of breath, poor appetite, and nausea are all symptoms of mild altitude sickness. A wet cough; being too weak to eat or get up; disorientation; shortness of breath at rest; and blue lips or fingernails are all symptoms of severe altitude sickness!

Altitude
sickness is

usually preventable if your ascent is slow. Sleeping a night or two at a lower elevation helps speed the body's process of acclimation. Being in excellent physical condition has no bearing on one's ability to acclimate to altitude!

## On Plants...

For each 1,000-foot (305meter) rise in altitude there is a $4^{\circ} \mathrm{F}\left(-16^{\circ} \mathrm{C}\right)$ drop in temperature. For example, if at sea level the average temperature is $75^{\circ} \mathrm{F}\left(24^{\circ} \mathrm{C}\right)$ at 10,000 feet ( 3048 meters) the average temperature would be only $35^{\circ} \mathrm{F}\left(2^{\circ} \mathrm{C}\right)$. This has a dramatic effect on plant and animal
distribution.

At sea level, there are lowland
 rainforests and mangroves. At cloud level, moist, dripping cloud forests may occur. They are cooler than lowland forests. High mountains may have alpine, tundra, and snow-covered peaks.
in England began in the middle of the 17th century when Catherine of Braganca of Portugal married Charles II and introduced tea to the nation. Green tea became very popular with royalty, but it took 100 years for it to catch on with the rest of the country.

By the mid 18th century, public tea gardens were popular where men and women came together to eat, dance, show off the latest in fashion and drink tea.

3 Family Are there special things you like to do with your family and friends?

Books
What do you like to read? Do you have a favorite type of book like science fiction or mystery books?

4 Vocabulary Dawdle means to take more time than necessary or to waste time.

Manners Christina showed good manners or etiquette by placing her napkin in her lap and keeping her elbows off the table. Do you know other ways to be polite?

Geography The historical character on page 24 was from Missouri. Since there were no airplanes in 1886, how did she most likely travel? What states did she cross?

A helmsman is someone who steers a ship or boat.


## Icebergs!

An iceberg is a huge piece of floating ice that breaks off from glaciers and ice shelves. Only 1/7 of the whole iceberg is visible above water, so they are quite a bit bigger than they seem.

The largest iceberg ever sighted was in the South Pacific Ocean. This mammoth iceberg was 200 miles long ( 322 km ) and 65 miles wide (105 km).

For fun, can you think of other terms with the word ice? (Ice cream, ice storm, ice hockey, Iceland, etc.)


## Iceberg Lab

To observe the effects that icebergs have on the ocean:

1. Give small groups of students these items: a graduated cylinder, a beaker, and an ice cube.
2. Have students make a hypothesis about what is going to happen when the ice cube melts. (i.e. What percentage of the ice cube appears above the surface of the water? How does the ice cube affect the level of the water? Does the level of the water change after the ice cube melts?)


5 Career Meteorologists are people who study the weather. They gather information from airplanes, satellites, weather stations, and weather balloons and use computers to help make predictions.
$6 \quad$ History Most cowboys were around 24 years old. Many were African American or Mexican and only earned $\$ 30$ per month.

In the 1940's people moved from cities into new homes in the suburbs. Today, people are fixing up older, run-down areas and are moving back to the cities for convenience and less commuting time.


6 Vocabulary A special side saddle allowed women to sit with both legs on one side of the horse. This came in handy while wearing long skirts!

6 Vocabulary A conglomeration is a group or a collection of things.

How much would Mimi spend if each adult picked a book for $\$ 15$ and each child picked a book for \$10? (\$60)

6 Vocabulary Grouse means to complain or grumble.

7 Weather What are the winters like where you live? Very cold, warm, rainy or snowy? The sun is the Earth's source of heat and light. The areas of the world that are closer to the equator receive more of the sun's rays and have warmer temperatures.

7 Geography Mountains are landforms that are 2,000 feet or higher. They can be tall and rocky or covered with trees and rounded.
$7 \quad$ Biology $\quad$ Tarantulas are large, hairy, tropical spiders with a painful, but not very poisonous bite.
$7 \quad$ Language $\quad$ To mine means to dig out ore or minerals from the earth.
$7 \quad$ Language

7
Science Molybdenum is a gray, hard, metallic substance used to toughen steel. It is also used in dyes and fertilizers.

## Mining Tidbits

Gold was discovered in the mountains of Colorado in 1858. Shortly after in 1859 hopeful prospectors rushed to Colorado starting the "Pikes Peak Gold Rush." Mining in Colorado has taken on many faces: gold, silver, copper, tungsten, molybdenum, uranium, coal, and even diamonds. The industry of mining gold and other minerals has been a very important part of Colorado's economy and history. This rich mining history continues today.

In 1923 Senator Samuel D. Nicholson, a former miner himself, donated money to build a memorial for his fellow Colorado miners. It took more than 50 years, but in 1979, artist George Carlson created Colorado Miner, a sculpture that you can see in the city of Denver.


After the first gold was discovered, many towns sprang up in Colorado. Many of those same towns have long since been abandoned. Some miners struck it rich while others lost everything. The ghost towns that were left behind often have clues that teach us what life was like during the early mining days.



Culture


How does the author create a sense of foreboding which means a feeling that something is going to happen. Which words create suspense? (Darkness, eerie, etc.)

Adobe is sundried brick made of clay and straw.

Vocabulary Terra cotta is hard, water proof, ceramic clay used in making pottery and buildings. Popular in the west and the midwestern part of the United States.

Kivas were underground or partly underground rooms in a Pueblo Indian village often used by men for councils or ceremonies.

Snow blindness is loss of sight caused by sunlight reflected off snow or ice.

If the kids travelled 120 miles to get to Colorado Springs at 60 miles per hour, how long would take for them to arrive? ( $120 / 60=2$ hours)

In, "We got a bead on them," bead means a small knob on the muzzle of a gun or rifle used for sighting. Do you think they really have a gun or rifle?

The Louisiana Purchase was when the United States bought the land of the western part of this country from France. It extended from the Mississippi River to the Rocky Mountains, between the borders of Canada and Mexico.

Honky tonk is the type of ragtime music often played on a tinny-sounding, old piano. It is also a slang for a noisy dance hall or bar.

## Colorado's Native People

## Anasazi

The commonly used name for an early "four-corners" people who were ancestors of the Pueblo peoples. They achieved great progress in the arts, architectural engineering, and agriculture. Today, some Native Americans object to the use of this term, which in Navajo means "enemy ancestors" and prefer Hisatsinom or Moqui.

## Pre-Pueblos or Cliff Dwellers

Lived in the steep sides of the mesas by AD 1100.

## Utes

Lived on mountains in open land. They shielded their homes by blocking mountain passes. The Utes lived in Colorado longer than any other people.

## Apache, Navajo, and other Tribes

Came from Canada and lived on the eastern plains of Colorado.

## Native Americans <br> Today

For more information about present-day Native Americans living in Colorado, contact:

## Southern Ute Tribe

PO Box 737
Ignacio, CO 81137
(303) 563-4525

Fax: (303) 563-0393

Ute Mountain Ute
PO Box 52
Towaoc, CO 81344
(303) 565-3751

Fax: (303) 565-7412

Writing

Life

Science

Laws


Life

Vocabulary

What is a practical joke? (A mischievous trick played on someone, sometimes causing embarrassment.) When can having fun go too far?

Why is "helpful" in quotation marks? Who are these two men and are they really being helpful?
Vocabulary "Varmint" is used here as a nickname for kids, but it was originally used for a troublesome or undesirable bird or animal.

Vocabulary An abyss is a very deep gulf or pit.

Vocabulary The firebox is a chamber on a steam locomotive's furnace where fuel is burned. leaves, flowers, or other decorations.

If you lived in the wild, how would you survive? What would you eat? (No fast food!)

A piñon is a pine tree with edible nutlike seeds.

Rules are made not just to protect people, but animals, places, and things, too.

What dinosaur names do you know? Examples: Triceratops, Tyrannosaurus, etc.

Hobbies Grant is obviously interested in dinosaurs. What are your hobbies or favorite things?


## Train Tracks!

## The Colorado Railroad

Museum is recognized as one of the best privately supported rail museums in the United States. This "can't miss" site for railfans features over 70 historic narrow and standard gauge locomotives and cars exhibited on 15 acres (6 hectares) at the foot of North Table Mountain, near Golden, Colorado.


The museum was established in 1959 to preserve for future generations a record of Colorado's flamboyant railroad era, particularly the state's pioneering narrow gauge mountain railroads. The mission of the Colorado Museum is:"...to acquire, preserve and exhibit to the general public, railroad equipment, artifacts, paper records, books, artwork, and photographs emphasizing Rocky Mountain area railroads; to explain and interpret the role of railroads in the history of this region from the 1860s to the present by means of exhibits, a reference library, educational programs, publications; and information sharing with other historical


Spelling Remember: Desert has one ' $s$ ' but dessert has two because it is so sweet. "My favorite is strawberry shortcake."


Some traditional Christmas goodies include gingerbread and peppermint candy. Do you have any favorite holiday foods?

12 Life

13
Sports

13
Nutrition
Being considerate means considering the needs of others as well as your own. How were the girls considerate of others in the inn?

Skiing requires a variety of equipment. Can you think of other sports that need special gear?

Carbohydrates are great for energy! A carbohydrate is a substance found in sugars, starches, and cellulose which is from plants.


13 Biology

13 Vocabulary
A snowplow is a vehicle used to remove snow from roads. It is also the name of a skiing maneuver where the tips of the skis are brought together to stop or slow down.

14 Writing
Christina felt grown up in her ball outfit. What makes you feel more grown up?

14 Life
The author uses onomatopoeia, when words imitate what they represent. Like the word "SPLAT!" Can you think of other fun words that describe how the girls fell? (Bam!, etc.) and upright cones.

## Old-Fashioned Carbing Up!

## Miner Forty-Niner Flapjacks

1 1/2 cups
flour
1/3 cup sugar 1 teaspoon
salt


1 1/2 teaspoons baking
powder
1 egg
4 tablespoons oil or melted butter
1 cup milk
Mix all ingredients in a mixing bowl. Cook over hot griddle. Serve hot in metal mining pan with maple syrup!

Makes about 10 flapjacks.
NOTE: Adult supervision is required for preparing all dishes.


## Guess What?

This recipe can help prevent altitude sickness!
Reducing your fat intake by eating a lot (as much as 70\% of your total calorie intake) of carbohydrates (i.e., pasta, rice, pancakes) makes it easier for your body to metabolize and speed up elevation acclimation! Hopefully, you'll never suffer the effects of altitude sickness! At least now you know ahead of time what you can do to minimize its effects!
generation.

14
Vocabulary Gumption means to have boldness.
Vocabulary "To egg" means to encourage or incite to action.

15
 the mountains so that cars could cross the Continental Divide. Before the tunnel was built, travelers had to use the Loveland Pass, a road that is 11,992 feet high.

Writing A pun is a play on words. It's "snow fun" can be a pun for it's "no fun."

Vocabulary Serendipity means a fortunate and unexpected discovery. A pleasant surprise!

Be sure to read Carole Marsh Mystery \#:14
The Mystery on the Mighty Mississippi

## Ski Slang

Cliff Dweller: Tube junkie
Cold Smoke: Contrail following fast powder skier

## Colorado Starfish:

Snowboarder, forward fall in powder

Crack of Nooners: Skiers that hit the lifts around 11'ish on a powder day
Face plant: Head first forward fall on pack
Fatties: Wide powder skis
Freeheeler: Telemark skier
Gearhead: A person outfitted in all new equipment - and can't ski

Head Auger: Alpiner, forward fall in powder

Hillrodder: An excellent skier
Huckster: Skier that launches off of cliffs

Jibblets: Kids in the tube
Klingon: Uninvited member in your squad

Loud Powder: Ice
Moderate Wind: Talkative skier on chairlift

Photo Op: Your buddy faceplants
Rentoid: A person outfitted in all rental equipment - and can't ski

Schussboomer: A sudden stop by an expert skier
Snow Hole: An area that attracts large amounts of snowfall
Squad: Your regular ski buddies

Tray Racer: Snowboarder
Wad: Cluster of snowboarders sitting on slope
Yard Sale: Gear scattered across slope after fall
Yepper: Affirmative

## Discussinn Auestinns

* On page 5, do you know where Grant gets, "Can you hear me now? Can you hear me now?" Can you think of other slogans from TV commercials or other advertisements? Why do you think it is important for companies to have catchy sayings?

Grant and Christina tried ice skating for the first time while visiting Colorado. Do you like to try new things? Do you like to ease into a new experience slowly or jump right in? How would you feel if you messed up or fell down like Grant did?


Compare and contrast winter where you live with wintertime in the Rocky Mountains. What is your favorite season? Why?

- Christina would like to have a summerhouse at the beach and a winter house in the mountains. What would you prefer? What are the flora and fauna-animals, plants, and birds of your desired locations?

The grizzly bear, the gray wolf, and the bald eagle are some of Colorado's endangered or threatened animals. Discuss how these animals become endangered and what we can do to help save them.


Why did the people dress up as historical characters in the old western town of Durango? Who would you dress up as if you visited this town and why?

## Colorado's wonderful wildlife:

## BYLAND

Moose
Beaver
Mule Deer
Bighorn Sheep
Mountain Lion
Coyote
Fox
Porcupine
Prairie Dog
Bobcat
Marten
Skunk
Squirrel
Pronghorn

BY WATER
Bass
Catfish
Walleye
Sunfish
Kokanee Salmon
Perch
Carp
Trout

AND MORE...
Tiger Salamander
Water Bug
Turtle
Leech
Crayfish
Fishing Spider
Diving Beetle
Muskrat
Toad

## ENDANGERED OR <br> THREATENED SPECIES:

Black-footed Ferret Grizzly Bear
Lynx
Gray Wolf
Wolverine
Wood Frog
Bald Eagle
River Otter Whooping Crane

## Bayou Bargain Puts Colorado in the Bag!



1. Can you find Colorado on this map? Fill in the names of the other states, too.
2. The Louisiana Purchase covered about 827,000 square miles ( $2,141,765$ square kilometers). How many states were formed completely or partially, from this land?
3. The United States purchased this land from France in 1803. In 1858, gold was discovered in Colorado. This was how many years later?

## Howdy Neighbors!

States that border Colorado are Arizona, Kansas, Nebraska, New Mexico, Oklahoma, Utah, and Wyoming.



Four Corners is the only place in the United States where four states meet! They are Colorado, Utah, Arizona, and New Mexico.

No boundaries! Colorado is the only state without a natural boundary like a river, mountain range, or coast.

## Early Settlers

In the 1820s and 1830s, fur trappers and traders, called
 mountain
men, started settling in Colorado in search of beaver and other fur-bearing animals. Trading posts were built, and both the mountain men and the Native Americans traded furs and manufactured goods. Many mountain men also served as scouts.

In 1821, Mexico offered large tracts of land to citizens willing to establish a colony in the San Luis Valley. Only a few settlers moved to Colorado at that time.


Make a bar graph using the following Mountain Heights of the World:

Mount Elbert (Colorado) 14,433 feet (4,399 meters)
Mount Everest (Nepal-Tibet) 29,028 feet ( 8,848 meters)
Mount Lincoln (Colorado) 14,286 feet (4,354 meters)
Kilimanjaro (Tanzania) 19,340 feet (5,895 meters)
King George Mount (Canada) 11,226 feet (3,422 meters)
Mount Stanley (Uganda) 16,763 feet (5,109 meters)
Brasstown Bald (Georgia) 4,784 feet (1,458 meters)
Mount McKinley/Denali (Alaska) 20,320 feet (6,194 meters)
El Pico de Orizaba (Mexico) 18,555 feet ( 5,656 meters)
Mount Washington (New Hampshire) 6,288 feet (1,917 meters)


## Eng|tsh: Write It!

1. Write a newspaper article telling about the arrest of the two thieves. Be sure to answer the questions who, what, when, where, and why in your story.
2. Write a new ending for the last chapter of the mystery.
3. If you could talk to Molly Brown, what would you say to her? Write a letter with your thoughts.
4. Write an acrostic poem using the word:

## R

0
C
K
Y

The first letter of each line should begin with letters from this word.
5. Choose one of the "Memorable Mines" and write a fictional story telling how it got its name. See page 129 for Colorado mine names.

6. Pretend you are skiing with the kids. Write a paragraph using descriptive adjectives and lots of action verbs to create excitement.
7. Write five new titles for The Mystery in the Rocky Mountains.
8. Write a list of what the well-dressed skier should have before hitting the slopes.

9. Write a commercial that advertises a place, activity, or thing from The Mystery in the Rocky Mountains.


Study the words below. Then fold the page in half and take a spelling test! Unfold the page to check your work. Study the words you miss!
$\qquad$
MYSTERY
COLORADO
MOUNTAIN
BISON
AVALANCHE
SECRET
CONCERT
VALET $\qquad$
VICTORIAN $\qquad$
TATTERED $\qquad$
INSTRUMENT $\qquad$
BREAKFAST
BLIZZARD
POLICE
PURCHASE
RAILROAD
PALACE
CACTUS
$\qquad$
$\qquad$
$\qquad$

DINOSAUR $\qquad$
WEATHER $\qquad$
DESERT $\qquad$
PEPPERMINT
TIMBER
$\qquad$

SKIING
DENVER
AUCTION
TUNNEL $\qquad$
SCENIC $\qquad$
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## Buffalo Bill

Colonel William F. Cody was a wellknown cowboy who earned his
 nickname hunting buffalo to feed railway workers who were building a railroad after the Civil War. Buffalo Bill had many jobs -
 Pony Express rider, soldier, Indian scout, hunting guide, and actor. Probably his most famous job was as the organizer and performer of the famous "Buffalo Bill's Wild West Show."

With sharpshooter Annie Oakley and the respected Indian chief Sitting Bull, Buffalo Bill traveled
 all over the United States. Eventually, his show's popularity grew and they traveled
 overseas - even performing before Queen Victoria! Colorado's beloved cowboy and entertainer is buried west of Denver in Golden, atop Lookout Mountain.

For more information contact:

## Buffalo Bill Grave and

Museum
987-1/2 Lookout Mountain Rd.
Golden, Colorado 80401
(303) 526-0747
www.buffalobill.org
-or-

## Buffalo Bill Museum

720 Sheridan Ave.
Cody, WY 82414
(800) 533-3838
www.bbhc.org

## Birdseed Mining Activity

This activity will illustrate how the "needle in a haystack" process of mining works. Students will be able to experience the difficulty that miners face in locating valuable mineral deposits. They will also learn a simple lesson in economics - a less valuable commodity may be more profitable because it is more abundant. Students will be shown the importance of clean, environmentally conscious mining, and will learn that all mining operations must pay for reclamation work.

1. Divide students into groups of 4 to 6 .
2. Pour approximately 1 pound of birdseed in each pan.
3. Add 2 gold beads, 4 silver beads and 8 blue beads, and 3 white beads to each pan - mix into birdseed.
4. The beads and seeds represent the following:

- Gold beads = Gold
- Silver beads = Silver
- Blue beads = Coal
- Sunflower seeds = Copper
- All other seeds = Waste
- White beads = Reclamation (These beads will be assigned a COST rather than a VALUE because reclamation must be done at all mining operations regardless of how much profit was made.)

5. Students search through the seed mixture and separate out or "mine" beads, sunflower seeds, and other grain products, making piles of each. Allow 5 to 10 minutes for the mining activity. (NOTE: The instructor should hint to the students that they should mine NEATLY, not mixing waste seeds with their beads, sunflower seeds and not scattering seeds all over the area. Instructor can have the option of examining the work of each group, or assigning a helper to monitor each group to see how cleanly the "mining" is being done. Instructor or helper may assign an arbitrary "fine" to cover costs for "environmental damage" at the messy tables.
6. Assign a value for each type of bead or seed.
7. Have the students count up the number of gold, silver, and blue beads, sunflower seeds from their piles and multiply the number of each by their values given in \#6. Document all information on a separate sheet of paper. Students should also note the amount of any environmental damage fines on the spreadsheet. Students should count the number of white beads in their pile and multiply by the reclamation factor. This number should be recorded on each group's paper.
8. Have each group total up the dollar value of their "mining" operation, subtracting the environmental damage fines and reclamation costs. Have each group share their success with the others. Prizes may be awarded to the best table of "miners."


## Materials:

- Wild Bird Food - any commercial birdseed mix with sunflower seeds and at least 2 other seed varieties
- Shallow pans (inexpensive plastic paint pans work well)
- Small beads (approximately 2 mm ) blue, gold and silver
- Medium beads (approximately $4-6 \mathrm{~mm}$ ) white color


## Assigned Values:

- Gold bead = Gold
$=\$ 50.00$ each
- Silver bead = Silver
$=\$ 40.00$ each
- Blue bead = Coal
$=\$ 30.00$ each
- Sunflower seeds = Copper $=\$ 20.00$ each
- All other seeds = Waste $=\$ 0.00$
- White beads = Reclamation $=\$ 1,000.00$ each


## More Colorado Minerals:

MOLYBDENUM: $47 \%$ of this mineral is used in steel alloy. In pure form it is used because of its high melting temperature. The filament supports in light bulbs is made from molybdenum.

GYPSUM: used in making gypsum board or sheet rock which is used to make walls in houses and buildings everywhere!

LIMESTONE: used for building, for making chalk, and for various other purposes.

TITANIUM: used for alloys with with other metals. They are used in the aerospace industry, for both airframes and engines, where lightweight strength and ability to withstand extremes of temperature are important.

## Creativitu: Cogk It!

## Tea and Crumpets

A crumpet is a light, soft bread similar to a muffin that is baked on a griddle and is often served toasted. (It came before the English muffin!)


## Ingredients

1 envelope of dry yeast
1/3 cup warm water
1 teaspoon of sugar
$11 / 2$ cups milk
2 cups bread flour
1/2 teaspoon baking soda
1 teaspoon salt


## Directions

1. Add warm water to a mixing bowl.
2. Sprinkle sugar and yeast on top of the water. Let rest for 5 minutes.
3. Add milk, flour, baking soda and salt. Stir.
4. Cover bowl with plastic wrap and wait 30 minutes.
5. Grease 3-inch cookie cutters and a griddle.
6. Warm griddle over medium heat, place cutters in the griddle, and add 3 spoons of batter into each cutter.
7. Reduce heat, cook until batter is set and bubbles appear, approx. 10 min .
8. Remove cookie cutters and brown on other side and serve!



## It's All in the Tea Leaves

Tea comes from the Camellia sinesis plant. It is an evergreen bush that grows 42 degrees north of the equator. Where is the best tea grown? China, Taiwan, Sri Lanka, Japan and India have tea that is hand picked to preserve its quality.

Types of tea:
-Black tea-fermented
-Green tea-unfermented -Oolong-partially fermented

## Popular sips

-Black tea from Sri Lanka and India gets thumbs up in the United States, Europe, and in the United Kingdom.
-Green tea is most popular in Japan.
-Oolong, with its more delicate flavor, is all the rage in China.

Chocolate Tea Sandwich Recipe

12 pieces of white bread with crusts removed 1/4 cup brown sugar 1/4 cup semisweet chocolate, grated
$30 z$ cream cheese, at room temperature

1. Take 6 slices of bread and spread them with cream cheese.
2. Sprinkle brown sugar on top.
3. Sprinkle chocolate on next.
4. Cut into halves, quarters, thirds, or use a fun cookie cutter shape.
5. Eat up!

## The Mystery in the Rocky Mountains Maze

Help Christina, Grant, Zander, and Dakota find their way back from


## The Mystery in the Rocky Mountains Pair Lp

Match the words on the left with the correct words on the right!
PIKES LEVEL
FLAPPLOWSNOWPLANEROCKYRAILESTESROAD
AIR ..... PARK
SKI MOUNTAINS
TRENCHLIFTCOWJACKSEAGINGERCASE
PEPPER
COAT
SUIT

## The Mystery in the Rocky Mountains Build Your Dwn Mountain

Use the information on this page to construct your own mountain.

## Mountains . . . Uncovered!

The earth's plates consist of strata, or layers of rock. As the plates move, the strata is bent and folded. In mountains you can see how the layers have been bent into wavy layers.

## Types of Mountains:

Block mountains are formed when the Earth's crust forms cracks called faults. In-between the faults the land is pushed up to become a mountain.

Dome mountains are created when molten rocks under the earth's crust push the earth's crust into a huge bulge.

Fold mountains are made when one plate pushes against another plate. Rock in-between is pressed into folds. (This is how the Andes Mountains were formed.)

## Mountain Vocabulary:

 crag-a steep piece of rock range-a series or group of mountains strata-layers of rock
## Materials

- Old paper bags or newspaper
- Paint
- Newspaper torn into strips
- Cardboard
- Bucket
- Paint brush
- Wallpaper paste

1 Make balls of crumpled paper bags or newspaper.

2 Create papier-mache by soaking pieces of newspaper strips in paste.

3 Place balled up paper on cardboard base and cover with soaked strips to form mountains and valleys.

4 Allow time to dry then paint your mountains, valleys, or even add a pond, lake, or stream.


## The Mystery in the Rocky Mountains Clue Scramble

Unscramble the names of Colorado bugs and decode the word below!

1. BELTEE

2. NTSA
3. MSIUOTQO


- 1

4. HOTM

5. GSARPEPSOHR $\qquad$ --- --- --_


HINT: Give bugs the boot.


## The Mystery in the Rocky Mountains

 Word SearchFind the Colorado towns and places below.

$\begin{array}{lllllllllllllllll}\text { S } & \mathrm{I} & \mathrm{L} & \mathrm{V} & \mathrm{E} & \mathrm{R} & \mathrm{T} & \mathrm{O} & \mathrm{N} & \mathrm{E} & \mathrm{L} & \mathrm{G} & \mathrm{A} & \mathrm{E} & \mathrm{J} & \mathrm{K} & \mathrm{L}\end{array}$ $\begin{array}{lllllllllllllllll}O & O & G & N & A & R & U & D & K & C & Z & F & B & B & J & A & A\end{array}$ $\begin{array}{lllllllllllllllll}\text { S } & \mathrm{G} & \mathrm{N} & \mathrm{I} & \mathrm{R} & \mathrm{P} & \mathrm{S} & \mathrm{O} & \mathrm{D} & \mathrm{A} & \mathrm{R} & \mathrm{O} & \mathrm{L} & \mathrm{O} & \mathrm{C} & \mathrm{E} & \mathrm{K}\end{array}$ $\begin{array}{lllllllllllllllll}P & B & R & E & C & K & E & N & R & I & D & G & E & N & R & P & E\end{array}$ $\begin{array}{lllllllllllllllll}\text { S } & \mathrm{N} & \mathrm{I} & \mathrm{L} & \mathrm{L} & \mathrm{O} & \mathrm{C} & \mathrm{T} & \mathrm{R} & \mathrm{O} & \mathrm{F} & \mathrm{J} & \mathrm{L} & \mathrm{A} & \mathrm{E} & \mathrm{S} & \mathrm{W}\end{array}$ $\begin{array}{lllllllllllllllll}Z & \mathrm{Y} & \mathrm{L} & \mathrm{R} & \mathrm{U} & \mathrm{A} & \mathrm{S} & \mathrm{O} & \mathrm{N} & \mathrm{I} & \mathrm{D} & \mathrm{P} & \mathrm{B} & \mathrm{N} & \mathrm{V} & \mathrm{E} & \mathrm{O}\end{array}$ $\begin{array}{llllllllllllllllll}\mathrm{K} & \mathrm{B} & \mathrm{O} & \mathrm{U} & \mathrm{L} & \mathrm{D} & \mathrm{E} & \mathrm{R} & \mathrm{Q} & \mathrm{O} & \mathrm{A} & \mathrm{Z} & \mathrm{R} & \mathrm{Z} & \mathrm{N} & \mathrm{K} & \mathrm{O}\end{array}$ $\begin{array}{lllllllllllllllll}\text { P } & \mathrm{U} & \mathrm{E} & \mathrm{B} & \mathrm{L} & \mathrm{O} & \text { A } & \mathrm{R} & \mathrm{O} & \mathrm{R} & \mathrm{U} & \text { A } & \text { A } & \text { A } & \mathrm{E} & \mathrm{I} & \mathrm{D}\end{array}$ $\begin{array}{lllllllllllllllll}H & O & L & L & Y & M & H & B & Q & R & W & F & M & V & D & P & H\end{array}$

| AURORA | BONANZA | BOULDER | BRECKENRIDGE |
| :--- | :--- | :--- | :--- |
| DENVER | DINOSAUR | DURANGO | COLORADO SPRINGS |
| EAGLE | HOLLY | LAKEWOOD | FORT COLLINS |
| MARBLE | PIKES PEAK | PUEBLO | SILVERTON |

## The Mystery in the Rocky Mountains Fill-in-the-Blank Crossward

Fill in the blanks to answer the questions.


1. State where this mystery takes place:

C
2. Type of vehicle the family drives while on vacation:
$\qquad$ U $\qquad$
3. Time of year for this trip:
$\qquad$
$\qquad$
$\qquad$
$\qquad$ R

4. Nickname for the group of mountains in the Rocky Mountains:
$\qquad$
5. What does LoDo stand for?

$\qquad$

D
6. What instrument was played at the concert?

7. People came to Colorado in search of this to get rich:

G OR $\qquad$ ___ V $\qquad$
$\qquad$

## The Mystery in the Rocky Mountains Matching Characters

Match these mystery characters with their descriptions!

1. Molly Brown
A. Mystery Writer
2. Grant
3. Zander
C. Jeff's pal
4. Papa
D. Dinosaur fan
5. Christina
E. Unsinkable
6. Mimi
F. Has a red airplane
7. Mutt
G. Wore white dress to the ball
8. Dakota
H. Oldest kid

## The Mystery in the Rocky Mountains Quiz

Use the clues to find the correct answer to each quiz question.

1. When snow suddenly falls down a mountain, burying everything in its path.

2. Maneuver that helps a skier to stop or slow down.
3. Nickname for a person who lives in an area that is mostly flat.
$\qquad$
4. A prank that may cause someone harm or embarrassment.
5. Famous ship that sank after hitting an iceberg.
6. Colorado airport that looks like a miniature mountain range.
$\qquad$
7. This type of winter storm limits visibility.

8. This was hidden underneath the rented SUV.
9. Mountain traveled in the story that had lots of hairpin turns.
10. Papa called this clothing his "penguin get-up."

## The Mystery in the Rocky Mountains True or False

## Mark each statement true or false.

Can you replace the word (or words) that is false in each statement?
$\qquad$ 1. Colorado Springs is the Mile High City.
$\qquad$ 2. Three mysterious men keep following the kids.
$\qquad$ 3. Christina bought lots of presents at the silent auction.
$\qquad$ 4. Papa has a pilot's license.
$\qquad$ 5. The kids and the adults went snowboarding.
$\qquad$ 6. The police arrested the strange men.
$\qquad$ 7. The family stayed in the White Palace Hotel.
$\qquad$ 8. Grant danced with a partner at the Ski Ball.
$\qquad$ 9. Mimi's and Papa's friends run the Allaire Timbers Inn.
$\qquad$ 10. The Eisenhower Tunnel goes under the Continental Divide.

## Answer Key...

## to The Mystery in the Rocky Mountains



Geography: Find It!
2. 15; 3.55

The Mystery in the Rocky Mountains Pair Up
PIKES PEAK; FLAP JACK; SNOWPLOW; ROCKY MOUNTAINS; RAILROAD; ESTES
PARK; AIRPLANE; SKI LIFT; TRENCHCOAT; COWBOY; SEA LEVEL; GINGERBREAD;
PEPPERMINT; SUITCASE
The Mystery in the Rocky Mountains Clue Scramble BEETLE, ANTS, MOSQUITO, GRASSHOPPER, MOTH, SPLAT!

The Mystery in the Rocky Mountains Matching Facts

1. E; 2. D; 3. H; 4. F; 5. G; 6. A; 7. C; 8. B

The Mystery in the Rocky Mountains Fill-in-the-Blank Crossword

1. COLORADO; 2. SUV; 3. WINTER; 4. FOURTEENERS; 5. LOWER DOWNTOWN; 6. TUBA; 7. GOLD OR SILVER

The Mystery in the Rocky Mountains Quiz

1. Avalanche; 2. The Snow Plow; 3. Flatlander; 4. Practical joke; 5. Titanic; 6. Denver International Airport; 7. Blizzard; 8. Tracking device; 9. Pikes Peak; 10.Tuxedo

The Mystery in the Rocky Mountains True or False

1. F-Denver; 2. F-two; 3. F-Grant; 4. T; 5. F-Skiing; 6. T; 7. Brown; 8. F-Without; 9. T; 10. T
