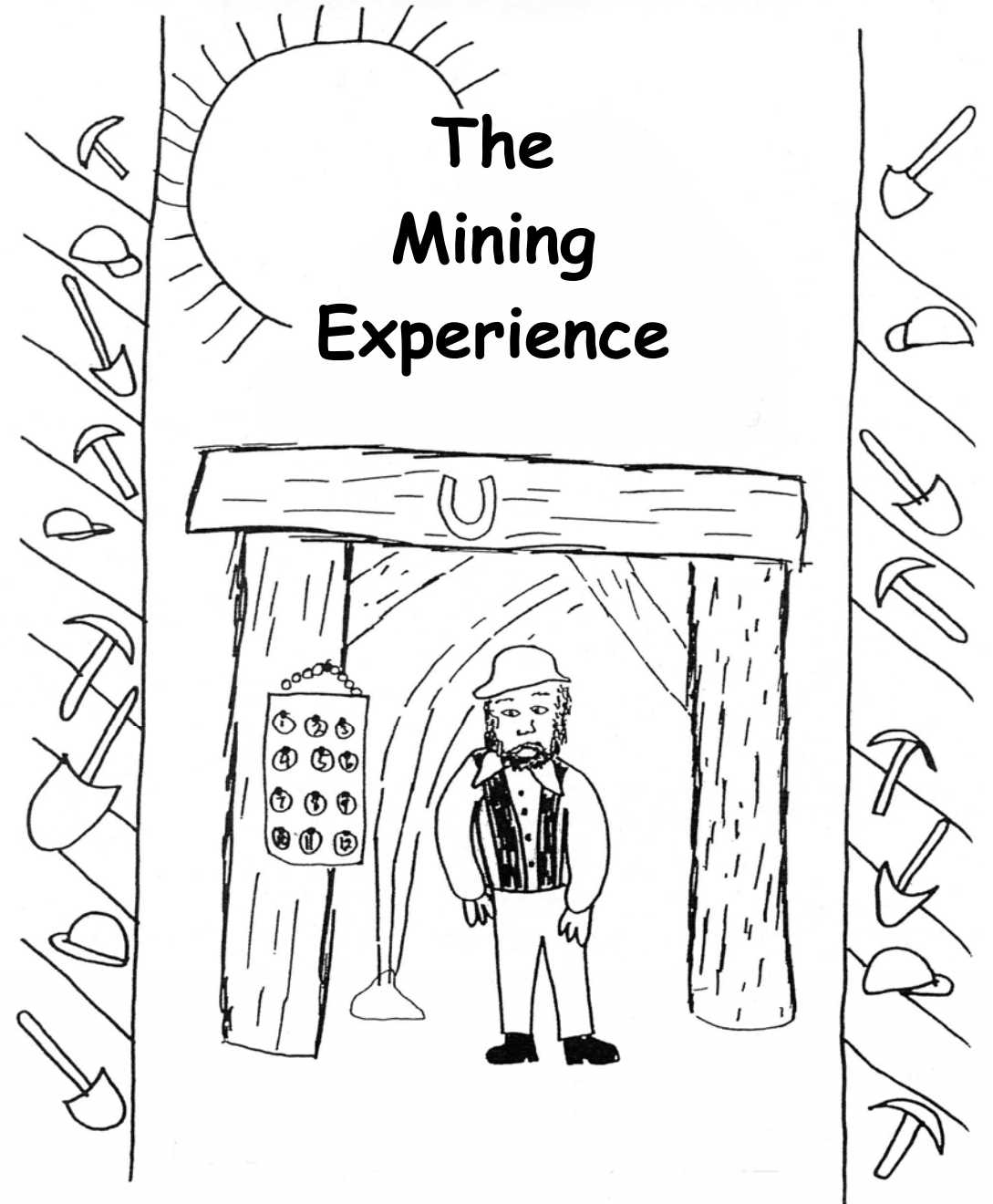


Draw a picture of the best part of the field trip.



NAME _____

Words to Know Before You Come



Face - The end of the tunnel where the workers are blasting to make the tunnel longer.

Headframe - Wooden structure above the shaft opening.



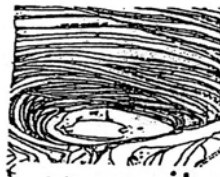
Mucking - Removing the ore that has been blasted from the face. The man who does this work is called a mucker.

Open Pit - A large hole open to surface to expose ore so it can be removed without going underground.



headframe

Ore - The rock in which valuable minerals are found.



open pit

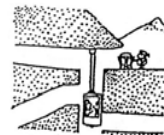
Outcropping - When the vein is sticking out on the side of a mountain.

Placer Mining - Using a pan, water, and gravity to separate gold from lighter sand and rock.



Shaft - Vertical entrance into the mine.

Tunnel/Adit - Horizontal opening into mountain so you can get to the ore. (also called a drift)



tunnel shaft

Vein - mineral with a boundary that separates it from the rock around it.



Introduction

This booklet is to be used by YOU. You will soon be visiting the McCaw School of Mines. This mine was opened for field trips in 1997. It was made so that YOU can learn about mining. Mining is important to Nevada. Learn the information in this booklet so that you will be ready to learn even more when you go to the field trip. Have fun coloring the pictures.

We will learn about:

- History - Nevada's early days
- Geology - The study of the earth
- Minerals - Everything is made of something
- Mining
 - Placer, hard rock and open pit
 - How to get the mineral from the ore

Then:

The Field Trip 'EXPERIENCE



The Mining Experience

Use your imagination and put yourself back in Nevada in the 1800's. Mining was very important to early Nevada and still is today. The McCaw mine is a pretend but very realistic copy of what a mine might have been like. As you enter the mine, think about what it was like for the real miners who worked in the underground mines.

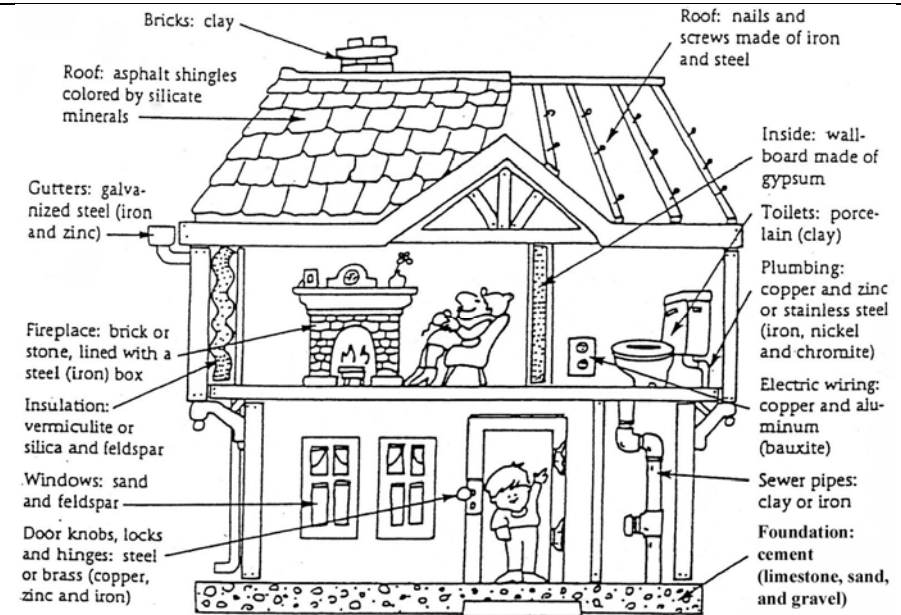
In order to tunnel into the side of mountains or dig down into the earth, miners would first drill holes, put dynamite in the holes to blast, and then muck or clean up the ore and rocks. Then they would do it all over again. This would take them deeper and deeper into the earth.

Mines were very dark. Without the light of candles or lanterns, a miner could not even see his hand in front of his face. Many mines were very hot to work in. Entering a mine was very dangerous. Cave-ins could happen and kill or trap miners. Falls, explosions, and fires occurred.

As you enter the McCaw mine, you will see the vein of gold above your head. The tunnel follows the vein. Use your imagination and think about all of the dangers and risks miners faced as you yourself enter the mine.



Your House Is Mined



Your House From a Mine -

Mining people say that "If It Can't be Grown - It's Gotta be Mined". That means that unless something is an animal or a vegetable - it is a mineral. The minerals come from the earth and the miners are the ones who dig them up. Look at the many things in the house that came from mining.

Animal???

Vegetable???

Mineral???



Processing the Ore

Not all of the rocks taken from the ground had gold or other valuable minerals. In the early mining days, miners looked for nuggets or veins. You could actually see the gold with your eyes. The rock that contains gold and silver is called *ore*. Much of the rock removed from the ground had no gold or silver and was waste or just thrown away. Sometimes large amounts of waste rock had to be removed to get to the gold.

To remove the gold and silver from the ore, it had to be crushed. Stamp mills were used to pound the ore and crush it. Not all gold is visible. Today, miners find microscopic gold in the ore. This means it is so small you can't see it with your naked eye. The microscopic gold has always been there, miners didn't know how to get it out of the ore in the 1800's.

Today, they crush the ore in huge crushers and use chemicals to get the gold out of the rocks.



The Mining Experience Checkpoint:

1. Mines were very dangerous places..... T F
2. The temperature underground was very nice to work in for miners..... T F
3. The McCaw mine is a real mine..... T F
4. The McCaw mine will make it seem like you are going into a real mine..... T F

Mining History in Nevada

Miners came to Nevada after the Gold Rush to California that started in 1849 ended. They were trying to find gold and silver like they did in California. Nevada had a lot of gold and silver under the earth. The largest silver find in the entire North American continent was the Comstock Lode in Virginia City. Many men moved to Virginia City to work in the mines. The money the mines made and increase in population helped Nevada become a state in 1864.

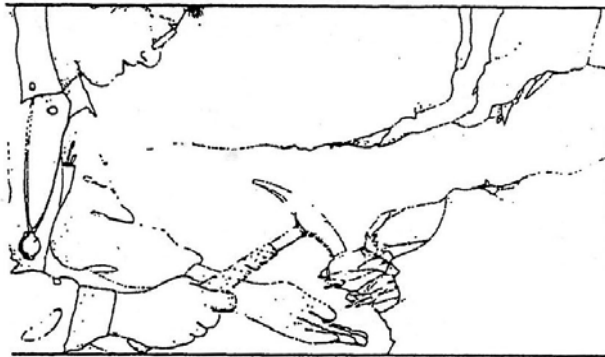


Early mines in Nevada were called underground mines. Miners tunneled into mountains and down into the earth. They were trying to get to the valuable minerals like gold and silver.

They would look for outcroppings in the rocks to help find gold. Outcroppings were places where a different type of rock was pushed out of the earth.

There they would hope to find a vein of gold to follow to the Mother Lode. That meant they found the big pockets of gold.

Today, some underground mining is still done. Open pit mines are most often dug. These use big drills on trucks, bulldozers and buckets on tractors, and huge trucks to haul the ore. Since this equipment was not available in the 1800's, underground mines had to be used.



In the big open pit mines, trucks as big as a house carry the ore from the mine to be processed. Then they would start all over again. First drill, next blast, and then muck.

The 3 Steps in Mining Checkpoint:

Write the 3 steps to mining in the right order:

1. _____
2. _____
3. _____



The 3 Steps to Mining



Whether an open pit or underground mine was used, the same three steps were always followed. First, miners would have to drill holes into the side of the mountain or end of the tunnel. The end of the tunnel was called the face. In open pit mines, deep holes are drilled straight down into the earth.

Next, the holes were loaded with dynamite. A miner would yell "Fire in the Hole." This meant they were about to set off the dynamite. Then a big explosion would happen.

Then, it was the muckers' turn. They were the ones who shoveled up the ore and rocks and carried it to be processed. In the early days, small underground ore cars would be pushed on rails to get the ore out of the tunnel. Sometimes miners would use wheelbarrows or even backpacks to carry the ore out. Eventually, mules were used to pull the ore cars and then electric or diesel engines were used to make trains.



Big companies often claimed mines and hired men to dig into the ground for them. The men did not get to keep the gold. The owners of the company got the gold and paid the miners to get the gold for them.

Not all miners worked for the companies. Many would stake their own claim. They were not able to go as deep into the earth to get the gold.

Many miners would pan for gold. Instead of digging into ground, they looked in rivers hoping the water already did the work. The rivers would erode mountains exposing gold. The gold would be carried down the rivers to the bottom of the



mountains. This is called placer gold. There the miners filled pans with the rocks from the bottom of the river. By moving and tipping the pan in the water, the lighter rock would float out of the pan. Gold is much denser or heavier than the other rocks. It would stay in the pan. If a

miner were lucky, he would find a gold nugget in the bottom of the pan.



Mining History in Nevada Checkpoint:

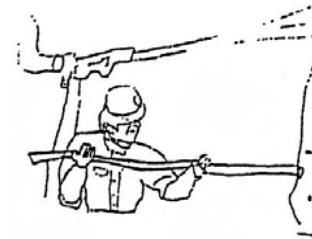
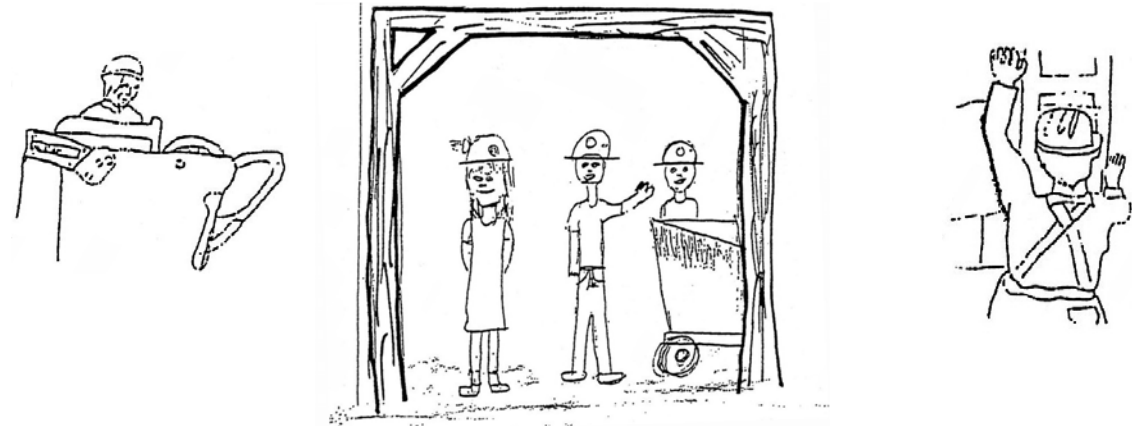
Complete the sentences using the 'word bank' below:

1. The gold rush to California started in _____.
2. The Comstock Lode was located in _____, Nevada.
3. Nevada became a state in _____.
4. Tunneling into the ground was called _____ mining.
5. Digging into the earth using big modern equipment is called _____ mining.

<u>Word Bank</u>		
Virginia City	underground	1849
1864		open pit



Vocabulary



Face
Tunnel
Mucker
Raise
Cap light
Ore Car
Rails
Lighting
Blast
Steel
5 Pound Hammer
Cage
Dark

