



Reed Gold Mine Teacher's Guide

September 2000

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SINCEREST APPRECIATION TO:

**Dr. Richard F. Knapp, North Carolina Historic Sites
-Division of Archives and History**

**John B. Dysart, Reed Gold Mine State Historic Site
-Site Manager**

**Susan E. Smith, Reed Gold Mine State Historic Site
-Chief of Historic Interpretations**

**Don McNeely of T. Braeden's, Inc.
-President of Gold History Corporation**

**Elizabeth Boyd, T. Braeden's, Inc.
President**

AND TO:

**The Reed Gold Mine Bicentennial of Gold Education Committee:
Robert Rensburg III, Reed Gold Mine State Historic Site
- Former Assistant Site Manager**

**Dr. Barbara Theide, Reed Gold Mine State Historic Site
-Former Bicentennial Coordinator**

**Amy Archer, Kannapolis City Schools,
- Instructional Technology Specialist**

**Dr. Ken Burrows, University of North Carolina at Charlotte
- Professor of Continuing Education**

**Jody Cohen, Kannapolis City Schools, Social Studies
- 4th Grade Teacher**

**Michael Corrigan, Kannapolis City Schools
- K-5 Resource Room Teacher**

**Patricia J. Dickson, Mecklenberg Area Catholic Schools, Math
- 4th Grade Teacher**

**Cathy Jewett, Cabarrus County Schools
- Middle School Curriculum Coordinator**

**Susan Kimball, Rowan-Salisbury Schools, Social Studies
- 4th Grade Teacher**

**Boone Linker, Cabarrus County Schools, Science
- 4th Grade Teacher**

**Karen Mann, Mecklenberg Area Catholic Schools, Math
- Learning Support Program Director**

**Linda H. Medlin, Cabarrus County Schools, Communications
- 4/5 AG Teacher**

**Ann Parker, Cabarrus County Schools, Communications
- 4th Grade Teacher**

**E. Campbell Price, North Carolina Department of Public Instruction
- Instructional Technology Consultant**

**Paula Ritchie, Cabarrus County Schools
- Assistant Principal for Instruction**

**Robert Shinn, Kannapolis City Schools
- Director of Student and Special Services**

**Brenda Steadman, Charlotte - Mecklenburg Schools
- Elementary Social Studies Coordinator**

**Martha West, Rowan County Schools
- Director of Elementary Education**

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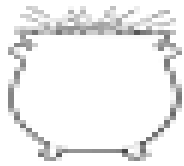
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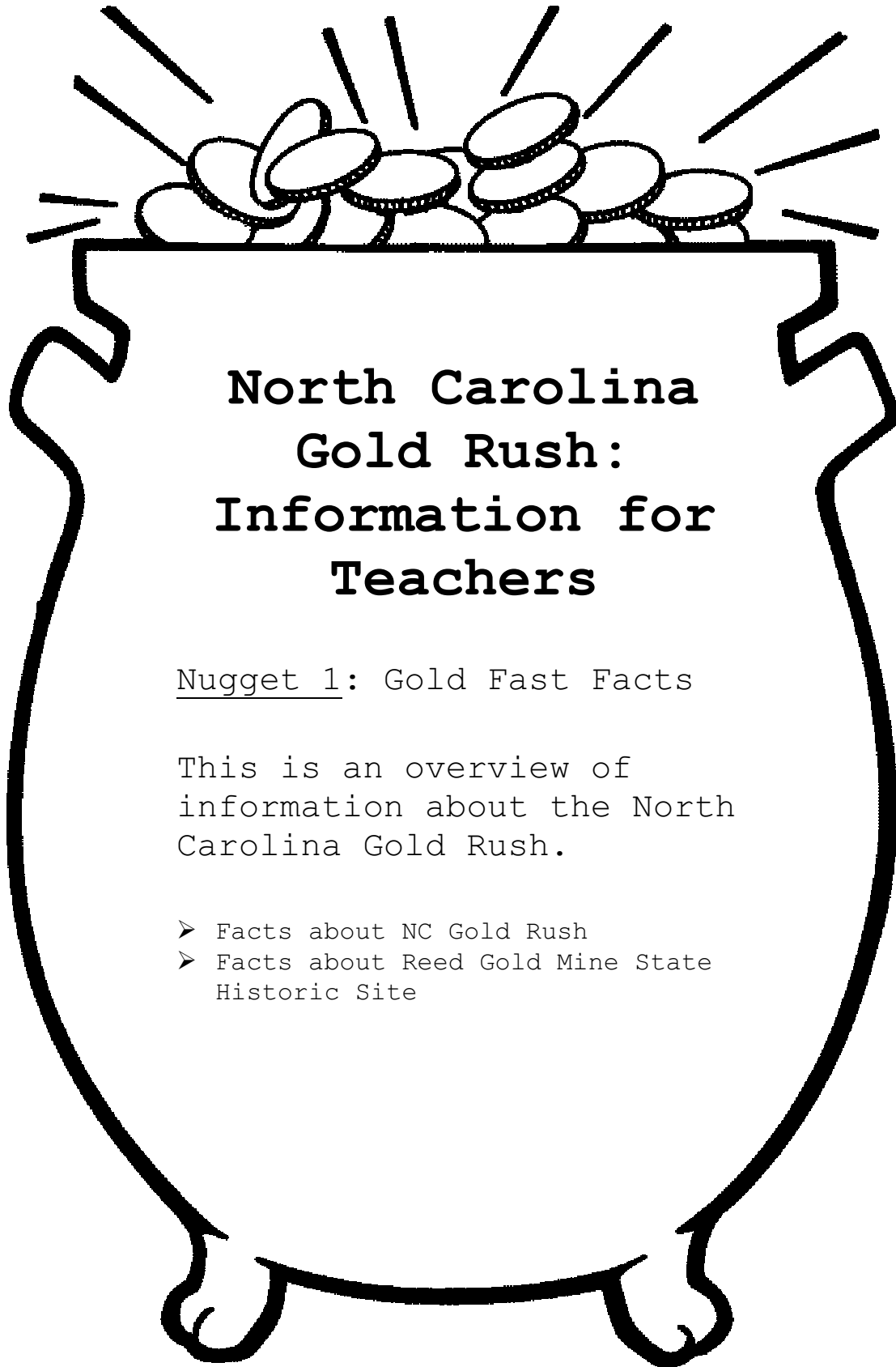
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North Carolina Gold Rush: Information for Teachers

Nugget 1: Gold Fast Facts

This is an overview of information about the North Carolina Gold Rush.

- Facts about NC Gold Rush
- Facts about Reed Gold Mine State Historic Site

Facts About the North Carolina Gold Rush

- ◆ The site of the first documented discovery of gold and the first American gold rush is located at Reed Gold Mine State Historic Site in Cabarrus County, North Carolina.
- ◆ In 1804, the U. S. Mint in Philadelphia processed \$11,000 worth of gold from Cabarrus County.
- ◆ Between 1804 and 1825 North Carolina produced \$134,000 of gold from placer mining alone.
- ◆ Between 1800 and 1948 the Central Piedmont boasted 294 mines (South Carolina had 50)
- ◆ By 1849 Charlotte mines had produced 2.6 million dollars worth of gold.
- ◆ Between 1804 and 1828 North Carolina remained the only producer of domestic gold in the country.
- ◆ North Carolina remained the highest producer of the precious metal until 1848, when gold was discovered in California.
- ◆ The estimated value of gold recovered during the high tide years of the 1850's reached over a million dollars a year.
- ◆ Estimated total gold production ranges from 50 to 65 million dollars worth of gold. That same gold would be worth about \$742,856,800 today.
- ◆ Americans first dubbed NORTH CAROLINA "The Golden State".

Facts About Reed Gold Mine State Historic Site

- John Reed was illegitimate. His father and mother did public penance (recorded in the church at Raboldshausen, Germany) a few months before he was born. Did Reed deliberately give a false birth date? His gravestone gives his birth date as January 1757, but church records indicate he was born on April 14, 1759. Perhaps he didn't want anyone in his adopted land to find out about his embarrassing past.
- John Reed fought with British and Hessian troops in the American Revolution, but deserted from Savannah, Georgia. The trek to North Carolina was a dangerous one, given the fact that bounty hunters were paid for bringing back the scalps of deserters. Reed made his way through the roads in three colonies, settled, married and later had nine children with his wife Sarah in Cabarrus County.
- John Reed's twelve-year-old son Conrad made the first documented discovery of gold in the United States. After the boy lugged the 17-pound "rock" home to his parents, the Reeds used it as a doorstep for three years. Once during that time, John Reed brought the nugget to a silversmith in Concord, but the silversmith couldn't identify it. Not until 1802, when Reed left for his annual marketing trip to Fayetteville, did the secret come out. At that point, Reed's curiosity got the better of him once again, and he hauled the nugget all the way to the "big city." A jeweler there asked Reed to leave the nugget with him, and while Reed was gone, the jeweler melted the bar of gold down to a bar about seven or eight inches in length. When Reed returned, the jeweler asked him to name his price. Reed suggested \$3.50, a week's worth of wages back then, and the jeweler paid -- gladly. The nugget was worth at least 100 times that much in those days (that's about \$75,000 in today's world). Reed discovered later that he'd been cheated. Oral tradition tells us that Reed went back to the jeweler to demand more money, and that he did receive an addition \$1,000.

- Back in 1802 three dollars and fifty cents seemed like an awful lot of money. Reed, the story goes, bought his wife Sarah calico for a new dress and coffee beans. The story continues: when Sarah got the beans, she tossed them in a pot of water with a bit of meat and was astonished to find that the beans could not be cooked soft. The mess was tossed on the hill beside the house (maybe that accounts for the expression "it's not worth a hill of beans").
- Maybe money made the world go around in the early 19th century, too. Still, John Reed never gave up his belief that farming was a better source of wealth than mining. He refused to allow his sons and sons-in-law to mine in any fields he cultivated -- even when he found gold nuggets there sticking to end of his plow. The area around his house included, according to one 19th-century observer, quartz outcroppings that may have contained gold. But Reed kept his fields intact and the area was never mined. He bought major parcels of land through the early 19th century, but even when the provisions of sale included rights to mine in that area, Reed never bothered with purchasing pans, rockers, or any other mining tools. In his mind, golden fields of corn or wheat must have glittered in their own way.
- In 1804 a slave named Peter found the biggest gold nugget ever discovered at Reed Gold Mine. The find occurred in the first true mining season on Reed's land. The nugget weighed 28 pounds, and was worth, in today's terms, \$131,264. Peter belonged to Rev. James Love, a Baptist minister, partner to John Reed, and friend to the Reed family. Two of John Reed's children married Love's children. In later years George Barnhardt, John Reed's son-in-law, told a story about the day when the 28-pound nugget was found. Barnhardt said that Love offered Peter the opportunity to pry a knob off the gold nugget with his fork as a reward for his good work. Love reportedly said that if Peter succeeded in prying the knob off the nugget he could keep it. According to Barnhardt, Peter responded, "No, master. I don't want to do that. I might break my fork." Obviously Peter, as well as Rev. Love, was well aware there was no possibility his fork would be strong enough to dislodge any gold from the nugget. Also, the replacing of a broken fork would not be a minor expense.

- The Reed mine was amazingly successful as soon as men began looking for gold. In a mere six weeks, during 1803-04, the Reed saw a net return of \$14,000 to \$20,000 from surface mining.
- In the mid-1890s two brothers, William and Robert Gadd worked at the Reed Gold Mine. One accused the other of having murdered a woman and thrown the body down a shaft. Arrests were made and an intense search initiated. Authorities found nothing, however, that could prove the story to be true. Still, rumors persist to this day that a tooth, a lock of hair, and a watch were found in the mine.
- In the first thirty years or so after Reed discovered he had gold on his land he and his three partners controlled mining operations. Each partner was to supply the manpower initially through two slaves apiece, and John Reed supplied the land. Profits were divided equally among the four men. Martin Phifer, a prominent local businessman in Cabarrus County, routinely assayed gold nuggets found at the mine. One week, Phifer claimed, he had received three nuggets, each weighing about twenty pounds, for assaying. When he examined the pieces closely, he discovered that they fit together perfectly. But there was a large gap where a fourth piece, also about twenty pounds worth, would have fit. Clearly, the pieces had somehow been broken apart. Just as clearly, one piece was missing. No one ever discovered where the missing nugget went. No legal battles ensued and the partnership continued its existence without accusations or recriminations.
- The same could not be said of a dispute among the next generation of partners. After the original partners died, John Reed allowed his sons and sons-in-law to operate the mine, while giving him one-ninth of the profits. One day, George Reed (John's son) could not get to the mine because his wife and son were ill. He sent his 16-year-old son in his place. That day, a 13-pound nugget was discovered. George's partners refused to give him a share of the nugget. They insisted that his son was not capable of performing an adult's share of work. George, therefore, did not deserve any share

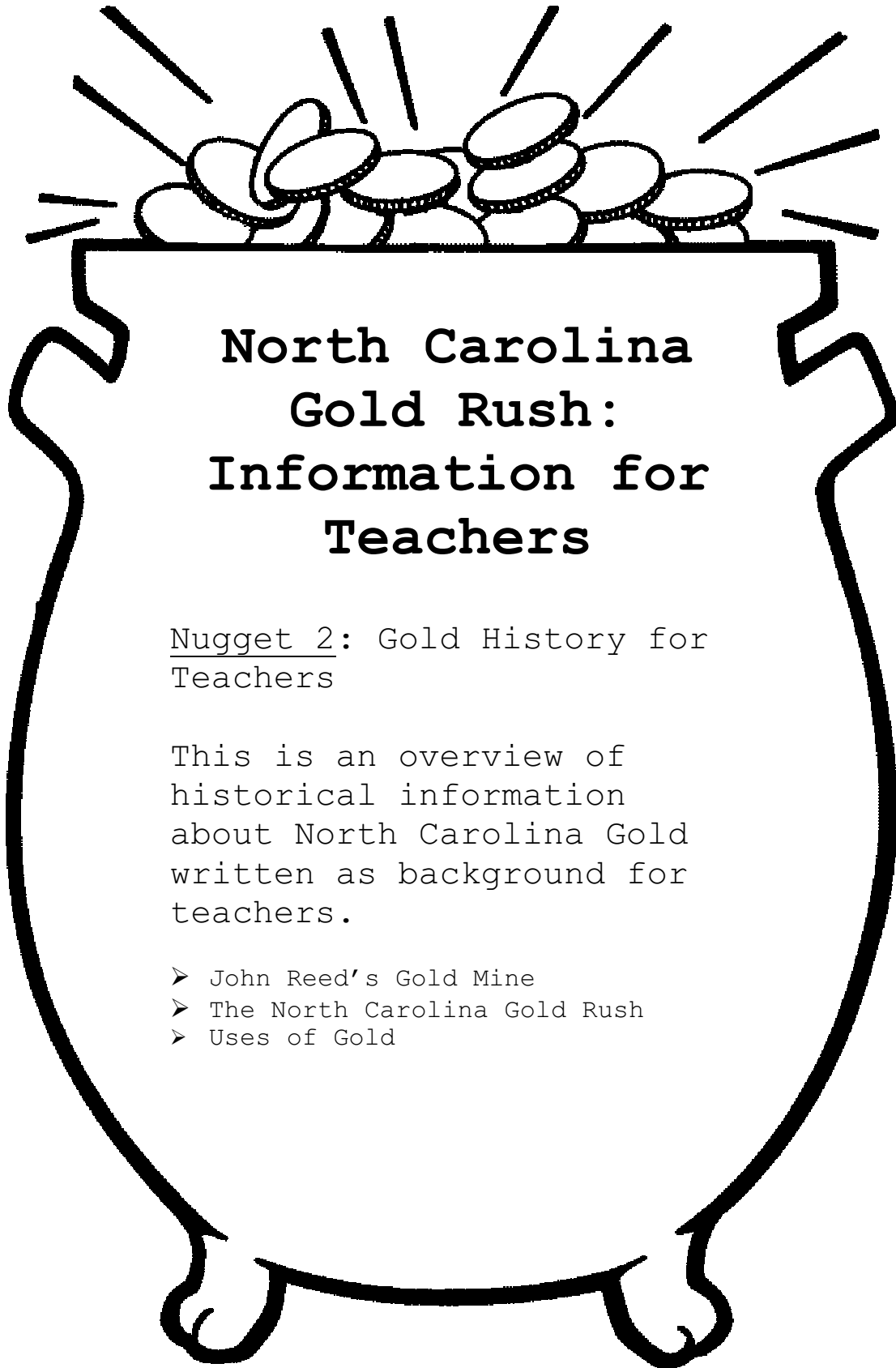
of the nugget. Seventy-five-year old John Reed attempted to pay George off using his personal resources. But George was not appeased. He took his brothers and brothers-in-law to court, and the mine shut down for 10 years because of the legal wrangle, which George eventually won (he recovered a sum of money that just about covered 10 years of legal expenses).

- Slaves who worked at gold mines generally labored during the off-seasons. They had to do some of the most dangerous work. Gold mine operators who were after quick profits sometimes made slaves dig directly into hillsides without giving them the opportunity or time to make sure the roof was secure. The earth, according to one historian, "often gave way and crushed the workers." Some slaves, however, were able to use the mines to better purposes. A few were allowed to use some of the gold they found to buy their freedom. Slave miners also earned money for doing "extra work" and made up to 30 dollars a month that way. Some slaves used Sundays and holidays to prospect on their own. Overseers did not trust slaves, apparently, and watched them carefully. Perhaps that lack of trust was the result of one basic reality: when slaves could, they often ran away from their white masters. One advertisement described runaway slave named Reuben and his wife Jinney, who were thought to be hiding in or around Smart's Mine in Mecklenburg County. John K. Harrison of Mecklenburg asserted that his slave, missing in 1837, was "lurking about Reed's Gold Mine."
- Mecklenburg County led the way in developing underground mining techniques. While miners at the Reed still relied on pans and rockers, miners to the west were digging shafts and tunnels so that they could follow gold through the ground. By the late 1820's Charlotte was experiencing a real gold "rush," producing, according to estimates, some \$2,000 of gold per week. The North Carolina gold rush prompted the *New York Observer* to send a correspondent to the gold fields.
- Famous architect William Thornton (physician, inventor, and designer of the U.S. Capitol) visited the Reed in the early 19th century. Thornton decided to purchase

land that bordered Reed's holdings and form a joint stock company to mine gold. The North Carolina Gold Mine Company included a number of prominent Washingtonians, but for some reason, the enterprise never got off (or in) the ground.

- Perhaps only one-third of gold mined in North Carolina ever made it to the U.S. mint.
- Matthias Barringer discovered that gold ran in quartz veins in 1825. He was panning for gold in a stream on his land in Stanly (then Montgomery) County when the gold seemed, simply, to run out. Then he noticed quartz rock in the side of the creek bed. Digging furiously, he discovered that gold was intermingled with quartz -- and that following quartz veins could become, in the right circumstances, quite profitable.
- North Carolina earned an early reputation as an economically retarded state, for which it was called the Rip Van Winkle State. That reputation persisted, even a good while after gold was discovered, and one New York writer characterized North Carolina as "the last state in the world, from which we would expect any good thing to come." Still, by 1828, the Tar Heel State earned another nickname: the Golden State.
- Some crafty natives sold their land to unsuspecting entrepreneurs by "salting" their holdings and making it appear that there was gold in their own hills. One source gave explicit advice for succeeding in such chicanery: "Melt up a silver dollar or a small gold piece . . . Divide them into small particles by throwing it into a basin of water while hot . . . Then scatter them about your spring, or in a branch where the road crosses it . . . Let some of your neighbors discover them by accident. . ."
- There were divided feelings about the influence of foreigners in the gold mining industry. In the early 1830s, Hezekiah Niles estimated there was a 10 percent return on foreign capital. But some natives offered proposals to exclude foreign capital from mines, and others even refused to work for European superintendents.

- Mining, it seemed, did not always bring out the best in men and women of the times. One observer wrote, "I can hardly conceive of a more immoral community . . . Drunkenness, gambling, fighting, lewdness, and every other vice exist here to an awful extent." Still, some mining superintendents did try to keep control of the climate by forbidding liquor at the mine. And some Cornishmen arranged for the preaching of the Gospel to miners.
- Some observers tried to tally up the overall benefits of mining: new business activity, increased employment for mechanics and artisans, influx of visitors and residents, 200-300 percent jump in property values, high rental returns, and more circulation of money. Each \$100 worth of gold produced was said to represent an additional \$75 worth of foodstuff sold to miners.
- Some miners' toasts: "May the gold miners meet with shallow pitting and rich grit for their reward. Health of body, peace of mind, and four pennyweights to the hand!
(July 30, 1832)
- In 1831 a German jeweler and clockmaker named Christopher Bechtler arrived in North Carolina. Local mining leaders convinced him to mint coins and help establish a sound regional currency. Bechtler minted the very first gold dollar in the U.S. in 1832 and, over the years, made a reputation for honesty.



North Carolina Gold Rush: Information for Teachers

Nugget 2: Gold History for Teachers

This is an overview of historical information about North Carolina Gold written as background for teachers.

- John Reed's Gold Mine
- The North Carolina Gold Rush
- Uses of Gold

John Reed's Gold Mine

The first documented discovery of gold in America occurred in 1799, some 50 years before the California gold rush began. The owner of North Carolina's first mine was a German immigrant who, strange as it may seem, preferred farming to working his rich mine.

John Reed's original name was Johannes Riedt, Ried, or Rieth. He was born on April 14, 1759, in the province of Hessen Cassel in west-central Germany. As a teenager, Rieth joined or was drafted into the Hessian militia from nearby Appenfeld. In 1776, Frederick II of Hessen Cassel mobilized Rieth's unit and shipped it to America to help his brother-in-law, George III of Britain, in his war with the American colonies. Rieth was probably a replacement recruit who reached America in 1778.

Rieth deserted on June 21, 1782, from a post "outside of Savannah." Rieth and several other Hessians made their way to rural Dutch Buffalo Creek in eastern Mecklenburg—now Cabarrus County. Decades earlier, some of the Germans who had traveled down the Great Wagon Road from Pennsylvania settled there. Most lived in crude log houses on modest farms. In 1782, Rieth married Sarah Kiser. They had nine children—four sons and five daughters. With the help of his brother-in-law Frederick Kiser, Rieth acquired 330 acres by 1800. Sometime thereafter he changed his name to John Reed.

Little is known of Reed's personal life and qualities. He signed papers with an *X*, so historians have assumed that he was illiterate. Unlike most German immigrants, he was not a member of a Lutheran church. Perhaps Reed and his family attended church with his neighbor, Rev. James Love, a Baptist preacher. Love became Reed's partner in mining. Reed's obituary later called him a Christian and a friend of the poor. To local historians he was "honest but unlearned," "a rather primitive character, but a good liver in his way and a respected citizen." In 1799 he was forty years old.

That year the accidental discovery of gold on his property changed his future. One Sunday his son, 12 year-old Conrad went bow-and-arrow fishing with his siblings in Little Meadow Creek on the family farm. He retrieved "a yellow substance shining in the

water.” The heavy, wedge-shaped rock was the size of a small flatiron and weighed about 17 pounds.

Conrad showed the rock to his father, who set it aside as a doorstop. So far as we know, Reed tried only one time in three years to find out what the rock was made of. He asked a jeweler in Concord to identify the rock, but the latter was unable to do so.

In 1802 a jeweler in Fayetteville, whom Reed visited on a marketing trip, fluxed the metal into a bar of gold. When the craftsman offered to buy it, Reed asked for \$3.50, a week’s wages. The merchant was quite willing to fleece his unwary customer. John Reed had sold his nugget for less than a thousand times its value: Conrad’s find was worth \$3,600.

Reed discovered his error and supposedly recovered about \$1,000 from the jeweler. In 1803, Reed took three friends—Frederick Kiser, Reverend Love, and landowner Martin Phifer Jr.—into partnership. In late summer, after crops were planted and the stream had nearly dried up, each of the three supplied equipment and two slaves to dig for gold in Reed’s creek. The partners planned an equal division of returns. That first season, Peter, an African American owned by Love, unearthed a 28-pound nugget worth more than \$6,600.

Gold enabled intelligent but uneducated Reed to become one of the wealthiest men in his part of the state. Reed invested in land and slaves but otherwise lived modestly. He forbade destructive mining on land he cultivated, and ultimately bought over 2,000 acres, nearly half of which he had retained at his death. He purchased three African Americans—Dinah, Charity, and Sam—in 1804. Reed later owned as many as 17 slaves.

The outside world had learned of the mine by 1803. Apparently Peter’s nugget was shipped to the United States mint in Philadelphia. In one year, miners at the Reed found five nuggets weighing up to nine pounds each, as well as gold in dust and fine particles. The four partners reportedly garnered over \$14,000 in six weeks. In 1804, \$11,000 in Cabarrus gold reached the mint. A few periodicals mentioned the mine, and word reached Washington, Philadelphia, and New York. Other farmers found gold, but Reed’s creek remained the nation’s principal gold mine. Soon workers there had gathered the larger nuggets and began panning for smaller, more numerous, particles. An apparatus called a “rocker” superseded the pan for washing gravel in the area. Both devices used

the high specific gravity of gold (19 times as heavy as water) to isolate the metal. A typical rocker was a box, a half-barrel, or half of a hollow log. After adding auriferous gravel and water to the device, the miner rocked it to wash away lighter material.

By 1824, haphazard digging at the Reed had yielded \$100,000 in gold, and seasonal mining was common in several counties. Yet farming predominated, and little technological progress occurred.

In the decade after 1825 gold mining in North Carolina saw significant changes and a genuine boom. There was a rush for placer gold in Burke County, but much increased output came from veins. The first was discovered by Matthias Barringer of Stanly County in 1825. Both slaves and whites did seasonal mining. Underground vein mining provided a method of seeking gold at its source inside the earth.

Men discovered the great vein mines of Mecklenburg County—the Capps, Rudisill, and McCombs. New corporations using skilled European miners and the latest technology soon controlled those mines. Prospectors developed dozens of smaller mines.

The state's output of gold rose sharply about 1825; much of it being made into jewelry, used in local trade, or exported to Europe. Within a decade the private Bechtler mint and a federal branch mint in Charlotte were established.

Yet Reed's creek mine remained a simple operation. Reed farmed and collected royalties while relatives, slaves, and partners mined. Before 1826 gold found in pieces exceeding one pound reached a total of 84 pounds. Shortly, people estimated the total yield at \$200,000. Little Meadow was probably the state's most dug-over creek. While larger mines had steam power and professional underground miners, Reed continued a close family operation, choosing not to disrupt his lifestyle with outside workers, values, technology, and perhaps capital.

In 1831 underground work began at the Reed. Isaac Craton, Reed's grandson, dug the first pit on Upper Hill and found a vein yielding five dollars per bushel of ore. The amateurs made considerable underground progress while continuing creek (placer) mining. Miners, many of whom were relatives of Reed, deepened pits into shafts. The family probably utilized both African American and local white labor. There were four or five shafts up to 90 feet deep on Upper Hill and probably others on Lower Hill, which at one point supposedly produced four pounds of gold daily.

The miners erected horse-powered whims to raise ore from shafts and an arrastra, or drag-stone mill, near the creek to crush ore. Perhaps the workers still used rockers.

Tales circulated about conflicts and wealth at the Reed. Grandson Timothy Reed forced Craton from his shaft and recovered up to \$20,000 in gold there. Son-in-law Robert Motley supposedly recovered 14 pounds of gold one day before breakfast. A Captain Biggers said he worked his weight in gold. Miners dug gold “like potatoes”. The family reportedly paid employees with pieces of gold pounded in a common hand mortar.

In early 1834 Conrad Reed died. The family continued mining, but in November an argument over a 13-pound nugget led to a bitter lawsuit. One of John’s sons, George Reed, was denied his share of the nugget because he had not worked at the mine the day the nugget was found, and had sent his young son as a replacement. The other partners were of two minds over whether the boy was a suitable replacement. George spurned John Reed’s personal offer of reimbursement and secured an injunction that closed the mine for a decade until the state supreme court finally settled the case. Legal expenses consumed all but \$20 of the son’s \$535 recovery.

John Reed died soon after the case was settled, in 1845. His executors sold the mine, and the estate probably grossed about \$25,000 (\$550,000 today).

A son-in-law and a grandson then ran the mine with limited success, using obsolete equipment and a few horses. Perhaps they dug several new shafts. Once they tunneled 140 feet through solid rock to intersect a vein that on the first day reportedly paid for the tunnel. In 1850 the partners produced ore worth \$7,500 with 20 hands at a labor cost of \$400 monthly. Yet by 1852 the owners remained heavily in debt.

In July 1853 the Reed Gold and Copper Mining Company paid \$25,000 for an additional 745 acres. The New York corporation hired professional miners and installed the latest equipment, becoming one of several companies that were active in Tar Heel mining after the California gold rush. During the mid-1850s Dr. Louis Posselt, a chemist and miner, directed the Reed, which could boast the most expertise and up-to-date equipment of its history.

Posselt spent considerable money developing the mine underground and erecting new surface machinery and buildings. He built a small village with an engine house and

millhouse, a large whim house and whim to raise ore, an office, a powder house, stables, a blacksmith shop, and 11 cabins. By mid-1854, the underground beneath Upper Hill contained 15 shafts and over 500 feet of tunnels.

Posselt instructed his employees in centuries-old European techniques. Miners tunneled along ore at different levels and chiseled out rooms to remove the ore. Loose ore was moved underground in low wheelbarrows.

Iron kibbles were used at Reed to hoist ore and miners up the 110-foot-deep engine shaft to the surface. A hoisting whim, initially powered by a single horse, accomplished this difficult work. The engine shaft also contained a steam pump to raise water for the mill and drain the mine.

A fifty-horsepower steam engine operated the pump and ore-crushing machinery that included a stamp mill. The wood-and-iron stamp mill resembled those of medieval Germany. Three large Chilean mills crushed ore to a finer size. A Chilean mill had a pair of large stone wheels for crushing ore. An arrastra, or drag-stone mill, substituted stones for the wheels of the Chilean mills. Shaking tables used a reciprocating motion to separate gold from lighter materials. The mill workers used these steam-powered machines, with water and mercury, to catch bits of metal before purifying it in retorts to recover gold.

Despite that machinery, the Reed company, like many others, failed during 1854. Tightening of the New York money market as well as flagrant speculation ruined many Carolina mines. Perhaps Posselt did not examine ore reserves adequately before erecting costly machinery. Shortly the state geologist of South Carolina reported the gold at Reed was almost entirely gone.

In 1855 the Cabarrus sheriff auctioned the property for one-fourth of its price in 1853. Tar Heel gold production had slipped, however, and the new owners did little mining. Various people panned in the creek, finding a few nuggets. By 1860 the mine was closed and remained so during the Civil War, along with nearly all Carolina gold mines.

For several years after 1890 little happened at the mine. Then the century-old mine attracted Ohio's Kelly family, which purchased the mine for \$15,000. A consultant told the Kellys they would need \$50,000 to put the mine in good working order.

In 1895 the owners had a crew doing placer (surface) and underground work at the mine. Local men leased placer rights. One of them, Jacob Shinn, found the last great nugget there (about 23 pounds) in April 1896. Shinn's find rekindled the owners' enthusiasm.

The Kellys ordered a heavy new, cast-iron stamp mill from the Mecklenburg Iron Works of Charlotte, a principal manufacturer of southern mining equipment. Again the Reed was somewhat typical of leading mines. In 1899 and 1900 young Armin Kelly and some old-timers got the mill running and tested some ore before suspending operations.

In 1912 the Kellys deepened the engine shaft to 140 or 150 feet, the last underground work until state ownership. Gold production in Carolina sputtered along until 1915 but then dropped sharply and never recovered, despite renewed activity during the Great Depression. Even gold at \$850 an ounce in 1981 could not revive the industry, because commercially recoverable gold simply was gone. There were few significant occurrences at Reed. Various people tested and explored the old mine. Panners worked the creek for decades, particularly in the 1930s. In 1999 the state historic site celebrated the bicentennial of the first documented discovery of gold in the United States.



The North Carolina Gold Rush

North Carolina's gold rush began after German immigrant John Reed discovered in 1802 that the rock he'd used for a doorstep for three years was actually gold. Word got around, and soon farmers in the area began hunting in their creek beds for gold nuggets. Charlotte, a little town of some 700 citizens, grew into a booming mine town, filled with folks who hoped they could strike it rich during America's first gold rush.

The gold industry brought real change to the Piedmont. In 1837 Congress authorized building branches of the U.S. Mint in Charlotte, Dahlonega, Georgia and New Orleans. The Charlotte mint operated from 1838 through 1861. The total worth of the gold coins struck at the mint amounted to \$5 million.

Many of the mining engineers who worked in the Piedmont's mining industry came from overseas. Some arrived from Latin America, where gold and silver had been mined for centuries. Others came from well-known mining areas in Europe. Cornish miners, German mining engineers, Italian workers, English investors -- they all came to the state to try their fortune. One observer claimed that over 13 languages were spoken on Charlotte's streets in the 1830s!

Some Americans had mixed feelings about the foreigners flocking to the Piedmont. On the one hand, the immigrants possessed needed skills for the new industry. Many brought funds for investing in mining ventures and mining equipment. On the other hand, North Carolinians worried those foreign investors and miners might exploit the state's good fortune for their own benefit.

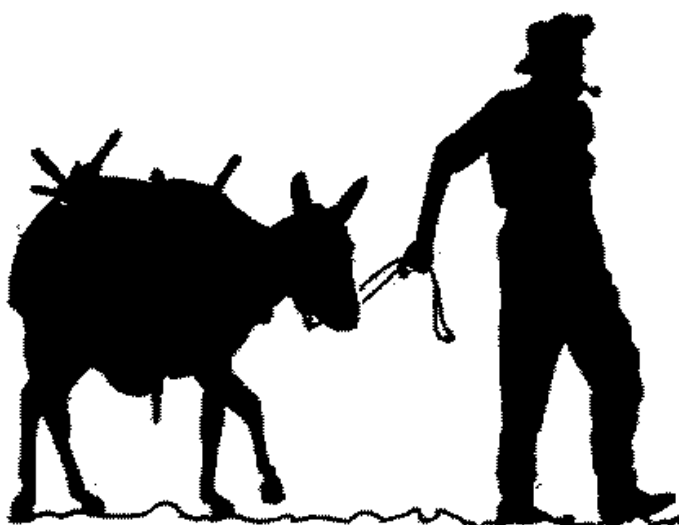
Some observers also noted that mining had all sorts of positive effects on the local economy. For one thing, gold made it possible to pay in hard currency instead of relying on paper money. This eliminated old-fashioned and inexact trading methods. For another, property values in the Piedmont jumped between 200 and 300 hundred percent after gold was discovered. Each \$100 worth of gold produced was said to represent an additional \$75 worth of foodstuff sold to the miners.

Back in Cabarrus County, John Reed made sure his farm would not become a big mining operation like the Rudisill and St. Catherine's mines in Charlotte. The first shaft dug underground at the Reed Gold Mine was opened in 1831, several years after miners in Charlotte had been pulling gold out of quartz veins in the earth.

In the late 1820s and early 1830s, when miners at the Rudisill were using ore-crushing equipment that processed nearly 3,000 pounds of ore a day, miners at the Reed still relied on primitive methods of surface mining. Heavy machinery wasn't brought to the Reed until the 1850s -- well after John Reed's death in 1845.

John Reed had plenty of chances to expand his mining operations. But he was strict: neither his partners nor his sons or sons-in-law were allowed to mine in any areas he cultivated. Apparently, the old farmer wanted to stay a farmer first, and be a miner second.

Mining became the second largest occupation in the state - after farming. Many farmers complained about the way mining tore up agricultural land, making it impossible for farmers to cultivate fields filled



with pits and shafts. Reed apparently decided that his mine produced enough gold without hauling in heavy machinery. However small his mining operation may have seemed to outsiders, it appears that it was, for him at least, big enough.

North Carolina produced at least 1.1 million ounces of gold with a value of approximately \$25 million. The gold rush made Charlotte a financial center for the region in the 19th century, and for the country at the close of the twentieth. Charlotte's two biggest banks; Bank of America and First Union, have their roots in gold rush history.

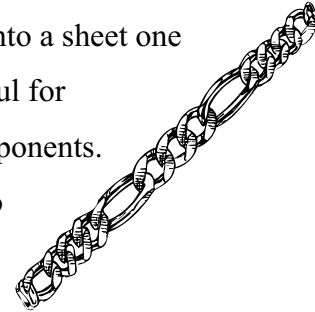
California gold may have eclipsed the gold rush in the Tarheel State. Still, North Carolina can always claim the bragging rights to the very first documented discovery of gold in the United States.

USES OF GOLD

Gold has certain characteristics that throughout history have made it ideal for many uses. Some of these characteristics, or properties, are store of value, ductility and malleability, resistance to corrosion, electrical and thermal conductivity, and infrared reflectivity.

Gold has a high store of value: It is the only substance that is accepted all over the world as a form of currency. Gold was used as money in China as early as 1091 B. C.

Gold is ductile and malleable: It is the softest and easiest to shape of all metals. Because gold is ductile, (meaning it can be drawn or pulled out), one ounce can be pulled into a wire five miles long. Because gold is malleable, (meaning it can be hammered thin), one ounce can be hammered into a sheet one hundred feet square. This means gold is very useful for making jewelry, artwork, and even electronic components. Gold can even be made so thin that it is possible to see right through it.



Gold is resistant to corrosion: It does not react with oxygen to form rust, so gold can be used in electronics and mechanical parts.



Gold is an electrical and thermal conductor: Because it conducts electricity and heat better than other metals, gold is used in wiring and shielding for electronic equipment. Gold wires and circuitry can be used to carry electricity from one point to another, or gold shielding can be used to carry heat away from sensitive electronic parts.

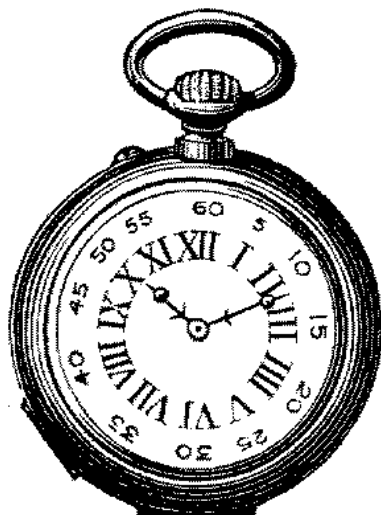
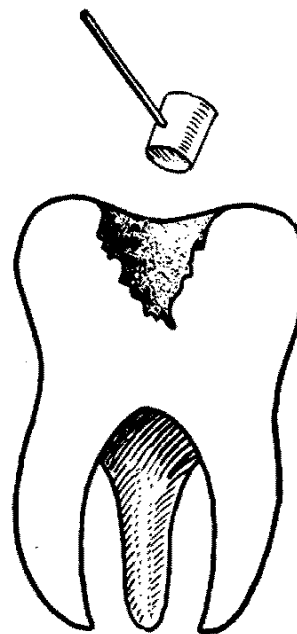
Gold has reflective abilities: It can reflect heat, so gold is used in the shielding on spacecraft and satellites. The gold in the shields reflects the sun's harmful infrared rays away from delicate machinery, preventing the machinery from overheating. It is also used in the helmets of astronauts to reflect infrared rays from astronauts' eyes.

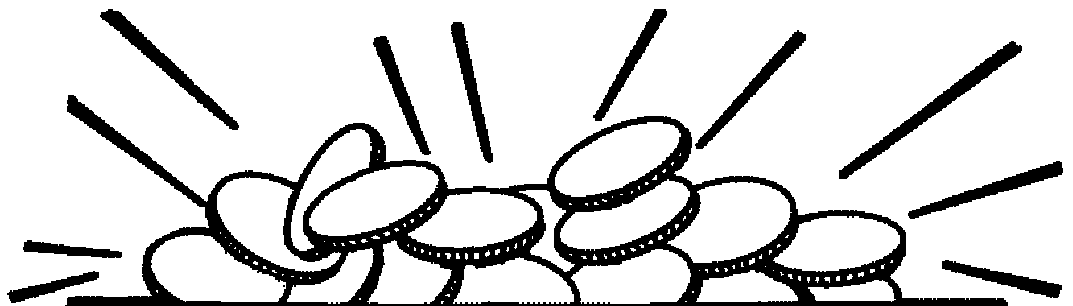
Because of the properties listed above, gold has a large number of common uses, including:

Electronics and Mechanical Equipment: Gold is used in the electronic circuitry found in computers, telephones, televisions, VCRs, and spacecraft. It is also used in parts found in aircraft and automobile engines.

Lasers and Optics: Gold can be found in the internal workings of some telescopes, copy machines, satellites, and security systems.

Medicine and Health: Doctors and scientists are now experimenting in using gold in eye surgery, lasers for cancer treatment, thermometers, and genetic and biochemical research. Dentists have also used gold for many years in crowns, bridges, inlays, and dentures.





North Carolina Gold Rush: Information for Teachers

Nugget 3: Gold History for Students

This is an overview of North Carolina Gold written in short selections that are easier for students to read.

- America's First Gold
- John Reed: Owner of America's First Gold Mine
- The Discovery: How America's First Gold was Found in 1799
- The Price of Progress
- Foreigners in the Mines
- African Americans and the North Carolina Gold Rush
- The Bechtler Mint
- The Charlotte Mint
- The Kelly Family and Reed Gold Mine
- The Last Large Nugget Found at the Reed
- Matthias Barringer Goes Underground
- Squeezing Gold From a Rock
- Pete Nash: North Carolina's Last Gold Prospector

America's First Gold

A child on a fishing trip went hunting for dinner and found gold instead. Conrad Reed, 12 year-old son of German immigrant John Reed, took a 17-pound rock home to his parents instead of fish.

Many Cabarrus County residents know the amazing follow-up to the find: the Reed family didn't know what their son had brought home, so they used the rock as a doorstep for three years. John Reed, Conrad's father, first took the rock to William Atkinson, a Concord jeweler, but he couldn't shed any light on the matter and the doorstep went back home and sat on the floor for awhile longer.

Conrad's father, John Reed, decided to take the rock with him on his annual



shopping trip to Fayetteville. A jeweler there melted the rock down into a bar of almost pure gold, about nine inches long. He asked John Reed to name his price.

John Reed named what he considered a big price: \$3.50. That was serious money for a farmer in those days -- a week's worth of wages, in fact. But it turned out that Reed had sold the rock for less than one percent of its actual value. The rock was worth over \$3,600 (in today's terms, around \$58,000).

How could John Reed have been so innocent of gold's value?

Reed himself was an unlearned man, who had lived a hard and hungry life as a child in Hessen Cassel, Germany. He was born April 14, 1759, as Johannes Ried and came to America as a young man. Reed, like many of his countrymen, was drafted into German forces lent to the British king, George III. These men were sent to America to fight against American revolutionaries.

Reed deserted from his troops on June 21, 1792, near Savannah, Georgia. He made his way over the Georgia border, through South Carolina and some of North Carolina --

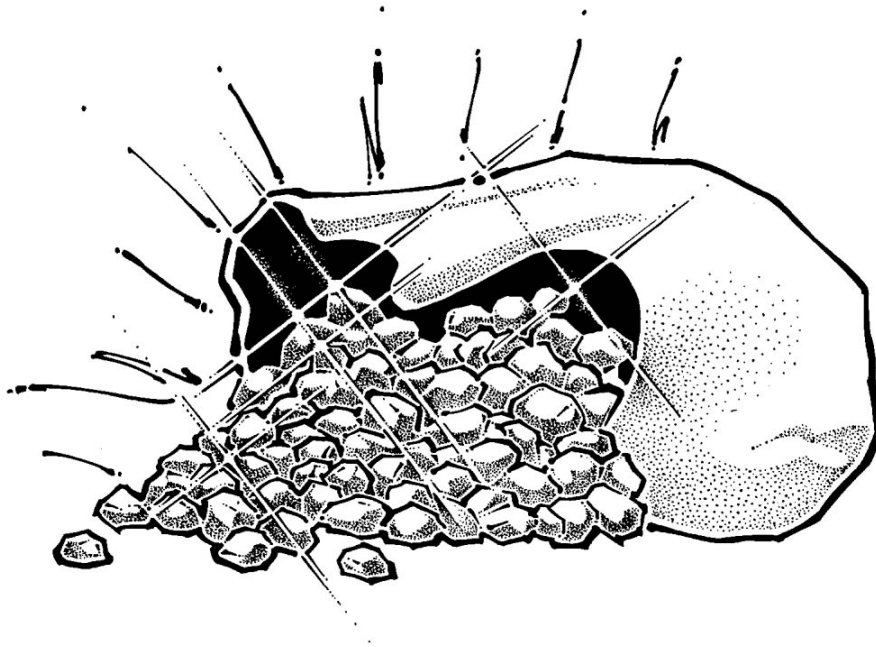
all the way to the northeastern tip of what was then called Mecklenburg County. (John Reed's home became part of newly established Cabarrus County in 1796.)

How John Reed made it, no one knows. To run away from his troops was a dangerous decision: deserters were considered criminals. They were hunted and, if caught, punished severely. A whipping was the best a deserter could expect, a hanging the worst. But somehow John Reed must have traded in his German uniform or stayed out of sight of those loyal to the British crown during his long trek across the southeastern colonies. Somehow he must have discovered that other Germans were living in the area north and east of Charlotte.

John Reed probably worked as a laborer on or around a farm owned by the Kisers, a German family that had come to North Carolina down the Great Wagon Road from Pennsylvania. Soon after John arrived in the area, he married Sarah Kiser.

John and Sarah had nine children. They lived a long life together. Their youngest child was born in 1803, shortly after Reed discovered he had gold on his land. Perhaps John Reed had always thought of his adopted country as a golden one. He must have been sure of it after he became the owner of America's very first gold mine.

America's first gold rush had begun.



John Reed: Owner of America's First Gold Mine

John Reed was born April 14, 1759 as Johannes Ried in Hessen Cassel, Germany. He came to America as a mercenary. Many men from his homeland were drafted into German forces lent to the British king, George III. These men were trained as soldiers and sent to America to fight against the American revolutionaries.

John Reed apparently had no heart for the fight, and he deserted from his troops on June 21, 1792, near Savannah, Georgia. He made his way through part of Georgia, all of South Carolina, and some of North Carolina – all the way to the northeastern tip of what was then called Mecklenburg County. John Reed's new home became part of the newly established Cabarrus County in 1796.

How John Reed made it, no one knows. To run away from one's troops was dangerous: deserters were considered criminals. They were hunted and if caught, subject to harsh treatment. They were whipped – in some cases, even hanged.



Somehow John Reed must have traded in his German uniform or stayed out of sight of those loyal to the British crown during his long trek across southeastern colonies. Somehow he must have known that Germans were living in the area north of Charlotte.

John Reed probably worked as a laborer on or around a farm owned by the Kizers, a German family that had come to North Carolina down the Great Wagon Road from Pennsylvania. Soon after John arrived in the area, he married Sarah Kizer.

John and Sarah had nine children. Their youngest child was born in 1803, the year after the Reeds discovered they had gold on their land. Perhaps John Reed thought of his adopted country as a golden one when he was just a farmer. Perhaps he was sure of it after he became the owner of America's very first gold mine.

The Discovery: How America's First Gold was Found in 1799

According to the story, John Reed's 12-year old son, Conrad, went bow-and-arrow-fishing one day down at the creek on his father's farm. Supposedly the young boy noticed something shiny and yellow in the waters of Little Meadow Creek. Curiosity got the better of Conrad. He waded into the water and hauled out a 17-pound chunk of gold.

Conrad and his family had never seen raw gold, and neither they nor a Concord jeweler by the name of William Atkinson understood the value of what Conrad had pulled from the creek bed.

Conrad's father, John Reed, decided to take the rock with him on his annual shopping trip to Fayetteville. A jeweler there melted the rock down into a bar about nine inches long of almost pure gold. He asked John Reed to name his price for the gold.



John Reed asked what he considered a big price: \$3.50. That was a big price for a farmer in those days – a week's worth of wages in fact! It turned out that Reed had sold the rock for less than one percent of its actual value. The rock was worth over \$3,600 (around \$58,000 in today's terms).

The story goes that John Reed figured out that he'd been swindled and went back to the Fayetteville jeweler. According to stories handed down over the years, he got an additional \$1,000 for his golden doorstep.

The Price of Progress: Is it too High?

John Reed never allowed his farm to become a big mining operation like the Rudisill and St. Catherine's mines in Charlotte. The first shaft dug underground at the Reed Gold Mine was opened in 1831, several years after miners in Charlotte had been following gold through quartz veins into the earth.

In the late 1820s and early 1830s, when miners at the Rudisill used ore-crushing equipment that processed nearly 3,000 pounds of ore a day, many miners at the Reed still relied on primitive methods of surface mining. Heavy machinery wasn't brought to the Reed until the 1850s, after John Reed's death in 1845.

John Reed had plenty of chances to expand his mining operations, though. But he was strict: neither his partners nor his sons and sons-in-law were allowed to mine in any areas where he cultivated crops. Apparently the old farmer wanted to stay a farmer first, and a miner second.

In 1826, when Reed was 67 years old, he had an interesting, foreign visitor. Matthew Thomas, a mining engineer and speculator from Cornwall, England, offered Reed a ninety-nine year lease for gold mining activity – with a fair percentage of profits to go to the old German. Reed turned Thomas down.

Mining became the second largest occupation in the state – after farming. Many farmers complained about the way mining tore up agricultural land, making it impossible for farmers to cultivate fields filled with pits and shafts. Reed apparently decided that his mine produced enough gold without hauling in heavy machinery. However small his mining operation may have seemed to outsiders, it appears that it was, for him at least, big enough.



Foreigners in the Mines

North Carolina's gold rush began after German immigrant John Reed discovered in 1802 that the rock he'd used for a doorstep for three years was actually gold. Word got around, and soon farmers in the area had begun hunting in their creek beds for gold nuggets. Charlotte, a little town of some 700, grew into a booming mine town, filled with folks who thought they had a chance of striking it rich during America's very first gold rush.

Many of the mining engineers who worked in the area came from overseas. Some came from Latin America, where gold and silver had been mined for centuries. Others came from well-known mining areas in Europe. Many Cornishmen, who had a wealth of experience in England's tin mines, came to North Carolina to work in the gold fields. German mining engineers, Italian workers, English investors – they all came to the state to try their fortune.

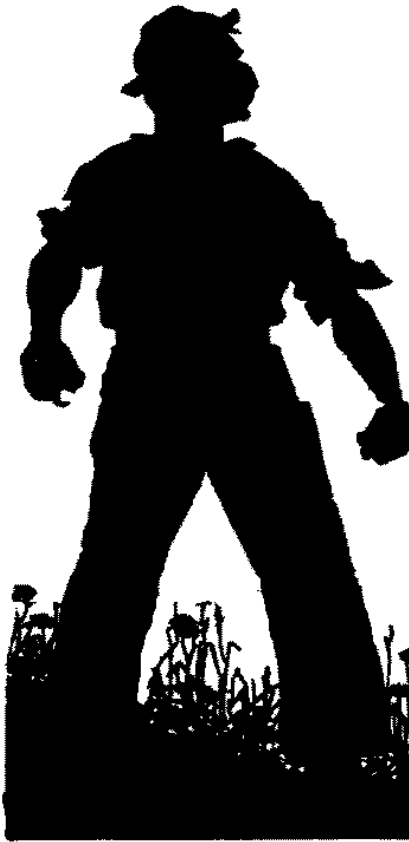
Some Americans had mixed feelings about the foreigners flocking to the Piedmont. On the one hand, the immigrants possessed needed skills for the new industry. Many brought funds for investing in mining; investors and miners might exploit the gold rush for their own benefit only. State residents suspected that North Carolina's most beautiful and impressive nuggets would end up in European museums. They believed that foreigners would take their profits back to their own countries.

Some observers noted that mining had all sorts of positive effects on the local economy. For one thing, gold made it possible to pay in hard currency (gold coin) instead of relying on old-fashioned and inexact trading methods. For another, property values in the Piedmont jumped between 200 and 300 percent after gold was discovered. Each \$100 worth of gold produced was said to represent an additional \$75 worth of foodstuff sold to the miners.

Still, North Carolinians often found it hard to adjust to an influx of people speaking different languages and coming from different cultures. Hearing over 13 languages spoken on Charlotte's streets in the 1830s must have been confusing for a person who spoke only one, no matter which language that happened to be!

African Americans and the North Carolina Gold Rush

Slaves worked in North Carolina's mines during America's first gold rush. Peter, a slave owned by one of John Reed's first partners, Rev. James Love, found the largest nugget ever documented at the Reed.



Peter discovered the nugget in 1803, during the first real mining season on Reed's land. The nugget weighed 28 pounds and was worth, in today's terms, \$131,264.

Slaves who worked at gold mines generally labored during the off-seasons. They often had to do some of the most dangerous work. Gold mine operators who were after quick profits sometimes made slaves dig directly into hillsides without giving them the opportunity or time to make sure the roof was secure. The earth, according to one historian, "often gave way and crushed the workers."

But some slaves were able to use the mines to better purposes. A few were allowed to use some of the gold they found to buy their freedom. Slave miners also earned money for doing "extra work," and they made up to \$30 per month that way. Some used Sundays and holidays to prospect—and profit—on their own.

Historians have discovered that slaves also used North Carolina's mines as escape locations. One contemporary advertisement described a slave named Reuben and his wife Jinney, who were thought to be hiding in or around Smart's Mine in Mecklenburg County. John K. Harrison of Mecklenburg claimed that his slave, missing in 1837, was "lurking about Reed's Gold Mine."

North Carolina's gold mines could mean almost anything to slaves laboring there: a chance to improve their circumstances, a chance to escape servitude, even, in some cases, a chance to buy their freedom.

The Bechtler Mint

In the early 1800s, gold and silver money was hard to come by in North Carolina and other southern states. North Carolina was the country's biggest gold producer until 1848, but the only official place to make coins was the federal mint in Philadelphia, Pennsylvania. No local mint meant very few coins available locally, as well as a long and dangerous trip north for miners to sell their gold. A German immigrant named Christopher Bechtler soon helped provide a solution.

Christopher Bechtler was born in the Grand Duchy of Baden in Germany around 1782. He came to America with his son Augustus and nephew Christopher in 1829, eventually settling in Rutherfordton, North Carolina. Bechtler started out as a jeweler and watchmaker, but he began minting coins in 1831. The Bechtler mint made coins in three values--\$5 (called a "half-eagle"), \$2.50 ("quarter-eagle"), and the first American gold dollars. Christopher Bechtler also designed and made all of his coining equipment himself. He developed a reputation for honesty, and his coins were highly prized because of their accurate weight and gold content.

Throughout the 1830s, North Carolina was trying hard to convince the federal government to build a branch of the federal mint in the South. The Charlotte branch mint opened in 1837, providing some competition for the Bechtler mint. However, the Bechtlers continued to be successful, and by 1840 they had coined over two million dollars in gold.

Christopher Bechtler died in 1842, passing the business to his son, Augustus. When Augustus died in 1844, his cousin Christopher took over the mint and continued to make coins until 1852. Even after the Bechtler mint closed, Bechtler coins continued to circulate and were accepted as currency for many years. The Bechtler mint in Rutherfordton, North Carolina, was one of only a few private mints ever operated in the United States.



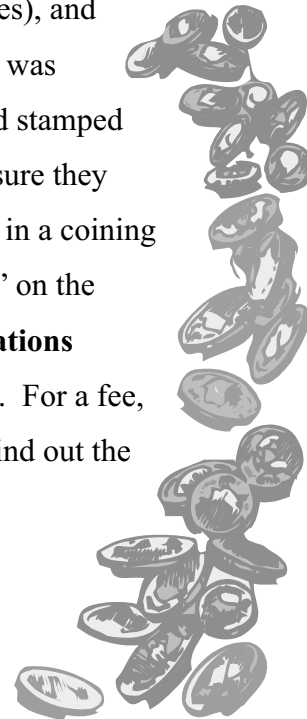
The Charlotte Mint

In the early days of gold mining in America, the only place gold could be made into coins was at the federal mint in Philadelphia, Pennsylvania. Since the southern states were producing all the gold being coined, however, miners had to make a long trip north to sell their gold to the mint. No southern mint also meant no real standard form of money in the South. North Carolina began trying to convince the U.S. government to build a branch mint in Charlotte. In 1835, Congress passed a bill to establish branch mints in New Orleans, Louisiana, Charlotte, North Carolina, and Dahlonega, Georgia. The Charlotte mint was the first of these southern branches to be constructed.

Samuel McCombs, a businessman and mine owner in Charlotte, was appointed commissioner of the new mint. The building was designed by Philadelphia architect William Strickland, and built by Reuben Perry and Thomas Phiger's construction company out of Raleigh. The Charlotte mint, located on West Trade Street, opened on December 4, 1837, with John H. Wheeler of Murfreesboro as president.

The very first deposit received at the Charlotte branch mint was a gold bar worth \$1,974.08, which belonged to Ervin & Elms a dry goods firm. The mint purchased gold from miners or mining companies, **refined** it (took out the impurities), and mixed the gold with other metals to make **alloys**. The alloyed gold was shaped into **ingots**, or small bars, and the ingots were rolled out and stamped into blank coins called planchets. The planchets were tested to be sure they were the correct weight, and then they were stamped with a pattern in a coining press and given a ridged edge. Coins minted in Charlotte had a "C" on the reverse of the coin, by the eagle's foot and came in three **denominations** (amounts)—half-eagles (\$5.00), quarter-eagles (\$2.50), and dollars. For a fee, miners could also bring gold to the mint to be **assayed**—tested to find out the purity of the gold.

In 1861 North Carolina entered the Confederacy and the new government took control of the Charlotte mint. The mint produced about a 1,000 \$5.00 coins for the Confederacy (the last coins it



ever made), but the mint was closed in 1862 and used only as office space for the Confederate naval yard. The building was also used as a hospital during the Civil War. When the war ended in 1865, Federal troops arrived in Charlotte and took over the mint as their own headquarters. The Confederate War Department seal was later found in a vault at the mint.

The Charlotte mint reopened in 1868, but only as an assay office. It never again produced coins, but the mint did buy local gold and made ingots to be sent to the mint in Philadelphia. The assay office was finally closed permanently in 1913. By that time, the Charlotte mint had produced \$5,059,180 in gold coins and the assay office had done business valued at \$10,163,660. The mint had even been used as temporary work space by Thomas Edison in 1901, when he came to North Carolina to experiment with extracting gold from rock using **electromagnetics**. The Charlotte mint sat empty until 1930, when it was scheduled to be destroyed. The efforts of Mary Myers Dwelle saved the building, and it was restored and moved to its present location on Randolph Road. The building now houses the Mint Museum of Art.

Suggested Vocabulary Words to Accompany Article
(words are denoted in bold in the article)

refine
alloy
ingot
denomination
assay
electromagnetic



The Kelly Family and Reed Gold Mine

Oliver S. Kelly was born on December 23, 1824 in Green Township, Ohio. At the age of 28, Kelly left his Midwestern home and headed west, hoping like so many others to strike it rich in California's gold fields.

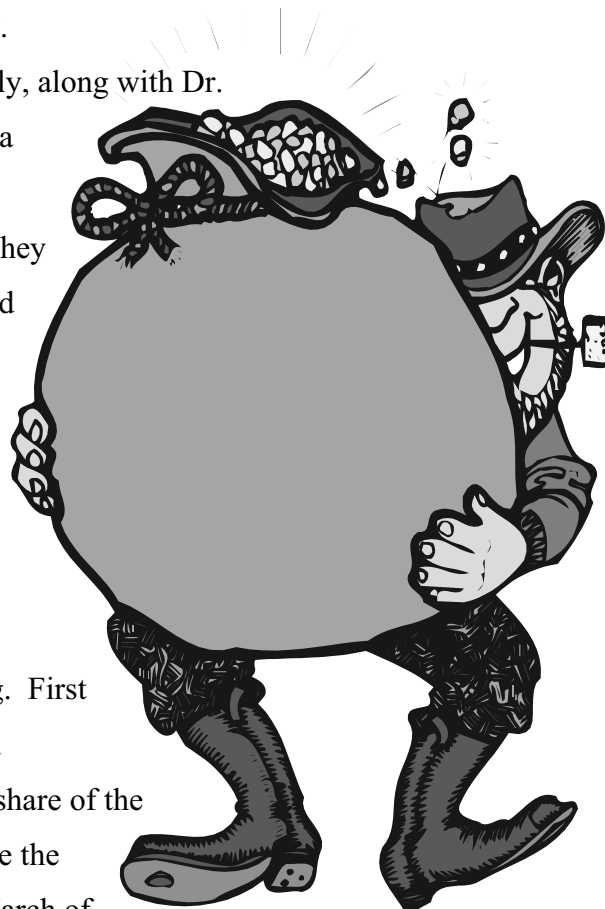
He learned plenty about mining, and became a prosperous businessman, but returned to Springfield, Ohio to start the O.S. Kelly Company and enter the political arena. He became a member of the Springfield City Council for six years and mayor for two.

Oliver's oldest son, O. Warren Kelly, was born in Springfield in 1851. When he was 18, Warren left for Europe to study German. He later entered into a partnership with his father in a Colorado silver smelting plant.

In late 1894, Oliver and Warren Kelly, along with Dr. Justin Lisle, visited Reed Gold Mine, on a shopping expedition. All three were looking for a gold mine to buy, and buy they did. On January 10, 1895, they purchased Reed Gold Mine.

On December 6, 1898, Warren ordered a ten-stamp mill to be constructed at the foot of Middle Hill near a deep part of Little Meadow Creek. The mill was probably delivered around January of 1899 and was in use by spring. First attempts to exploit the area were failures.

In 1899, Warren bought Dr. Lisle's share of the Reed and sent his eldest son, Armin, to be the next superintendent. Armin arrived in March of 1899, and began directing several underground mining ventures. He had discovered a small stringer vein above the 90-foot level of a shaft in an old stope. The ore in the area reportedly boasted an assay value of more than \$20,000 per ton. But during the next



year, very little gold was produced at the Reed. Armin went back home to Springfield by 1900.

Armin went back to the Reed for visits now and then, and found his father sinking Engine Shaft to a depth of about 150 feet. Warren wasn't having any luck either, though, and Reed Gold mine officially closed down that year.

Almost 23 years later, the Kelly family hired Frank Cox to reopen the mine and work several veins on the surface of Upper Hill. To no avail. Little was found and operations ceased once again. In 1935 the Kellys allowed anyone to pan freely along the creek, as long as any large nuggets were reported to the family and profits shared.

In 1971, after owning the mine for three-quarters of a century, the Kelly family donated their historic mining acreage and sold the remaining portion of their property to the state of North Carolina.

Reed Gold Mine became a state historic site in 1976, and continues to be the only underground gold mine open to the public in North Carolina.

The Last Large Nugget Found at the Reed

During 1896, the Kelly family leased the rights to mine along Little Meadow Creek to four local residents— Jacob L. Shinn, Jesse Cox, his son A. Mack Cox, and Dr. James Robert Jerome. All four had other occupations and mined in their spare time, like many farmers had even at the height of the gold rush.

One Thursday morning, on April 9, 1896, the four commenced digging in Dry Hollow just above Little Meadow Creek. Late in the morning, Jacob Shinn, who was digging at around three and a half feet below the surface, struck a large, heavy something.

He took that something down to the creek to wash the dirt off, and discovered that he was not holding just a large rock in his hands, but a nugget of gold weighing nearly 23 pounds in Troy weight. The nugget was 11 inches in length and 13 1/2 inches in circumference. It contained approximately five pounds of quartz. Apparently, Jesse Cox shouted out with joy while Dr. Lisle was so astonished that he couldn't breathe properly. He managed to regain his composure, however, and hitched up his surrey.

The four miners headed to Georgeville to weigh the rock and spread the news: the “big one” had been found at the Reed...

On the way, Jesse Cox shouted out his glad tidings and soon everyone who heard him was talking about the discovery. When the men passed by the Georgeville Academy, the principal overheard excited shouting. He declared, so the story goes, that the men who so rudely interrupted serious academic study either had been hitting the bottle or had struck gold.

Hundreds of people hoping to see the nugget traveled to Georgeville, which was then a tiny village that sported little more than a store, a post office, a flour and corn mill, sawmill, and cotton gin. Within days Dr. Lisle received telegrams from as far away as Milwaukee, Philadelphia, and New York, asking if the nugget was for sale.

But the nugget was taken to Concord first and later to the Charlotte assay offices to be displayed. Several casts were made of the nugget—one for the Smithsonian Museum. Finally, the nugget was ground up for its gold.

The “Shinn nugget” was the last large nugget ever found at the Reed. At least, as far as we know!

Matthias Barringer Goes Underground

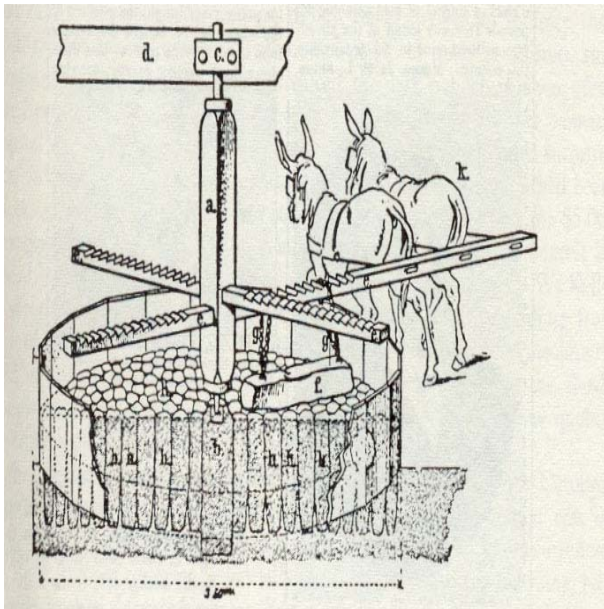
In 1825, Matthias Barringer was working the creek on his farm, panning for gold. Along the lower part of the creek, he found many small gold nuggets, but as he followed the creek upstream there were no more gold nuggets. He realized that at some point the gold must have washed out of the rocks on the bank of the creek. As he walked along the stream, he spotted some quartz rock and broke it open with a pick. To his surprise, he found lots of gold in the quartz.

With the help of partners and probably slaves, Matthias dug out this quartz and followed it deeper and deeper into the earth. Eventually, this hole would become a deep shaft with tunnels at different levels underground. Miners dug through the solid granite rock searching for more quartz. Not all the quartz had gold, but a lot of it did. Matthias Barringer became wealthy and many other gold mines started to look underground for gold in quartz.



Squeezing Gold from a Rock

After Matthias Barringer realized that gold could be in quartz rock, a method had to be found to get the gold out of the rock. Pieces of rock that had large amounts of gold were easy, just keep smashing with a hammer until the quartz rock breaks up and pick out the gold. But what about those tiny specks of gold in the quartz? Was it possible to get more gold if you crushed more quartz?



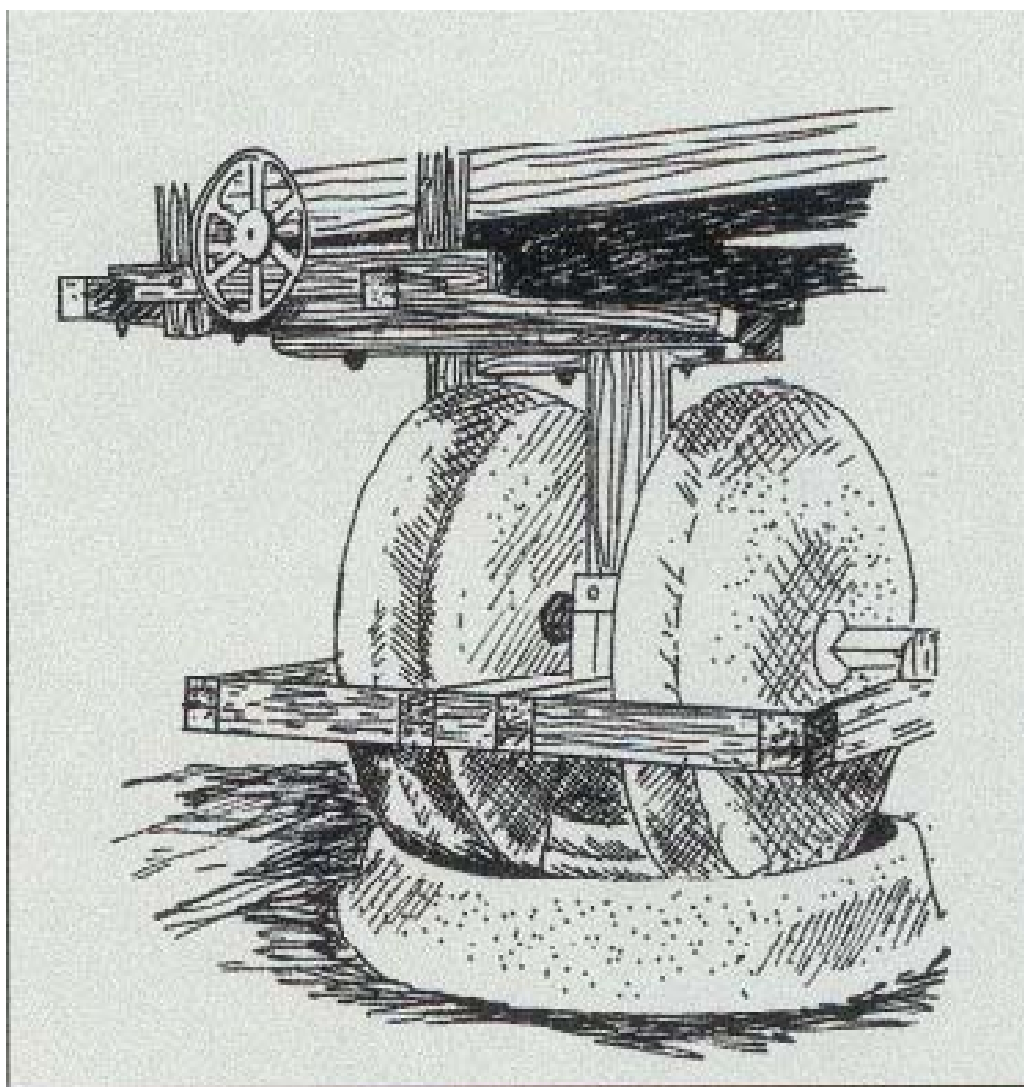
Gold miners in North Carolina already knew that gold is attracted to mercury (like iron is attracted to a magnet), so they needed a way to crush the quartz after it came out of the mine. The first invention was the arrastra, a platform of granite cobblestones that an ox or a

horse could pull a large granite stone across. This “dragstone”, being larger and heavier than the quartz, would crush the quartz into a powder. Arrastras were slow and not very efficient.

The miners then borrowed an ancient grinding stone idea, the Chilean Mill that originally was used to grind grain and crush olives in Biblical times. The Chilean Mills were made of granite were hard enough to crush the quartz. Mercury was added to the base stone and the upright wheel-

stones to grinding the ore. As the quartz rock was crushed, the mercury attracted the gold allowing much more gold to be recovered.

The process was still too slow, so after the 1849 gold rush to California, miners invented the “modern” stamp mill. Large steam or water powered stamps, which were like giant hammers, would fall onto the ore, crushing it into powder. The cast iron stamps weighed over 700 pounds each. This noisy cast-iron machine worked much faster than the earlier stone crushing mills but actually left more gold behind in the powdered rock.



Pete Nash: North Carolina's Last Gold Prospector?

Most folks think gold mining is a thing of the past. But not Pete Nash.

Pete Nash is the oldest gold miner in Cabarrus County—maybe in North Carolina. He's been mining since he was ten years old, and working at the family-owned Snider Mine as a teenager.

Nash can tell you stories about the days when gold mines were still open and operating, all right. He remembers seeing the last gold ingot poured at the famous Rudisill Mine in Charlotte back in the 1930s.

Nash has visited all the mines in the area, including Gold Hill in Rowan County, the Coggins Mine in Montgomery County, and the Howie Mine in Waxhaw.

At 83, Nash is still panning for gold as often as he can. If he feels well, he'll be out every day the weather permits.

"I do it for the excitement," he says. "I know I'm going to find it. That yellow stuff attracts my attention."

Out at Reed Gold Mine State Historic Site, employees joke that Pete Nash can smell gold. Certainly he knows just where to find it.

"I work in one spot for about ten minutes. If I don't see some gold I move," he explains.

Nash and his family have provided Reed Gold Mine with a number of artifacts, including drills, windlasses, hydraulic winches, and even steam pumps. Pete's brother Harold helped reconstruct Reed Gold Mine's stamp mill, and the visitor center includes a



display that holds nuggets Pete found here in North Carolina. Pete still provides the souvenir gold nuggets that are for sale to the public at the site's visitor center.

Pete loves to show children how to pan out at Reed Gold Mine, and he'll be found helping out the staff at every major event the site organizes.

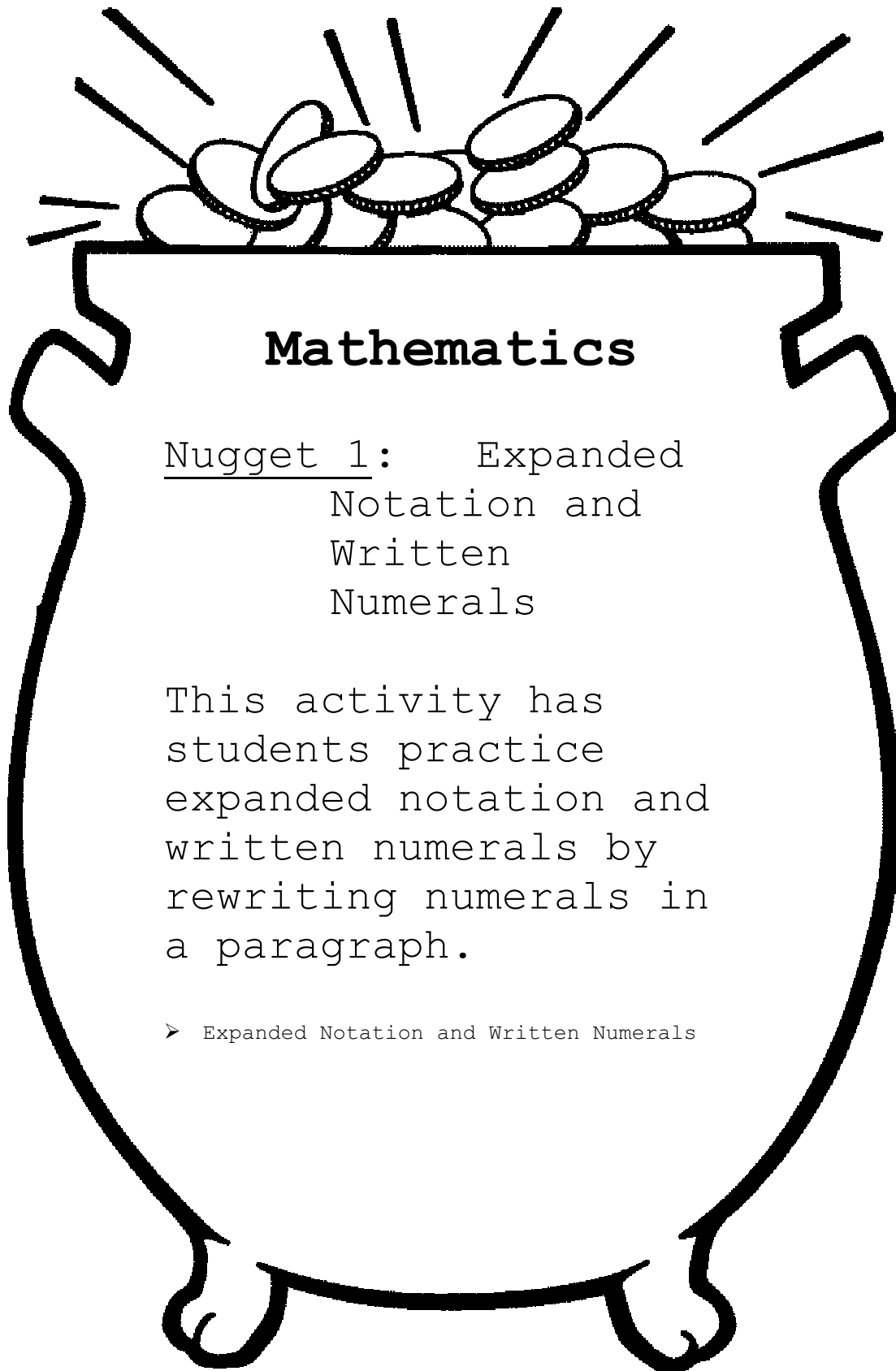
"You go out there and there are 100 kids panning," he says. "You know how many will find gold? Lots of times they'll dump it out, or won't have any. I pick out two or three that I'm going to make sure they get gold. I put it in the pan. Lots of times I put a nice piece in there and you'd be surprised what excitement that generates. I have a good time with those kids."

At 83, Pete Nash is still looking for the big one. The largest nugget he ever found weighed a little over a pound. He found it in Stanly County. Ninety-five percent of the time he finds fine flakes of gold, he says, but he's sure there's plenty still out there.

"I'm going to find it at Reed Gold Mine for the museum. I'm going to find it in Little Meadow Creek. I know it's there. They didn't get it all."

Lots of folks ask the old prospector where he pans. But he's not revealing any secrets, he says.

"There are several good spots," he admits. "But I don't tell nobody. I spit in my hand and pop it with my finger and say `that direction.'" He chuckles. "That tells them a lot, doesn't it?"



Mathematics

Nugget 1: Expanded
Notation and
Written
Numerals

This activity has students practice expanded notation and written numerals by rewriting numerals in a paragraph.

➤ Expanded Notation and Written Numerals

Expanded Notation and Written Numerals

Change the numerals into expanded notation:

$$359 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$2,984 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$857,092 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

Spell out the numerals. Use one letter in each space.

$$12 = \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$$

$$37 = \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} - \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$$

$$249 = \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$$

Directions: Change the numbers in the following story into expanded notation or spell out the numbers. Use one letter in each space when spelling out the numerals.

According to the story, in 1799 ($\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$) John Reed's 12 ($\underline{\hspace{1cm}} + \underline{\hspace{1cm}}$) year-old son, Conrad, went bow-and-arrow fishing 1 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$) day down at the creek on his father's farm. The young boy saw something shiny and yellow in the waters of Little Meadow Creek. He waded into the water and hauled out a 17 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \underline{\hspace{1cm}}$) pound chunk of gold. The family used it as doorstep for 3 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$) years. John Reed sold it for \$3.50 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$ dollars and $\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}}$ cents) but the gold rock was worth a lot more. It was worth \$3,600 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \underline{\hspace{1cm}}$). Today it would be worth about \$58,000 ($\underline{\hspace{1cm}} \underline{\hspace{1cm}} \underline{\hspace{1cm}} + \underline{\hspace{1cm}} \underline{\hspace{1cm}}$).

Teacher's Key

Expanded Notation and Written Numerals

Change the numerals into expanded notation:

$$359 = 300 + 50 + 9$$

$$2,984 = 2000 + 900 + 80 + 4$$

$$857,092 = 800,000 + 50,000 + 7,000 + 90 + 2$$

Spell out the numerals.

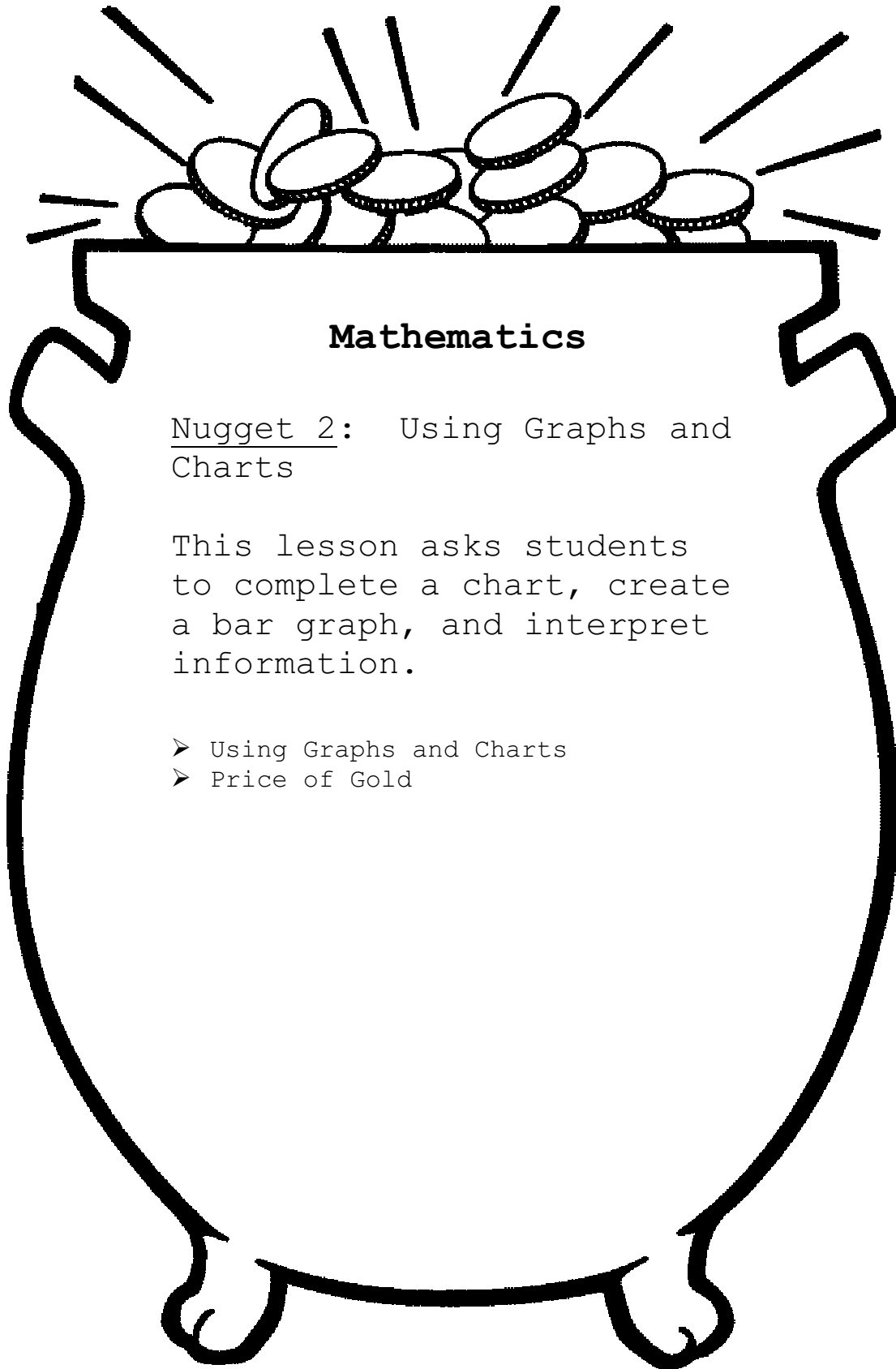
$$12 = \textit{TWELVE}$$

$$37 = \textit{THIRTY-SEVEN}$$

$$249 = \textit{TWO HUNDRED FORTY-NINE}$$

Directions: Change the numbers in the following story into expanded notation or spell out the numbers.

According to the story, in 1799 (**1000 + 700 + 90 + 9**) John Reed's 12 (**10 + 2**) year-old son, Conrad, went bow-and-arrow fishing one (**ONE**) day down at the creek on his father's farm. The young boy saw something shiny and yellow in the waters of Little Meadow Creek. He waded into the water and hauled out a 17 (**10 + 7**) pound chunk of gold. The family used the rock as doorstep for 3 (**THREE**) years. John Reed sold it for \$3.50 (\$ **three** dollars and **fifty** cents) but the gold rock was worth a lot more. It was worth \$3,600 (\$ **3,000 + 600**). Today it would be worth about \$58,000 (**50,000 + 8,000**).



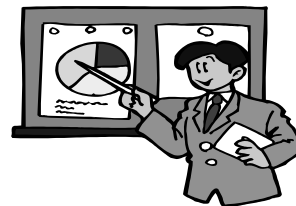
Mathematics

Nugget 2: Using Graphs and Charts

This lesson asks students to complete a chart, create a bar graph, and interpret information.

- Using Graphs and Charts
- Price of Gold

Using Graphs and Charts

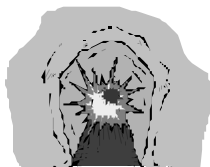


Reed Gold Mine Adit Information

Adit/Crosscut Name	Approximate Length	Main Rocks	Approximate Year Opened
Linker			
Morgan			
Tunnel #3			
Saw Mill			

The Reed Gold Mine has a series of adits, or horizontal tunnels. (Shafts are vertical tunnels.) The four main adits are Linker, Morgan, Tunnel #3, and Sawmill. The approximate lengths and approximate years opened are: Linker, 150 feet, 1833; Morgan, 85 feet, 1840; Tunnel #3, 75 feet, 1880; and Sawmill, 60 feet, 1895. Linker had 40% greenstone, 30% argilite, and 30% quartz. Morgan had 70% greenstone, and 30% quartz. Tunnel #3 had 50% greenstone, 30% argilite, and 20% quartz. Sawmill had 20% greenstone, and 80% argilite.

1. Complete the chart above using the information in the paragraph above.
2. Milky quartz is the stone in which gold is found. Which of the adits has quartz?



3. Using the chart from problem 1, make a bar graph showing the lengths of the adits/crosscuts. Use a sheet of paper to make the graph.

Use the graph you made to answer these questions:

4. Which adit or crosscut is the longest?
5. Which adit or crosscut is the shortest?
6. Using the information on the rock types present, why was the shortest adit not expanded?
7. Why do you think Linker Adit is the longest?

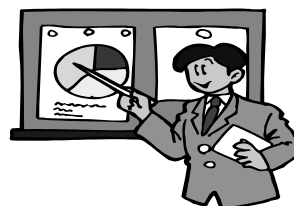
Excavation Times

Kind of Rock	Time to Excavate per inch
Greenstone	45 minutes
Quartz	30 minutes
Argilite	10 minutes

8. Tunnel # 3 consists of about 23 feet of argilite, 15 feet of quartz, and about 36 feet of greenstone. Using the chart above, how long would it take to dig Tunnel # 3? (Hints: 1 foot equals 12 inches. Then find the length of time it would take to dig each kind of rock.)
9. If Tunnel # 3 had 2 more feet of greenstone, how much longer would it take to complete the shaft?
10. Using the information from the table above, create your own word problem and answers.

Teacher's Key

Using Graphs and Charts



Reed Gold Mine Adit Information

Adit/Crosscut Name	Approximate Length	Main Rocks	Approximate Year Opened
Linker	150 feet	Greenstone (40%), Argilite (30%), Quartz (30%)	1833
Morgan	85 feet	Greenstone (70%), Quartz (30%)	1840
Tunnel #3	75 feet	Greenstone (50%), Argilite (30%), Quartz (20%)	1880
Sawmill	60 feet	Argilite (80%), Greenstone (20%) *	1895

* Sawmill Adit does not have any quartz.

The Reed Good Mine has a series of adits or horizontal tunnels. (Shafts are vertical tunnels.) The four main adits are Linker, Morgan, Tunnel #3, and Sawmill. The approximate lengths and approximate years opened are Linker, 150 feet, 1833; Morgan, 85 feet, 1840; Tunnel #3, 75 feet, 1880; and Sawmill, 60 feet, 1895. Linker had 40% greenstone, 30% argilite, and 30 % quartz. Morgan had 70% greenstone, and 30 % quartz. Tunnel #3 had 50% greenstone, 30% argilite, and 20 % quartz. Sawmill had 20% greenstone, and 80% argilite.

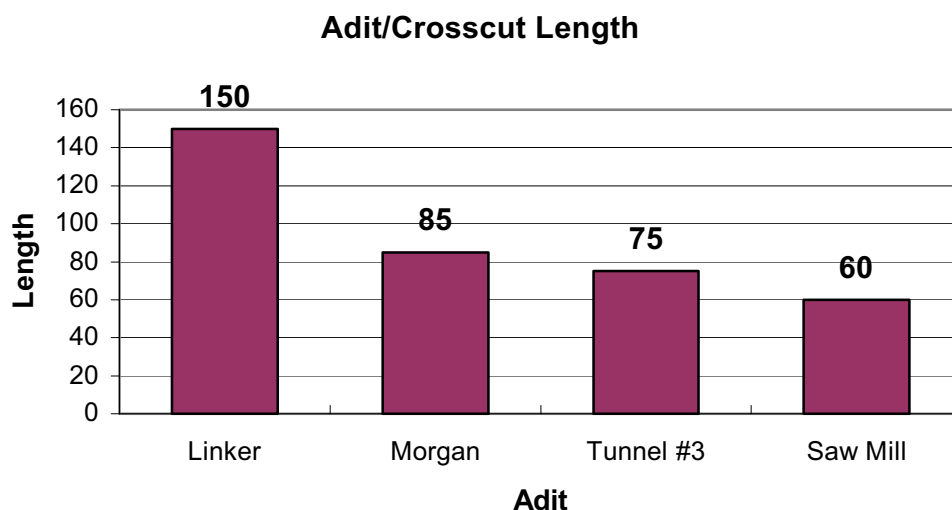
1. Complete the chart using the above information. (Answers are in the chart.)
2. Milky quartz is the stone in which gold is found. Which of the adits has quartz?
(*Linker, Morgan, Tunnel #3*)



Teacher's Key

Using Graphs and Charts

3. Using the data from above, make a bar graph showing the lengths of the adits/crosscuts.



4. Which adit or crosscut is the longest?
(Linker)
5. Which adit or crosscut is the shortest?
(Sawmill)
6. Using the information on the rock types present, why was the shortest adit not expanded?
(No quartz was found after 60 feet, therefore there was no chance of finding gold in that section.)
7. Why do you think Linker Adit is the longest?
(Possible answers: The adit had to be long to reach the veins of quartz. It was the first adit mined, so they thought there could be more gold if they continued. The other adits and crosscuts were so deep they were too far below the water table for the water to be safely removed and Linker was intended to help with drainage.)

Teacher's Key

Using Graphs and Charts

Excavation Times

Kind of Rock	Time to Excavate per inch
Greenstone	45 minutes
Quartz	30 minutes
Argilite	10 minutes

8. Tunnel # 3 consists of about 23 feet of argilite, 15 feet of quartz, and about 36 feet of greenstone. Using the chart above, how long would it take to dig Tunnel # 3? (Hints: 1 foot equals 12 inches. Then find the length of time it would take to dig each kind of rock.)

Argilite: $23 \times 12 = 276$ inches; $276 \times 10 = 2760$ minutes; 2760 minutes = 46 hours

Quartz: $15 \times 12 = 180$ inches; $180 \times 30 = 5400$ minutes; 5400 minutes = 90 hours

Greenstone: $36 \times 12 = 432$ inches; $432 \times 45 = 19,440$ minutes; $19,440$ minutes = 324 hours

9. If Tunnel # 3 had 2 more feet of greenstone, how much longer would it take to complete the shaft?

$2 \times 12 = 24$ inches; $24 \times 45 = 1080$ minutes; 1080 minutes = 18 hours

10. Using the information from the table above, create your own word problem and answers.

Price of Gold

Average Annual Price of Gold (US Dollars - Actual Terms)

Year	Average Price per Ounce	Low	High	Difference Between Low and High Prices
1998	\$ 294.09	\$ 173.40	\$ 313.15	
1997	\$ 331.29	\$ 293.00	\$ 367.80	
1996	\$ 387.87	\$ 367.40	\$ 416.25	
1995	\$ 384.05	\$ 372.45	\$ 395.55	
1994	\$ 384.15	\$ 369.65	\$ 397.50	
1993	\$ 359.82	\$ 326.10	\$ 406.70	
1992	\$ 343.95	\$ 330.20	\$ 359.60	
1991	\$ 362.26	\$ 344.25	\$ 403.70	
1990	\$ 383.59	\$ 345.85	\$ 421.40	
1989	\$ 380.79	\$ 355.75	\$ 417.15	
1988	\$ 436.00	\$ 389.05	\$ 485.30	
1987	\$ 446.07	\$ 390.00	\$ 502.75	
1986	\$ 367.94	\$ 326.00	\$ 442.75	
1985	\$ 317.27	\$ 284.25	\$ 340.90	
1984	\$ 360.36	\$ 303.25	\$ 406.85	
1983	\$ 424.12	\$ 374.25	\$ 511.50	
1982	\$ 375.90	\$ 296.75	\$ 488.50	
1981	\$ 459.75	\$ 391.25	\$ 599.25	
1980	\$ 612.74	\$ 474.00	\$ 850.00	
1979	\$ 306.67	\$ 216.55	\$ 524.00	
1978	\$ 193.24	\$ 166.30	\$ 243.65	
1977	\$ 147.72	\$ 129.40	\$ 168.15	
1976	\$ 124.82	\$ 103.50	\$ 140.35	
1975	\$ 161.03	\$ 128.75	\$ 186.25	

Complete the chart. Then use the chart above to answer these questions:

1. In which year was there the biggest difference in the **high and low prices**? What was the difference?
2. In which year was there the smallest difference in the **high and low prices**? What was the difference?
3. In how many years was the **average price** between \$300 and \$399?

4. List the top 5 years for the *highest average price*. (In order from highest)
5. Using the answers from question 4, which years are consecutive?
6. If you had bought 1 ounce of gold in 1975, in what year would it have had its highest value? (Hint: Look at the high price column.)
7. Use the average price on the chart to determine how much each nugget would be worth for the years given and then the difference in the prices:
- a) 3 ounce nugget in 1985: in 1995: difference:
- b) 5 ounce nugget in 1975: in 1983: difference:
- c) 7 ounce nugget in 1977: in 1980: difference:

* **Challenges** (Remember to change ounces into pounds. **Precious metals such as gold are measured in troy units. 12 ounces troy are in one pound troy.**)

d) 1 pound 3 ounce nugget in 1996: and in 1981 difference:

e) 4 pound 6 ounce nugget in 1987: and in 1986: difference:

f) Conrad Reed's nugget was valued at about \$3,600 for approximately 17 pounds of gold. How much did it count per ounce?

TEACHER'S KEY
Price of Gold
 Average Annual Price of Gold
 (US Dollars - Actual Terms)

Year	Average Price per Ounce	Low	High	Difference Between Low and High Prices
1998	\$ 294.09	\$ 173.40	\$ 313.15	\$141.90
1997	\$ 331.29	\$ 293.00	\$ 367.80	\$74.80
1996	\$ 387.87	\$ 367.40	\$ 416.25	\$48.85
1995	\$ 384.05	\$ 372.45	\$ 395.55	\$23.10
1994	\$ 384.15	\$ 369.65	\$ 397.50	\$27.85
1993	\$ 359.82	\$ 326.10	\$ 406.70	\$80.70
1992	\$ 343.95	\$ 330.20	\$ 359.60	\$29.40
1991	\$ 362.26	\$ 344.25	\$ 403.70	\$59.20
1990	\$ 383.59	\$ 345.85	\$ 421.40	\$75.55
1989	\$ 380.79	\$ 355.75	\$ 417.15	\$61.40
1988	\$ 436.00	\$ 389.05	\$ 485.30	\$96.25
1987	\$ 446.07	\$ 390.00	\$ 502.75	\$112.75
1986	\$ 367.94	\$ 326.00	\$ 442.75	\$116.75
1985	\$ 317.27	\$ 284.25	\$ 340.90	\$65.65
1984	\$ 360.36	\$ 303.25	\$ 406.85	\$103.35
1983	\$ 424.12	\$ 374.25	\$ 511.50	\$137.00
1982	\$ 375.90	\$ 296.75	\$ 488.50	\$191.75
1981	\$ 459.75	\$ 391.25	\$ 599.25	\$208.00
1980	\$ 612.74	\$ 474.00	\$ 850.00	\$376.00
1979	\$ 306.67	\$ 216.55	\$ 524.00	\$307.45
1978	\$ 193.24	\$ 166.30	\$ 243.65	\$77.35
1977	\$ 147.72	\$ 129.40	\$ 168.15	\$38.75
1976	\$ 124.82	\$ 103.50	\$ 140.35	\$36.85
1975	\$ 161.03	\$ 128.75	\$ 186.25	\$57.75

Complete the chart. Then use the chart above to answer these questions:

1. In which year was there the biggest difference in the **high and low prices**? What was the difference? **1980; \$376.00**
2. In which year was there the smallest difference in the **high and low prices**? What was the difference? **1995; \$23.10**
3. In how many years was the **average price** between \$300 and \$399? **14**

4. List the top 5 years for the *highest average price*. (In order from highest)
1980 (\$612.74), 1981 (\$459.75), 1987 (\$446.07), 1988 (\$436.00), 1983 (\$424.12)
5. Using the answers from question 4, which years are consecutive?
1980-1981, 1987-1988
6. If you had bought 1 ounce of gold in 1975, in what year would it have had its highest value? (Hint: Look at the high price column.) **1980**
7. Use the average price on the chart to determine how much each nugget would be worth for the years given and then the difference in the prices:
 - a) 3-ounce nugget in 1985: **\$951.81** in 1995: **\$1152.15** difference: **\$200.34**
 - b) 5 ounce nugget in 1975: **\$805.15** in 1983: **\$2,120.60** difference: **\$1315.45**
 - c) 7 ounce nugget in 1977: **\$1034.04** in 1980: **\$4289.18** difference: **\$3255.14**

* **Challenges** (Remember to change ounces into pounds. **Precious metals such as gold are measured in troy units. 12 ounces troy are in one pound troy.**)

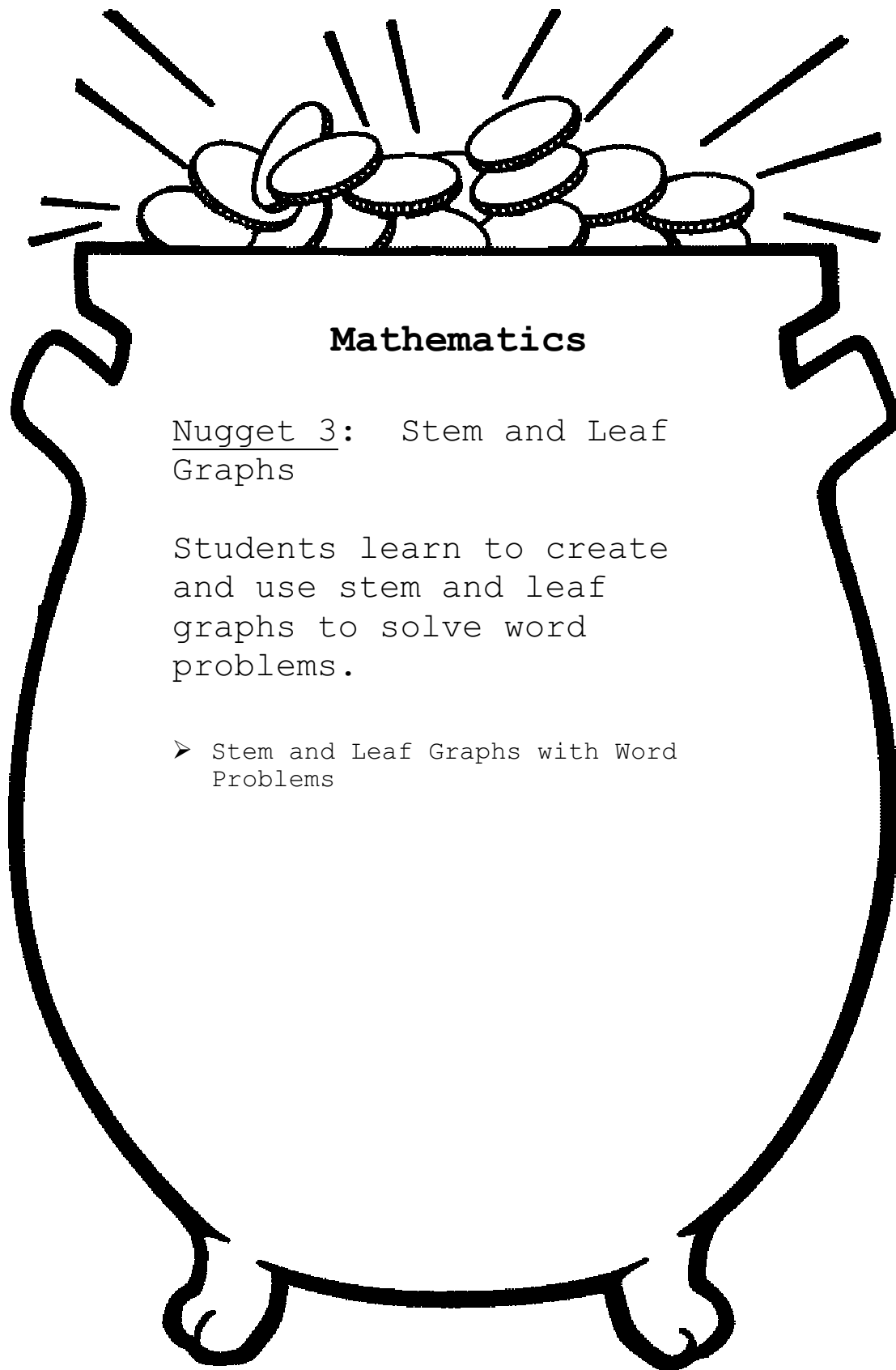
- d) 1 pound 3 ounce nugget in 1996: $12 \text{ oz.} + 3 \text{ oz.} = 15 \text{ oz.} \times \$387.87 = \$5,818.05$
in 1981: $15 \text{ oz.} \times \$459.75 = \$6,896.25$ difference: **\$1,078.20**
- e) 4 pound 6 ounce nugget in 1987: $12 \text{ oz.} \times 4 + 6 \text{ oz.} = 54 \text{ oz.} \times \$446.07 = \$24,087.78$
in 1986: $54 \text{ oz.} \times \$367.94 = \$19,868.76$ difference: **\$4,219.02**
- f) Conrad Reed's nugget was valued at about \$3,600 for approximately 17 pounds of gold. How much did it count per ounce?
 $17 \text{ pounds} = 204 \text{ oz.}$ $\$3,600/204 = \17.65 (rounded to the nearest cent)

Some additional information:

In 1933 President Franklin D. Roosevelt banned the export of gold, halted the conversion of dollar bills into gold, ordered U. S. citizens to hand in all the gold they possessed, and then established a daily price for gold. In 1934 the daily price was fixed at \$35 per ounce. On March 15, 1968, the central bank gave up fixed pricing for gold (then still at \$35 per ounce), and let it free float. On December 31, 1974, the US government ended the ban on individual ownership of gold. Since then the prices have risen and fallen dramatically.

It will be important to explain to the students the difference in the standard measurements we use and the troy system.

12 troy ounces = 1 pound rather than the standard 16 oz. = 1 lb.



Mathematics

Nugget 3: Stem and Leaf Graphs

Students learn to create and use stem and leaf graphs to solve word problems.

- Stem and Leaf Graphs with Word Problems

Stem and Leaf Graphs with Word Problems

There have been a number of large nuggets found at and around Reed Gold Mine. The largest have weighed 28, 23, 17, 13, 10, and 7 pounds troy.

1. Troy pounds have 12 ounces (rather than 16 ounces). Convert the nugget weights given above into troy ounces.
2. Create a stem and leaf plot to show the weight using troy ounces for the larger nuggets of gold found in the Reed Gold Mine area.

Title
STEM / Leaf

3. Create a stem and leaf plot to show the weight using troy pounds for the larger nuggets of gold found in the Reed Gold Mine area.

Title
STEM / Leaf

4. Which is greater, the number of nuggets that weigh more than 20 pounds troy or between 10 and 20 pounds troy?
5. How many nuggets weigh between 15 to 20 pounds troy?
6. How many nuggets weigh between 10 pounds troy and 15 pounds troy?
7. How many nuggets weigh between 1 to 19 pounds troy?

8. What if you wanted to show the data about gold nuggets in a bar graph? From the stem-and-leaf plot, how can you tell which bar would be the longest?
9. Using the information in the stem-and-leaf plot, create a bar graph that represents the information given.
10. If the 17-pound troy nugget that Conrad Reed found in 1799 were divided evenly between 3 people, how many pounds would each person get? (Hint: Look at the information in troy ounces.)
11. If that nugget were divided between 4 people, how many pounds would each person get?
12. Gold is measured in troy ounces and pounds. There are 12 ounces troy in one pound troy. If a miner found a 3-pound nugget, how many ounces would the nugget be?
13. How many ounces troy would be in a 5-pound nugget?
14. If the price for one ounce of gold were \$214, how much would the 5 largest nuggets be worth?

15. If you went to Reed Gold Mine, you could pan for gold. If you found a nugget that weighs 3 ounces, how much would it be worth if the price per ounce were \$232?

16. If a friend found a nugget weighing 2 ounces and the price per ounce was \$350, how much would it be worth?

17. What is the difference in the value of the nuggets in questions 14 and 15?

18. Using the information in this lesson, create three problems. Be sure to include your answers.

TEACHER KEY



There have been a number of large nuggets found at and around Reed Gold Mine. The largest have weighed: 28, 23, 17, 13, 10, 7 pounds troy.

1. Troy pounds have 12 ounces (rather than 16 ounces). Convert the nugget weights given above into troy ounces.

$$28 = 336$$

$$23 = 276$$

$$17 = 204$$

$$13 = 156$$

$$10 = 120$$

$$7 = 84$$

2. Create a stem and leaf plot to show the weight using troy ounces for the larger nuggets of gold found in the Reed Gold Mine area.

(Accept Reasonable Answers)

Title

STEM / Leaf

8/4

12/0

15/6

20/4

27/6

33/6

3. Create a stem and leaf plot to show the weight using troy pounds for the larger nuggets of gold found in the Reed Gold Mine area.

(Accept Reasonable Answers)

Title

STEM / Leaf

0/7

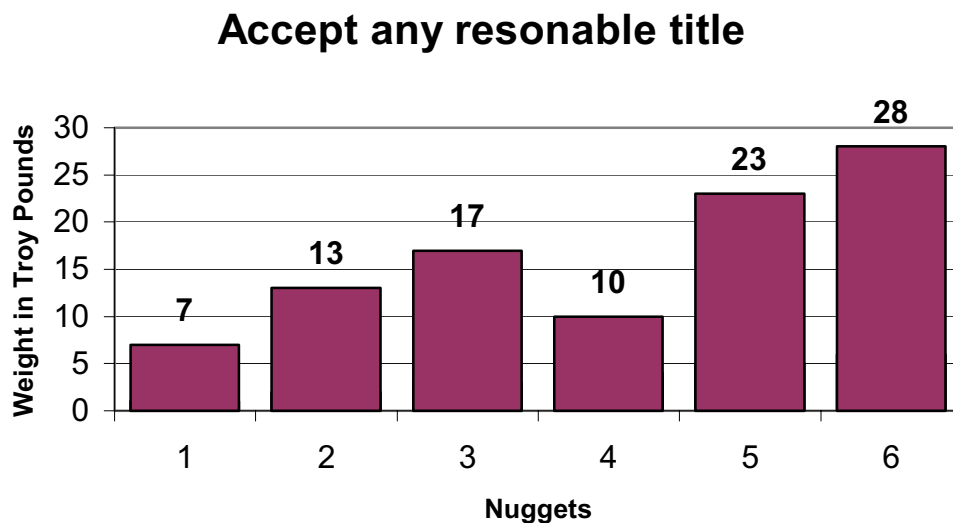
1/3, 7, 0

2/3, 8

4. Which is greater, the number of nuggets that weigh more than 20 pounds troy or between 10 and 20 pounds troy? (10-20)
5. How many nuggets weigh between 15 to 20 pounds troy? (1)
6. How many nuggets weigh between 10 pounds troy and 15 pounds troy? (2)
7. How many nuggets weigh between 1 to 19 pounds troy? (4)
8. What if you wanted to show the data about gold nuggets in a bar graph? From the stem-and-leaf plot, can you tell which bar would be the longest? (Yes – the 28-pound

troy nugget would be longest because it is the heaviest.)

9. Using the information in the stem-and-leaf plot in question 3, create a bar graph that represents the information given.



10. If the 17-pound troy nugget that Conrad Reed found in 1799 were divided evenly between 3 people, how many pounds would each person get? (Hint: look at the information in troy ounces.)

*(17 pounds troy = 204 ounces troy $204 / 3 = 68$ ounces troy each)
 (68/12 = 5.67 troy pounds each)*

11. If that nugget were divided between 4 people how many pounds would each person get?

*(17 pounds troy = 204 ounces troy $204 / 4 = 51$ ounces troy each)
 (51/12 = 4.25 troy pounds each)*

12. Gold is measured in troy ounces and pounds. There are 12 ounces troy in one pound troy. If a miner found a 3-pound nugget, how many ounces would the nugget be?
(36 ounces troy)

13. How many ounces troy would be in a 5-pound nugget? *(60)*

14. If the price for one ounce of gold were \$214, how much would the 5 largest nuggets be worth?

$$28 \text{ pounds troy} = 336 \text{ ounces troy} \times \$214 = \$71,904$$

$$23 \text{ pounds troy} = 276 \text{ ounces troy} \times \$214 = \$59,064$$

$$17 \text{ pounds troy} = 204 \text{ ounces troy} \times \$214 = \$43,656$$

$$13 \text{ pounds troy} = 156 \text{ ounces troy} \times \$214 = \$33,384$$

$$10 \text{ pounds troy} = 120 \text{ ounces troy} \times \$214 = \$25,680$$

15. If you went to Reed Gold Mine, you could pan for gold. If you found a nugget that weighs 3 ounces, how much would it be worth if the price per ounce were \$232?

$$(3 \times \$232 = \$696)$$

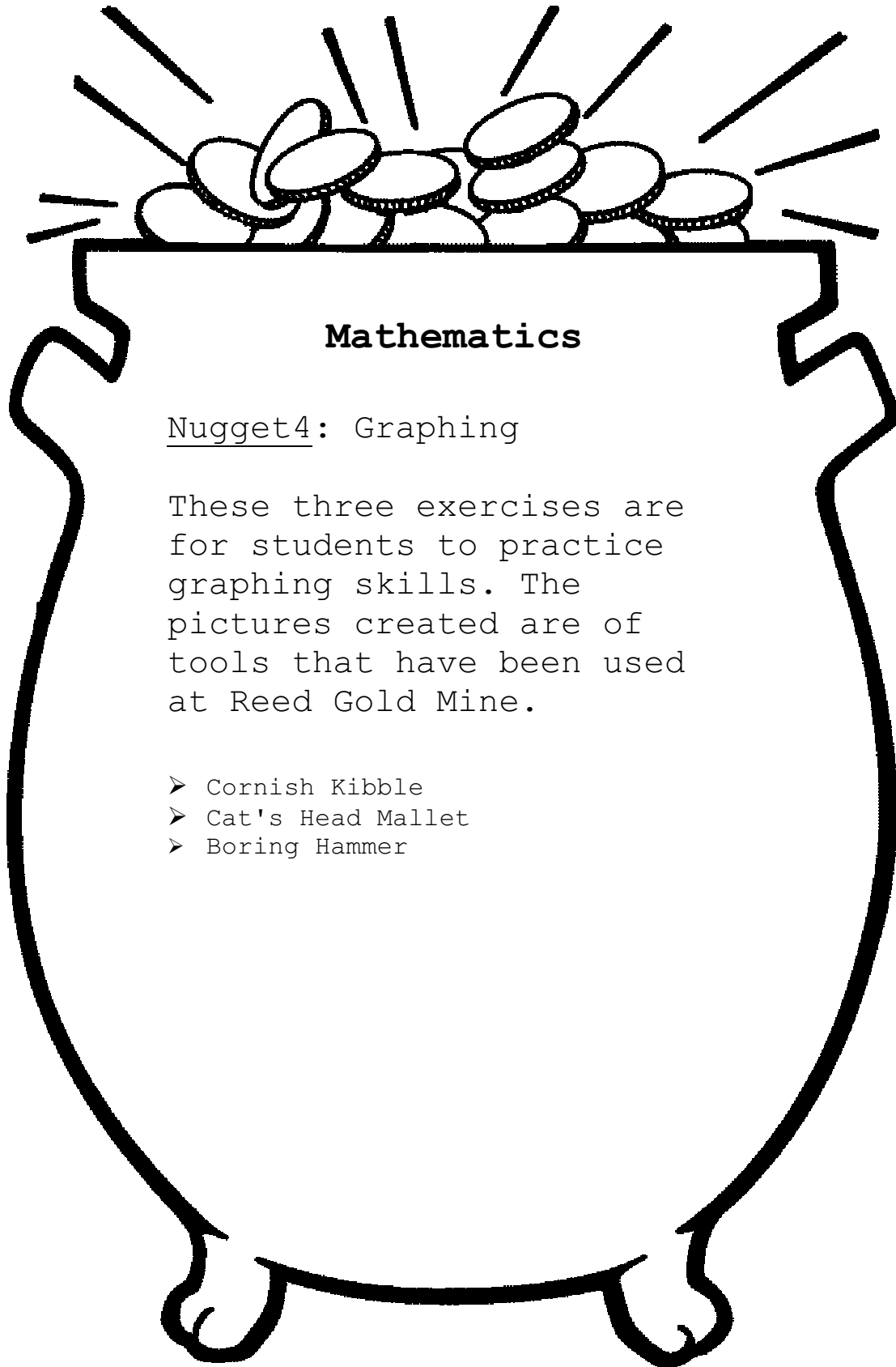
16. If a friend found a nugget weighing 2 ounces and the price per ounce was \$350. How much would it be worth?

$$(2 \times \$350 = \$700)$$

17. What is the difference in the value of the nuggets in questions 14 and 15?

$$(\$4.00)$$

18. Using the information in this lesson, create 3 problems. Be sure to include your answers.



Mathematics

Nugget4: Graphing

These three exercises are for students to practice graphing skills. The pictures created are of tools that have been used at Reed Gold Mine.

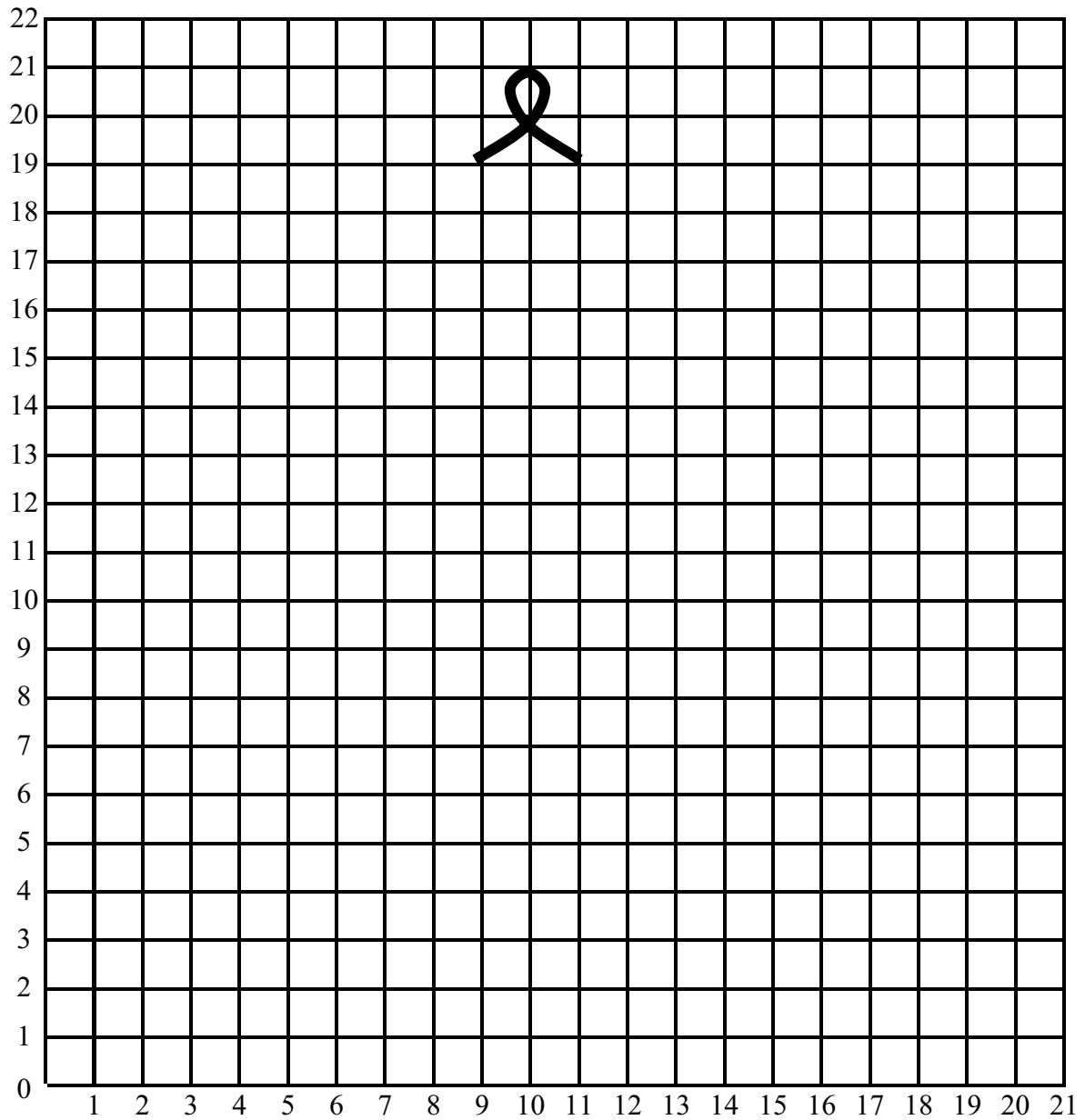
- Cornish Kibble
- Cat's Head Mallet
- Boring Hammer

A **Cornish Kibble** was an ore bucket used to carry the gold out of the mine. Connect the ordered pairs inside each set of brackets to see what it looked like.

$\langle(8,0) (12,0) (15,3) (15,11) (14,12) (6,12) (5,11) (5,3) (8,0)\rangle$

$\langle(6,12) (6,16) (9,19) (11,19) (14,16) (14,12)\rangle$

$\langle(5,11) (15,11)\rangle$



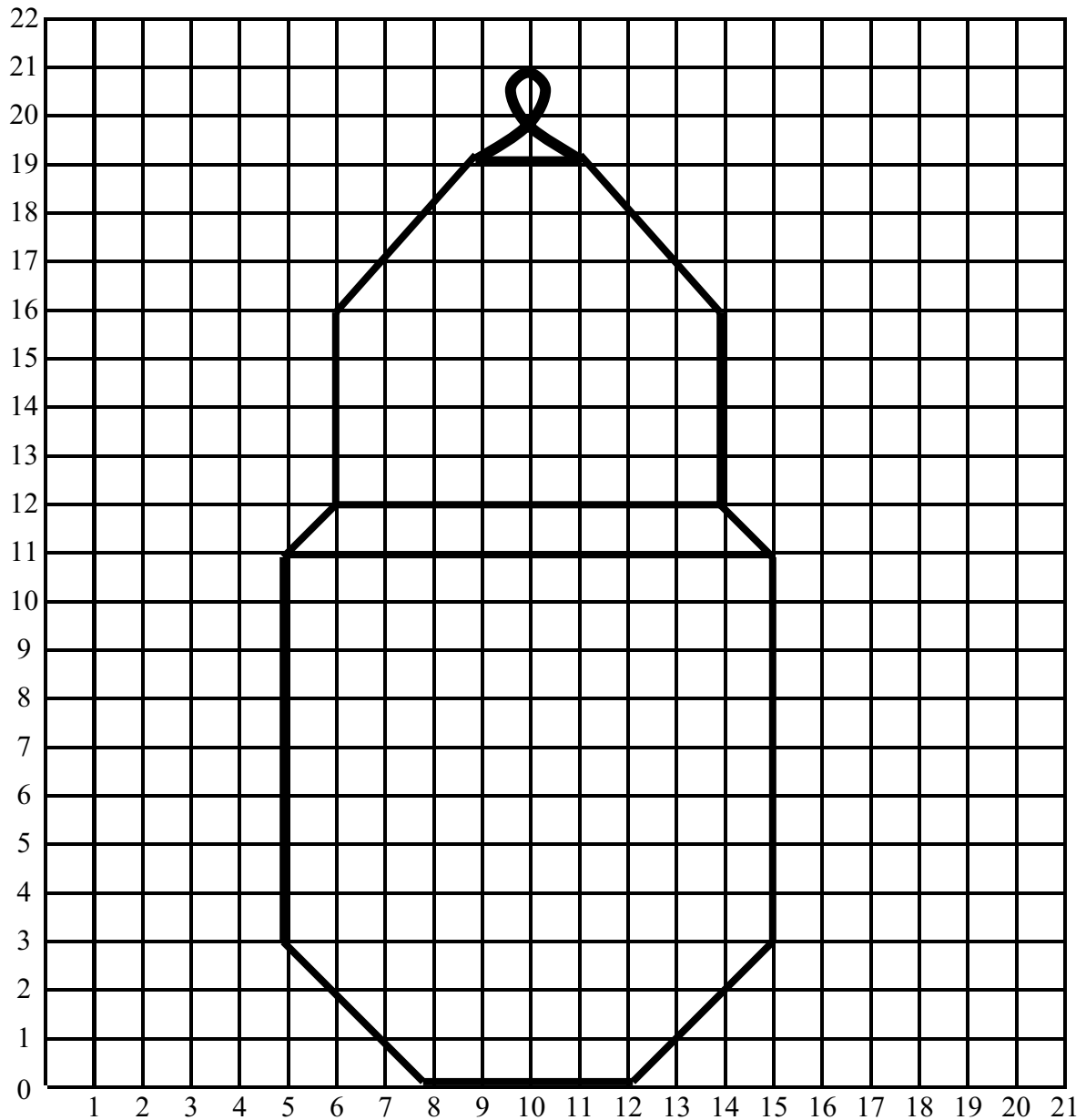
Answer Key

A **Cornish Kibble** was an ore bucket used to carry the gold out of the mine. Connect the ordered pairs inside each set of brackets to see what it looked like.

$\langle(8,0) (12,0) (15,3) (15,11) (14,12) (6,12) (5,11) (5,3) (8,0)\rangle$

$\langle(6,12) (6,16) (9,19) (11,19) (14,16) (14,12)\rangle$

$\langle(5,11) (15,11)\rangle$

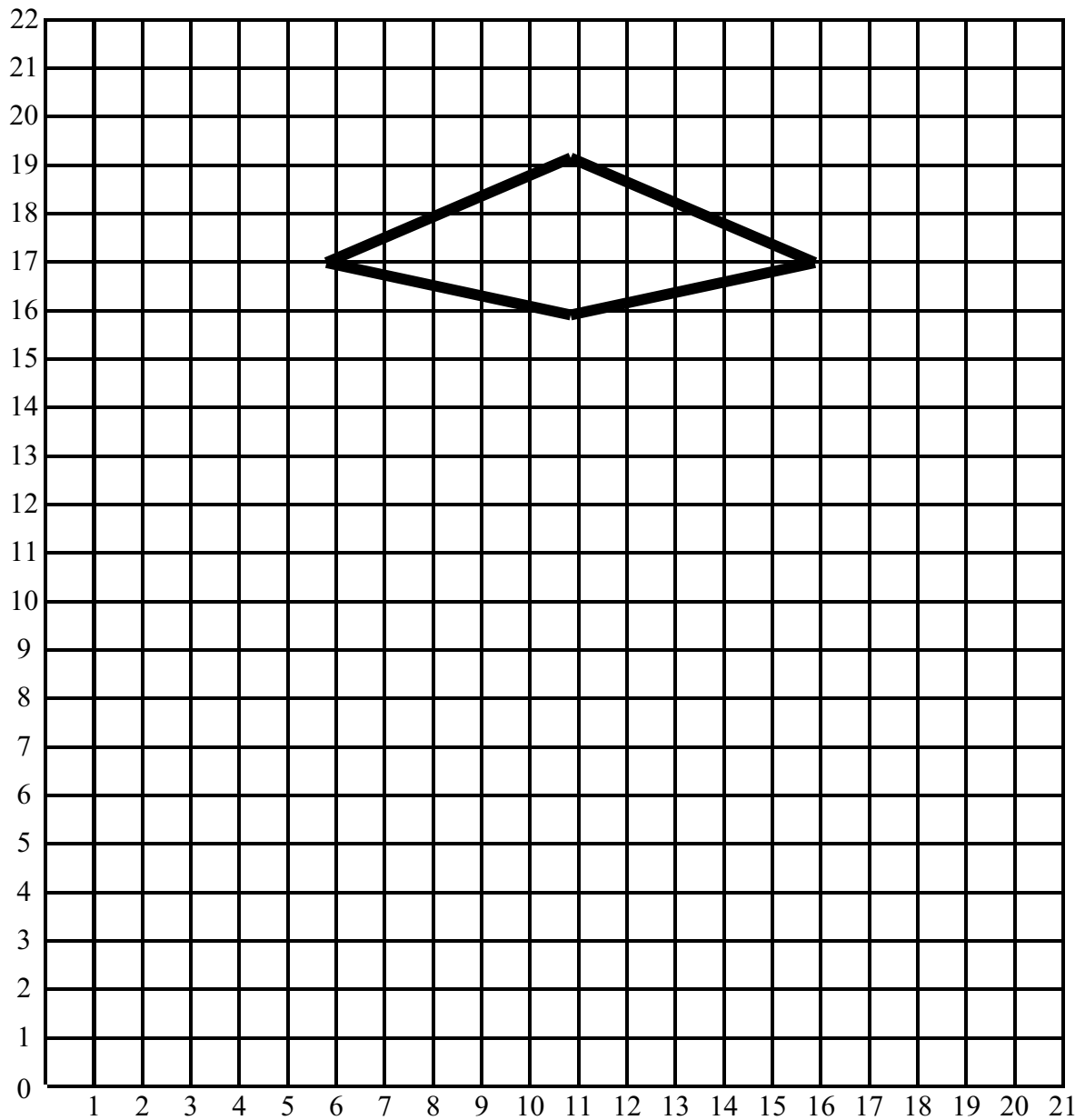


A **Cat's Head Mallet** is a large hammer-like tool used at the Reed Gold Mine. To see what it looked like, connect the ordered pairs inside each set of brackets.

<(10,2) (12,2) (12,14) (13,14) (13,16) (16,16) (16,19) (6,19) (6,16) (9,16)
(9,14) (10,14) (10,2)>

<(6,17) (11,16) (16,17)>

<(6,17) (11,19) (16,18)>



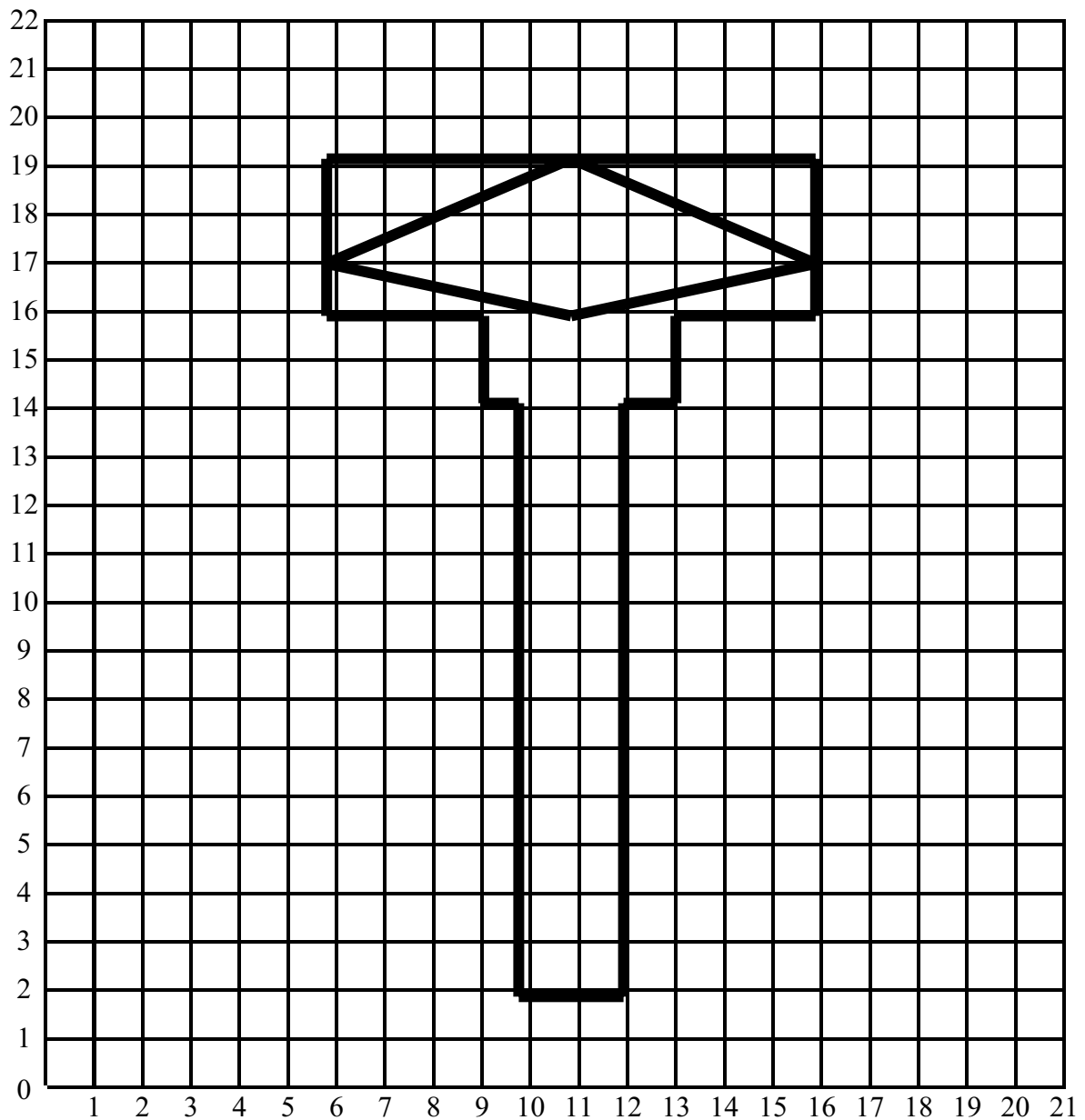
Answer Key

A Cat's Head Mallet is a large hammer-like tool used at the Reed Gold Mine. To see what it looked like, connect the ordered pairs inside each set of brackets.

<(10,2) (12,2) (12,14) (13,14) (13,16) (16,16) (16,19) (6,19) (6,16) (9,16)
(9,14) (10,14) (10,2)>

<(6,17) (11,16) (16,17)>

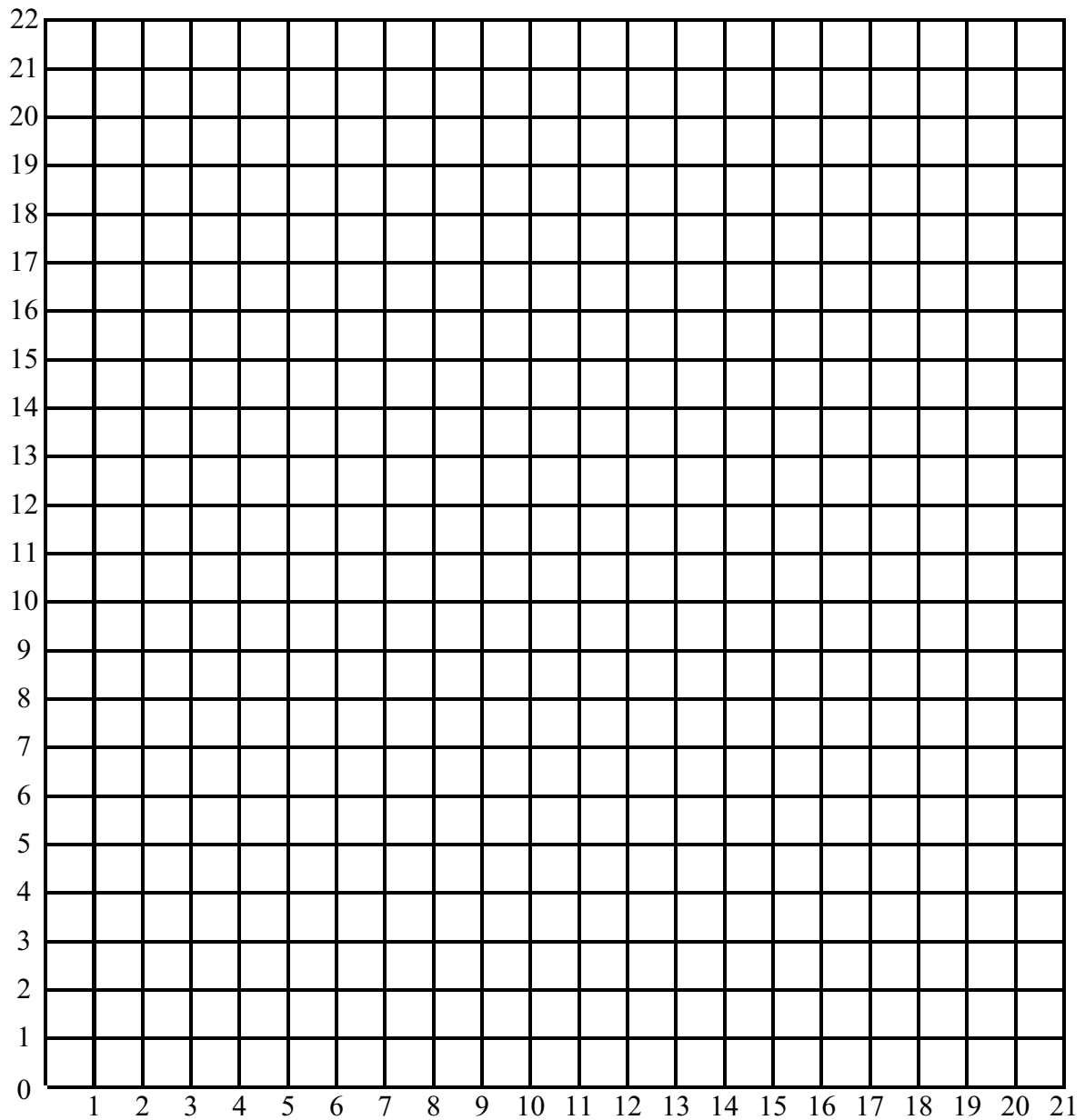
<(6,17) (11,19) (16,18)>



A Boring Hammer was a hammer-like tool used at the Reed Gold Mine. Connect the ordered pairs in the brackets to see what it looked like.

$\langle(2,5) (3,8) (4,10) (3,10) (2,8) (1,5) (2,2) (3,0) (4,0) (3,2) (2,5)\rangle$

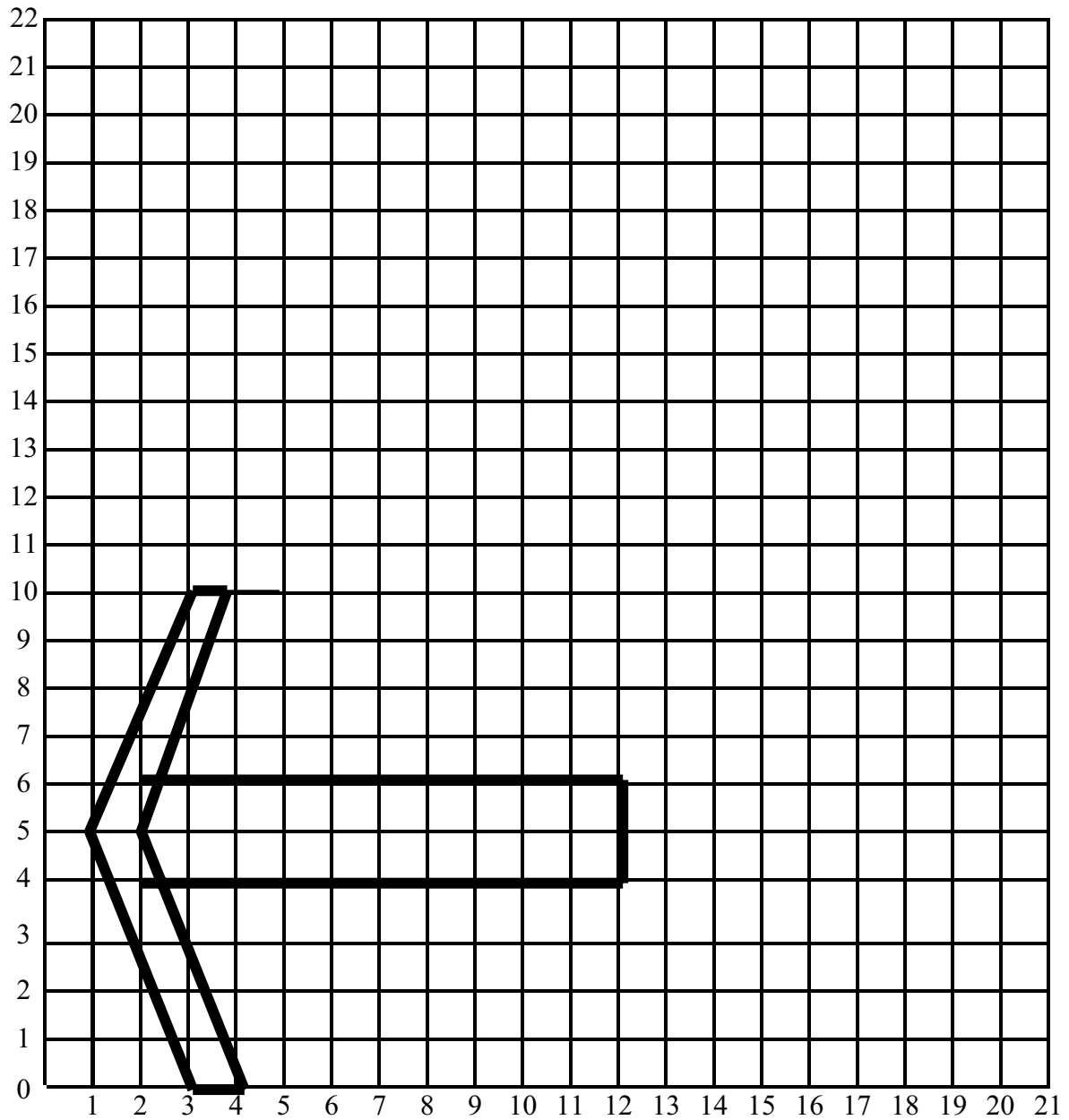
$\langle(2,6) (12,6) (12,4) (2,4)\rangle$

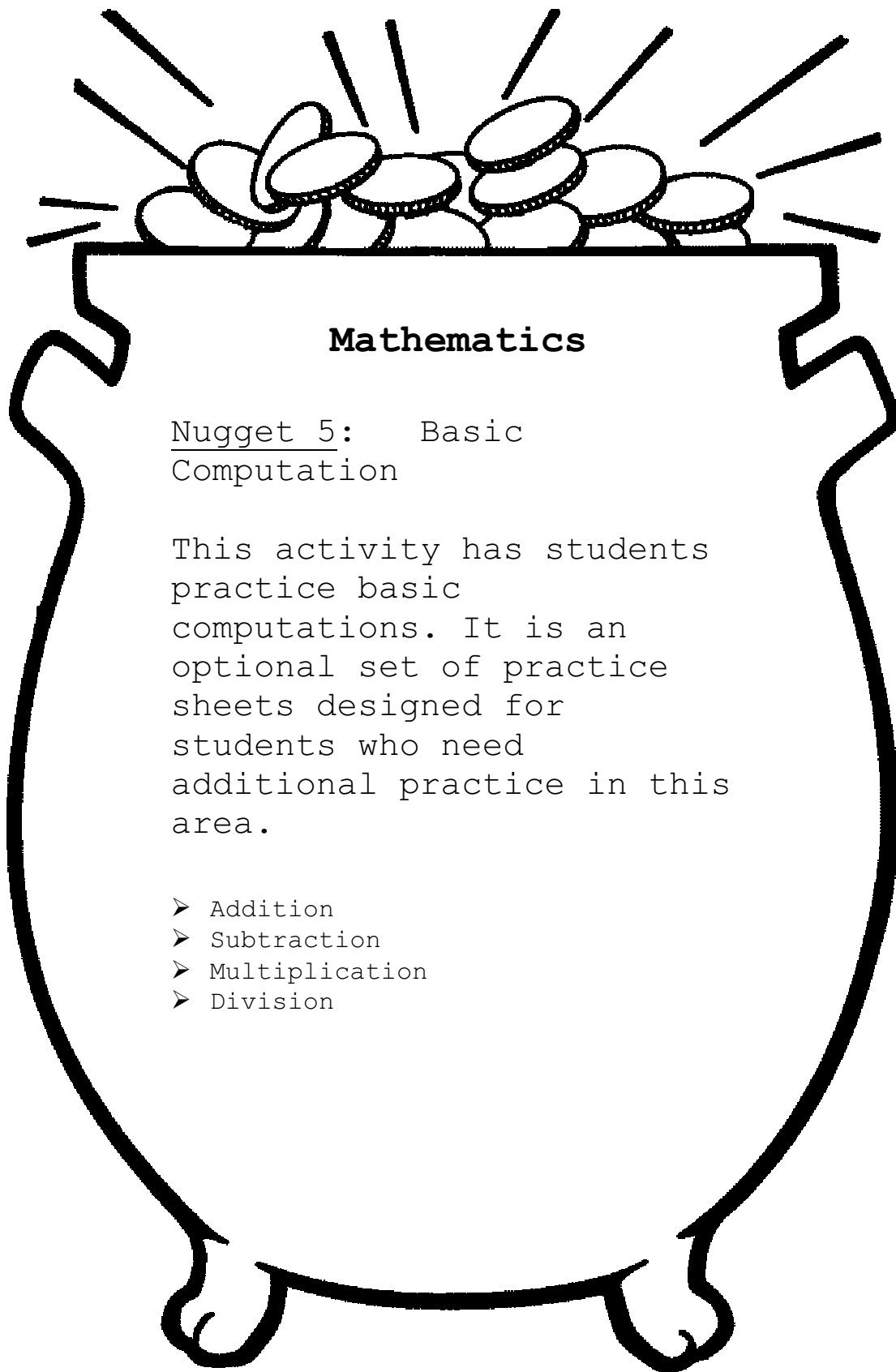


A Boring Hammer was a hammer-like tool used at the Reed Gold Mine. Connect the ordered pairs in the brackets to see what it looked like.

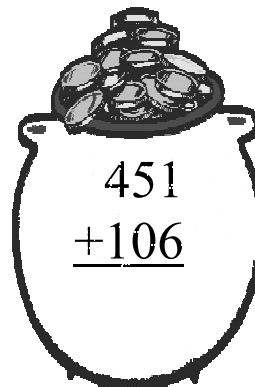
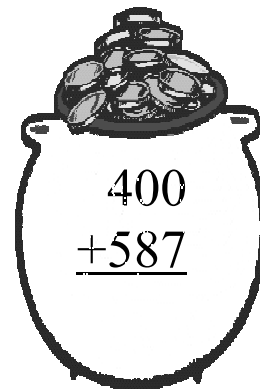
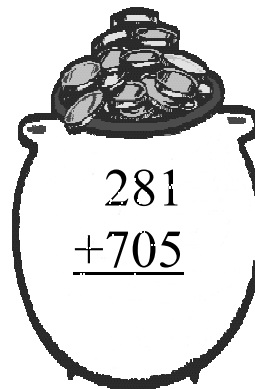
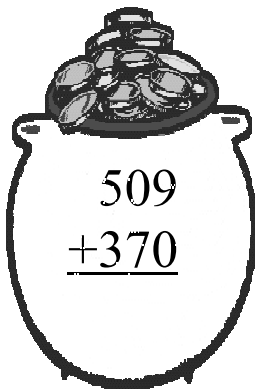
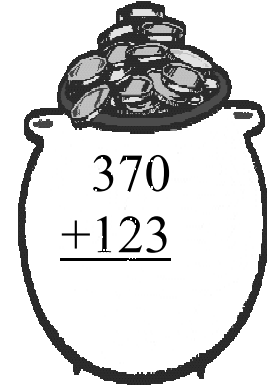
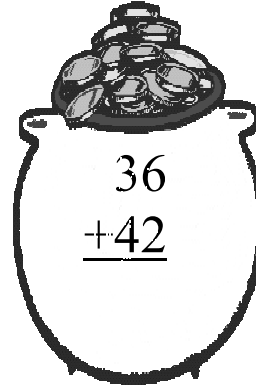
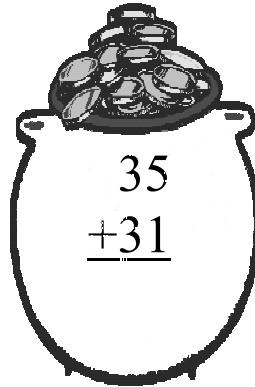
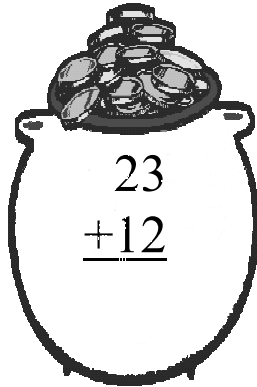
<(2,5) (3,8) (4,10) (3,10) (2,8) (1,5) (2,2) (3,0) (4,0) (3,2) (2,5)>

<(2,6) (12,6) (12,4) (2,4)>








Directions: Some students went panning for gold. Each person found 2 gold nuggets. Solve the addition problems to see how much each student found.





Directions: Some students went panning for gold. Each person found 2 gold nuggets. Solve the addition problems to see how much each student found.



$$\begin{array}{r} 23 \\ +12 \\ \hline 35 \end{array}$$



$$\begin{array}{r} 35 \\ +31 \\ \hline 66 \end{array}$$

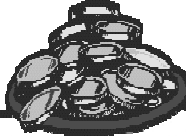

$$\begin{array}{r} 36 \\ +42 \\ \hline 78 \end{array}$$



$$\begin{array}{r} 370 \\ +123 \\ \hline 493 \end{array}$$



$$\begin{array}{r} 509 \\ +370 \\ \hline 879 \end{array}$$



$$\begin{array}{r} 385 \\ +813 \\ \hline 1198 \end{array}$$

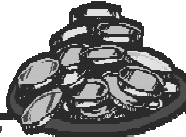

$$\begin{array}{r} 281 \\ +705 \\ \hline 986 \end{array}$$


$$\begin{array}{r} 400 \\ +587 \\ \hline 987 \end{array}$$

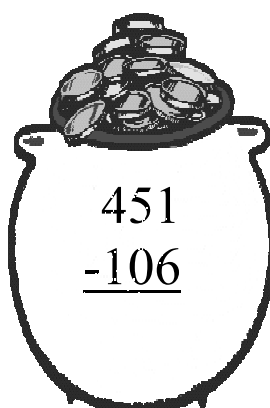
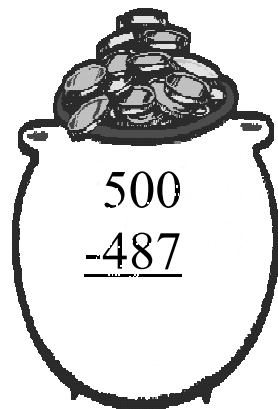
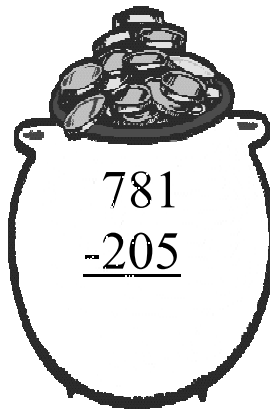
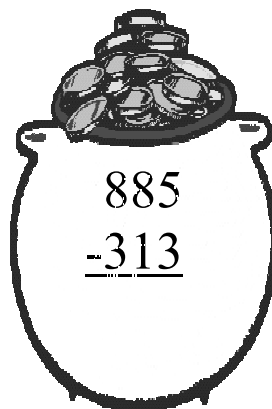
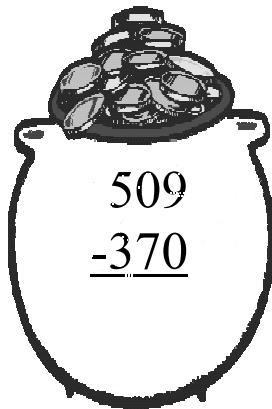
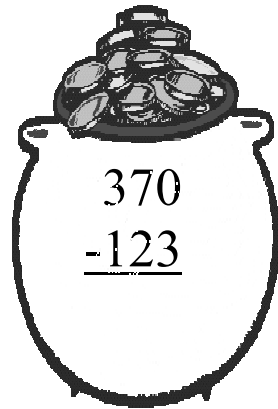
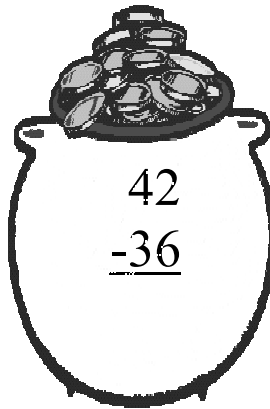
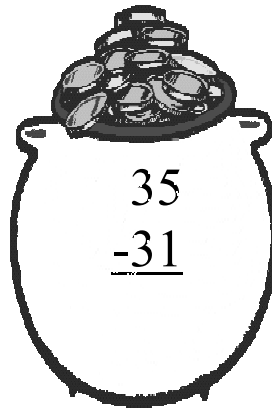
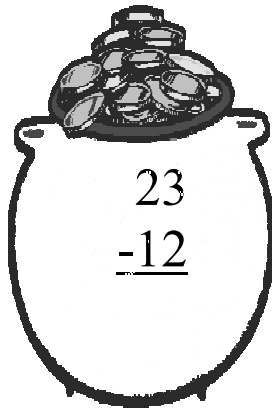

$$\begin{array}{r} 668 \\ +321 \\ \hline 989 \end{array}$$


$$\begin{array}{r} 711 \\ +383 \\ \hline 1094 \end{array}$$


$$\begin{array}{r} 451 \\ +106 \\ \hline 557 \end{array}$$



$$\begin{array}{r} 341 \\ +857 \\ \hline 1198 \end{array}$$

Directions: Some 4th grade students found some gold in Little Meadow Creek. They sold the gold and used the money to buy some things. Do the subtraction problems to see how much they have left.




What would you buy if you found a gold nugget? _____


Directions: Some 4th grade students found some gold in Little Meadow Creek. They sold the gold and used the money to buy some things. Do the subtraction problems to see how much they have left.




$$\begin{array}{r} 23 \\ -12 \\ \hline 11 \end{array}$$




$$\begin{array}{r} 35 \\ -31 \\ \hline 4 \end{array}$$




$$\begin{array}{r} 42 \\ -36 \\ \hline 6 \end{array}$$




$$\begin{array}{r} 370 \\ -123 \\ \hline 247 \end{array}$$




$$\begin{array}{r} 509 \\ -370 \\ \hline 139 \end{array}$$




$$\begin{array}{r} 885 \\ -313 \\ \hline 572 \end{array}$$




$$\begin{array}{r} 781 \\ -205 \\ \hline 576 \end{array}$$




$$\begin{array}{r} 500 \\ -487 \\ \hline 13 \end{array}$$



$$\begin{array}{r} 668 \\ -321 \\ \hline 347 \end{array}$$



$$\begin{array}{r} 711 \\ -383 \\ \hline 328 \end{array}$$



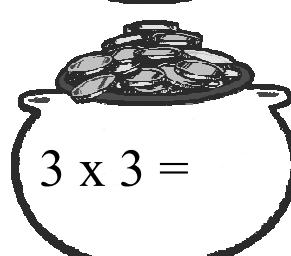
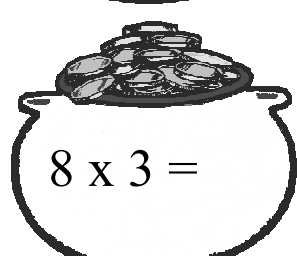
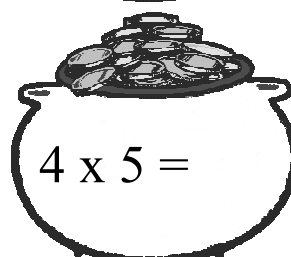
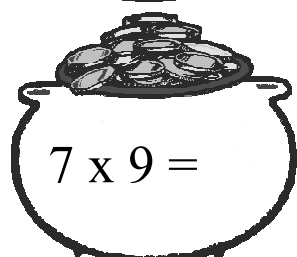
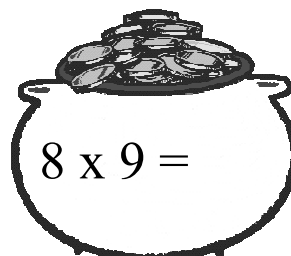
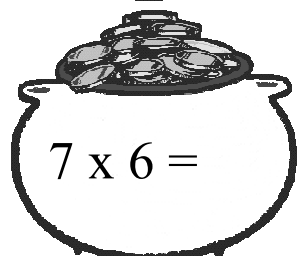
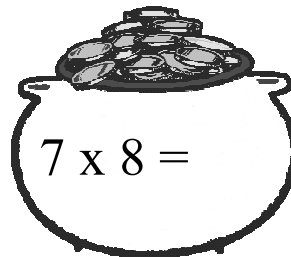
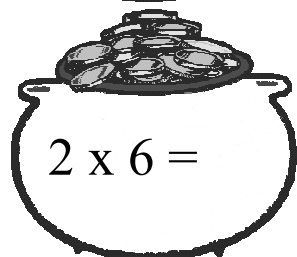
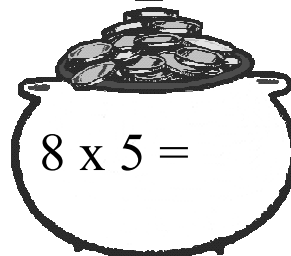
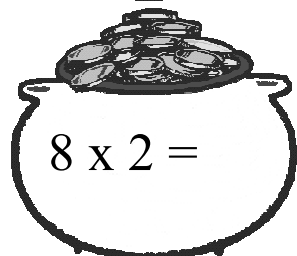
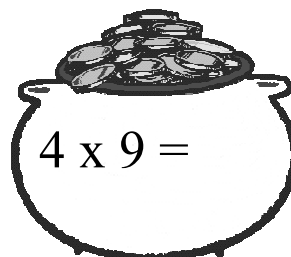
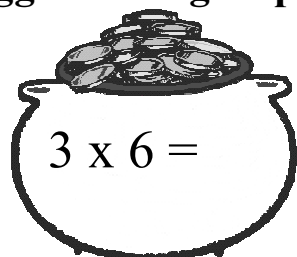
$$\begin{array}{r} 451 \\ -106 \\ \hline 345 \end{array}$$



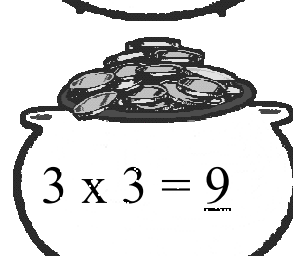
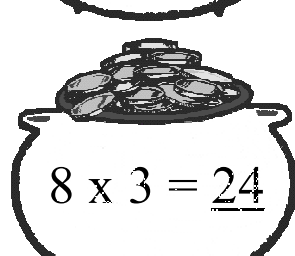
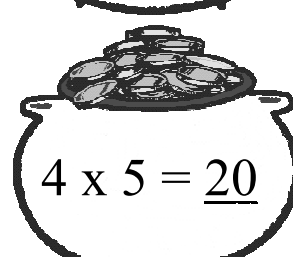
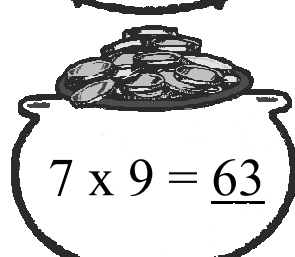
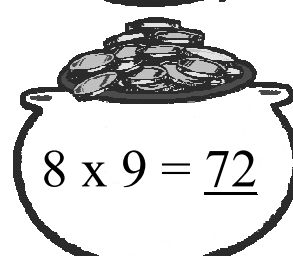
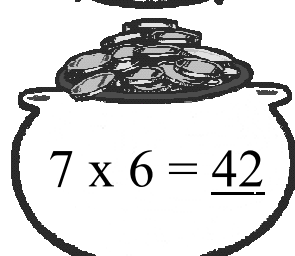
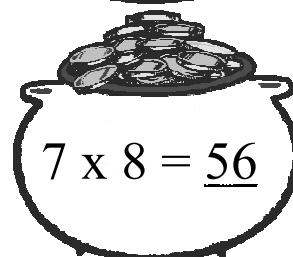
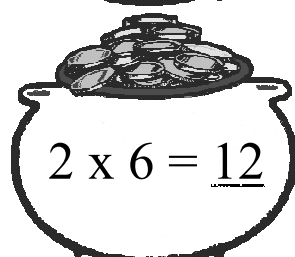
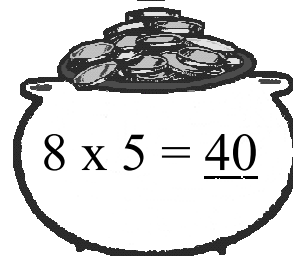
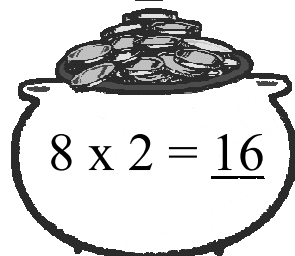
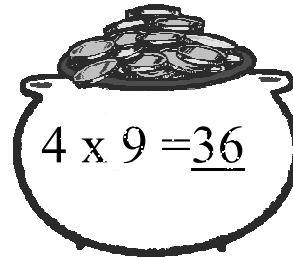
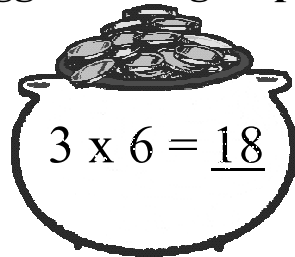
$$\begin{array}{r} 841 \\ -357 \\ \hline 484 \end{array}$$

What would you buy if you found a gold nugget? (answers vary)

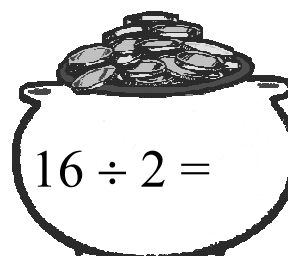
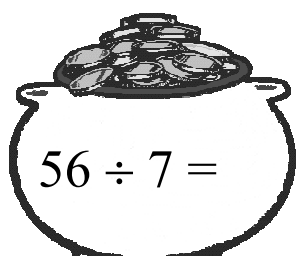
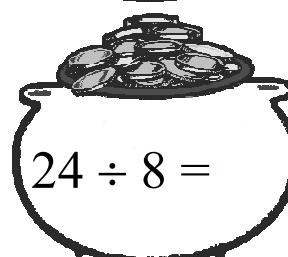
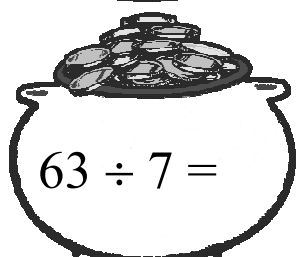
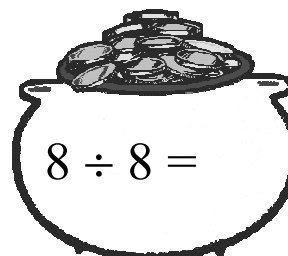
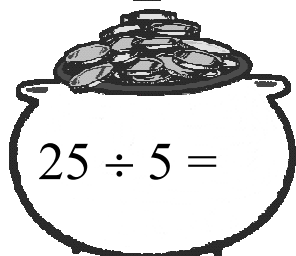
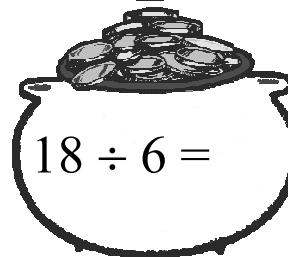
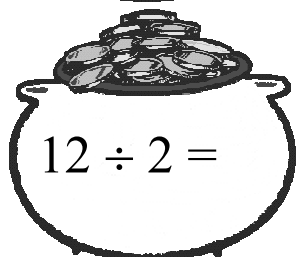
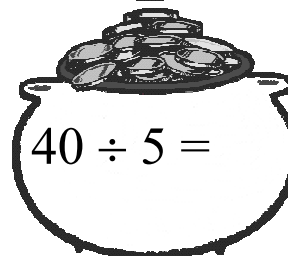
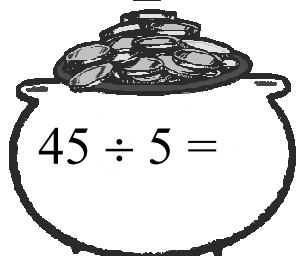
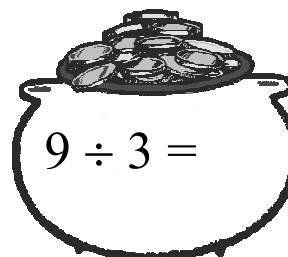
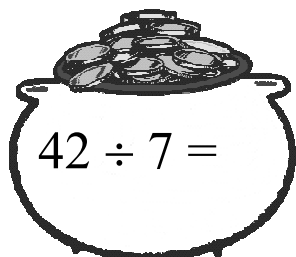
Directions: Several 4th grade students decided to work together to find gold nuggets. Do the multiplication to see how many gold nuggets each group found.



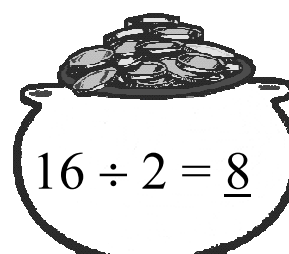
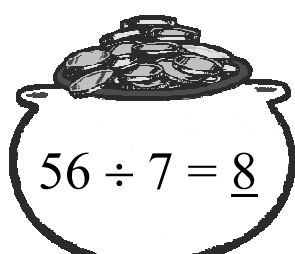
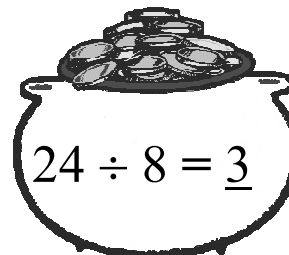
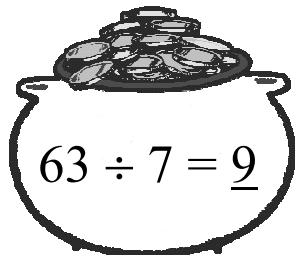
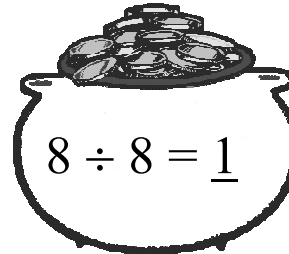
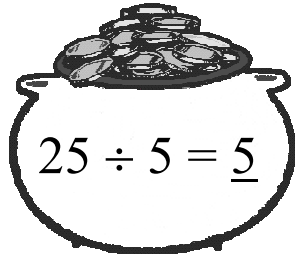
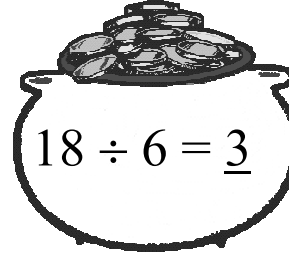
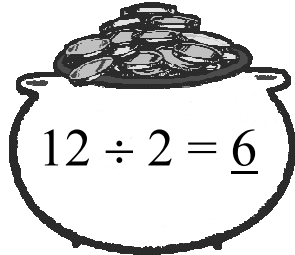
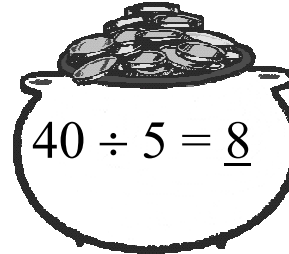
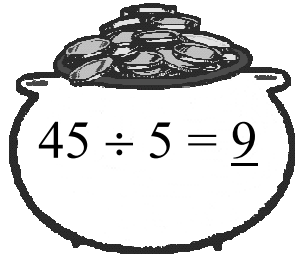
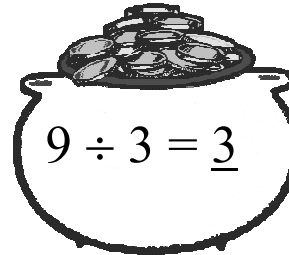
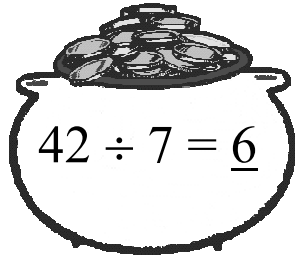
Directions: Several 4th grade students decided to work together to find gold nuggets. Do the multiplication to see how many gold nuggets each group found.

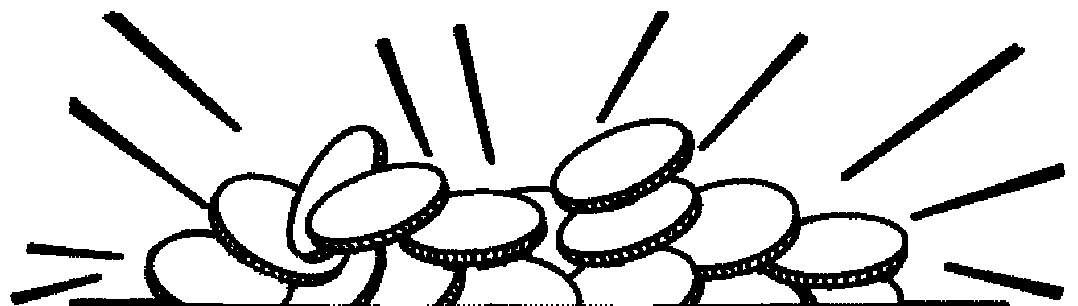


Directions: The same students decided to divide the nuggets evenly. Do the division problems to see how many nuggets each student has.



Directions: The same students decided to divide the nuggets evenly. Do the division problems to see how many nuggets each student has.





Mathematics

Nugget 6: Math Games

The first activity has students practice using calculators. Each computation spells a word which answers a question related to gold. In the second game, students use multiplication to crack the code.

- Calculator Math
- Secret Code

Calculator Math

Directions: Complete each problem using a calculator, then invert the calculator to read the answer to each riddle.

1. What was the size of Conrad Reed's nugget? $\begin{array}{r} 147 \\ +471 \\ \hline \end{array}$ _____

2. In 1802, Reed did this with his doorstep. $\begin{array}{r} 2486 \\ +5249 \\ \hline \end{array}$ _____

3. What does John Reed do when he finds out the nugget's true value? $\begin{array}{r} 2789.12 \\ +3016.22 \\ \hline \end{array}$ _____

4. The expression "It ain't worth a _____ of beans" might trace back to the tale of John's wife, Sally, after he used his money to buy her coffee beans and a new dress. $\begin{array}{r} 1102 \\ \times 7 \\ \hline \end{array}$ _____

5. After Reed discovered he had been cheated, he settled with his _____ . $\begin{array}{r} 750386 \\ -214879 \\ \hline \end{array}$ _____

Calculator Math

Directions: Complete each problem using a calculator, then invert the calculator to read the answer to each riddle.

- | | | |
|--|----------------------------|----------------|
| 1. What was the size of Conrad Reeds nugget? | 147
<u>+471</u> | <u>BIG</u> |
| 2. In 1802, Reed did this with his doorstep. | 2486
<u>+5249</u> | <u>SELL</u> |
| 3. What does John Reed do when he finds out the nugget's true value. | 2789.12
<u>+3016.22</u> | <u>HE SOBS</u> |
| 4. The expression "It ain't worth a _____ of beans" might trace back to the tale of John's wife, Sally, after he used his money to buy her coffee beans and a new dress. | 1102
<u>x 7</u> | <u>HILL</u> |
| 5. After Reed discovered he had been cheated he settled with his _____. | 750386
<u>-214879</u> | <u>LOSSES</u> |

Secret Code

Directions: Use your multiplication facts to complete these problems. Then on the line below the problem, decode the secret fact about the Reed Gold Mine.

A	18	B	24	C	32	D	12	E	20	F	49	G	40
H	9	I	36	J	8	K	16	L	30	M	26	N	35
O	27	P	48	R	63	S	81	T	64	U	72	V	84

$$\begin{array}{r} 4 \quad 5 \\ \underline{\times 9} \quad \underline{\times 7} \end{array}$$

$$\begin{array}{r} 6 \quad 9 \quad 5 \quad 2 \quad 12 \quad 5 \\ \underline{\times 3} \quad \underline{\times 9} \quad \underline{\times 6} \quad \underline{\times 9} \quad \underline{\times 7} \quad \underline{\times 4} \end{array}$$

_____ **1804,** _____

$$\begin{array}{r} 7 \quad 3 \quad 13 \quad 10 \quad 3 \\ \underline{\times 5} \quad \underline{\times 6} \quad \underline{\times 2} \quad \underline{\times 2} \quad \underline{\times 4} \end{array}$$

$$\begin{array}{r} 6 \quad 4 \quad 8 \quad 10 \quad 9 \\ \underline{\times 8} \quad \underline{\times 5} \quad \underline{\times 8} \quad \underline{\times 2} \quad \underline{\times 7} \end{array}$$

$$\begin{array}{r} 7 \quad 9 \quad 8 \quad 5 \quad 4 \\ \underline{\times 7} \quad \underline{\times 3} \quad \underline{\times 9} \quad \underline{\times 7} \quad \underline{\times 3} \end{array}$$

$$\begin{array}{r} 8 \quad 3 \quad 10 \\ \underline{\times 8} \quad \underline{\times 3} \quad \underline{\times 2} \end{array}$$

$$\begin{array}{r} 8 \quad 4 \quad 5 \quad 10 \quad 4 \quad 9 \quad 8 \\ \underline{\times 3} \quad \underline{\times 9} \quad \underline{\times 8} \quad \underline{\times 4} \quad \underline{\times 5} \quad \underline{\times 9} \quad \underline{\times 8} \end{array}$$

$$\begin{array}{r} 5 \quad 9 \quad 10 \quad 20 \quad 4 \quad 8 \\ \underline{\times 7} \quad \underline{\times 8} \quad \underline{\times 4} \quad \underline{\times 2} \quad \underline{\times 5} \quad \underline{\times 8} \end{array}$$

at Reed Gold Mine.

Secret Code

Directions: Use your multiplication facts to complete these problems. Then on the line below the problem, decode the secret fact about the Reed Gold Mine.

A	18	B	24	C	32	D	12	E	20	F	49	G	40
H	9	I	36	J	8	K	16	L	30	M	26	N	35
O	27	P	48	R	63	S	81	T	64	U	72	V	84

$$\begin{array}{r} 4 \quad 5 \\ \times 9 \quad \times 7 \\ \hline 36 \quad 35 \end{array}$$

$$\begin{array}{r} 6 \\ \times 3 \\ \hline 18 \end{array}$$

$$\begin{array}{r} 9 \quad 5 \quad 2 \quad 12 \quad 5 \\ \times 9 \quad \times 6 \quad \times 9 \quad \times 7 \quad \times 4 \\ \hline 81 \quad 30 \quad 18 \quad 84 \quad 20 \end{array}$$

I N **1804,** A S L A V E

$$\begin{array}{r} 7 \quad 3 \quad 13 \quad 10 \quad 3 \\ \times 5 \quad \times 6 \quad \times 2 \quad \times 2 \quad \times 4 \\ \hline 35 \quad 18 \quad 26 \quad 20 \quad 12 \end{array}$$

$$\begin{array}{r} 6 \quad 4 \quad 8 \quad 10 \quad 9 \\ \times 8 \quad \times 5 \quad \times 8 \quad \times 2 \quad \times 7 \\ \hline 48 \quad 20 \quad 64 \quad 20 \quad 63 \end{array}$$

N A M E D P E T E R

$$\begin{array}{r} 7 \quad 9 \quad 8 \quad 5 \quad 4 \\ \times 7 \quad \times 3 \quad \times 9 \quad \times 7 \quad \times 3 \\ \hline 49 \quad 27 \quad 72 \quad 35 \quad 12 \end{array}$$

$$\begin{array}{r} 8 \quad 3 \quad 10 \\ \times 8 \quad \times 3 \quad \times 2 \\ \hline 64 \quad 9 \quad 20 \end{array}$$

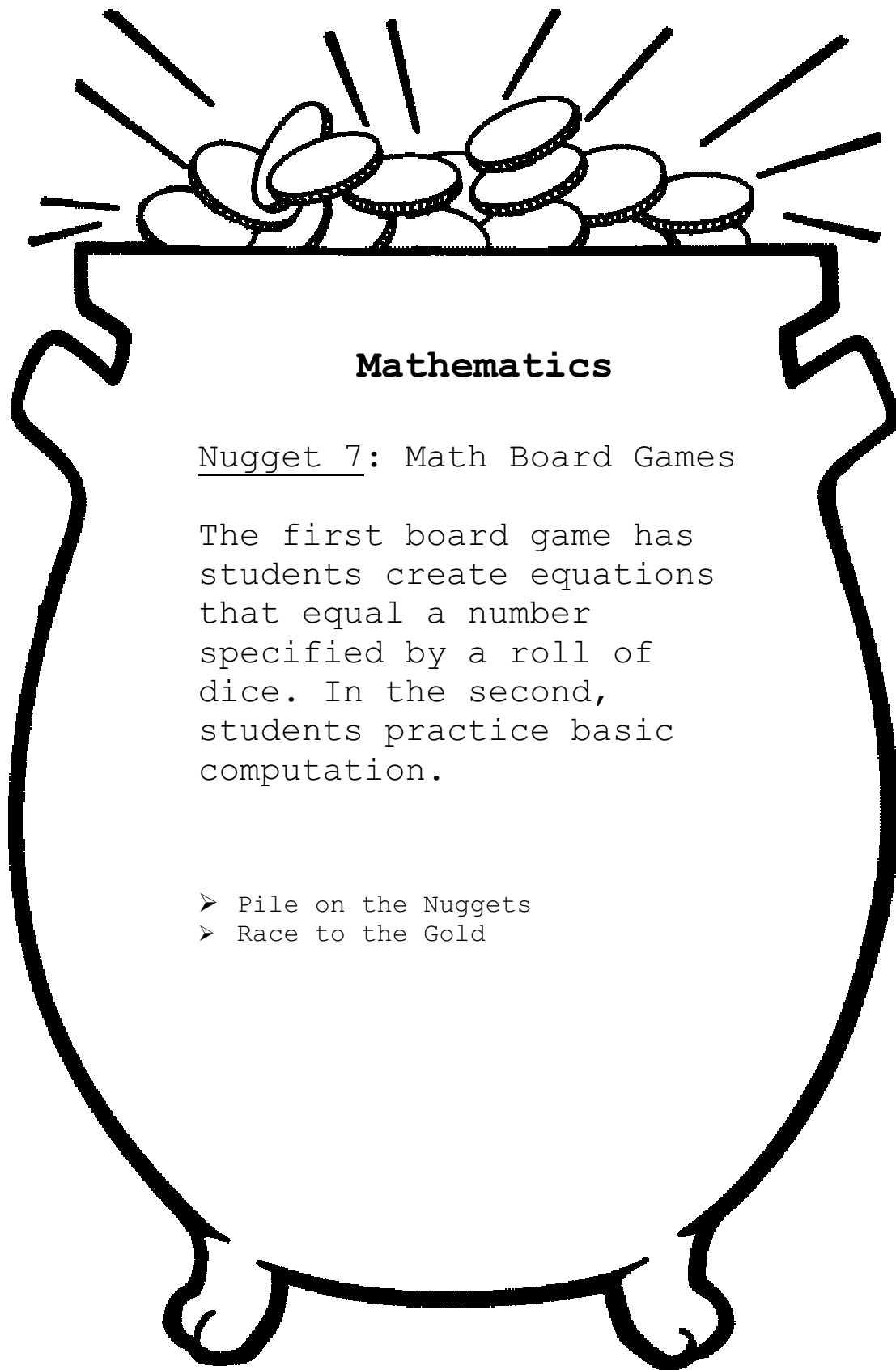
F O U N D T H E

$$\begin{array}{r} 8 \quad 4 \quad 5 \quad 10 \quad 4 \quad 9 \quad 8 \\ \times 3 \quad \times 9 \quad \times 8 \quad \times 4 \quad \times 5 \quad \times 9 \quad \times 8 \\ \hline 24 \quad 36 \quad 40 \quad 40 \quad 20 \quad 81 \quad 64 \end{array}$$

$$\begin{array}{r} 5 \quad 9 \quad 10 \quad 20 \quad 4 \quad 8 \\ \times 7 \quad \times 8 \quad \times 4 \quad \times 2 \quad \times 5 \quad \times 8 \\ \hline 35 \quad 72 \quad 40 \quad 40 \quad 20 \quad 64 \end{array}$$

B I G G E S T N U G G E T

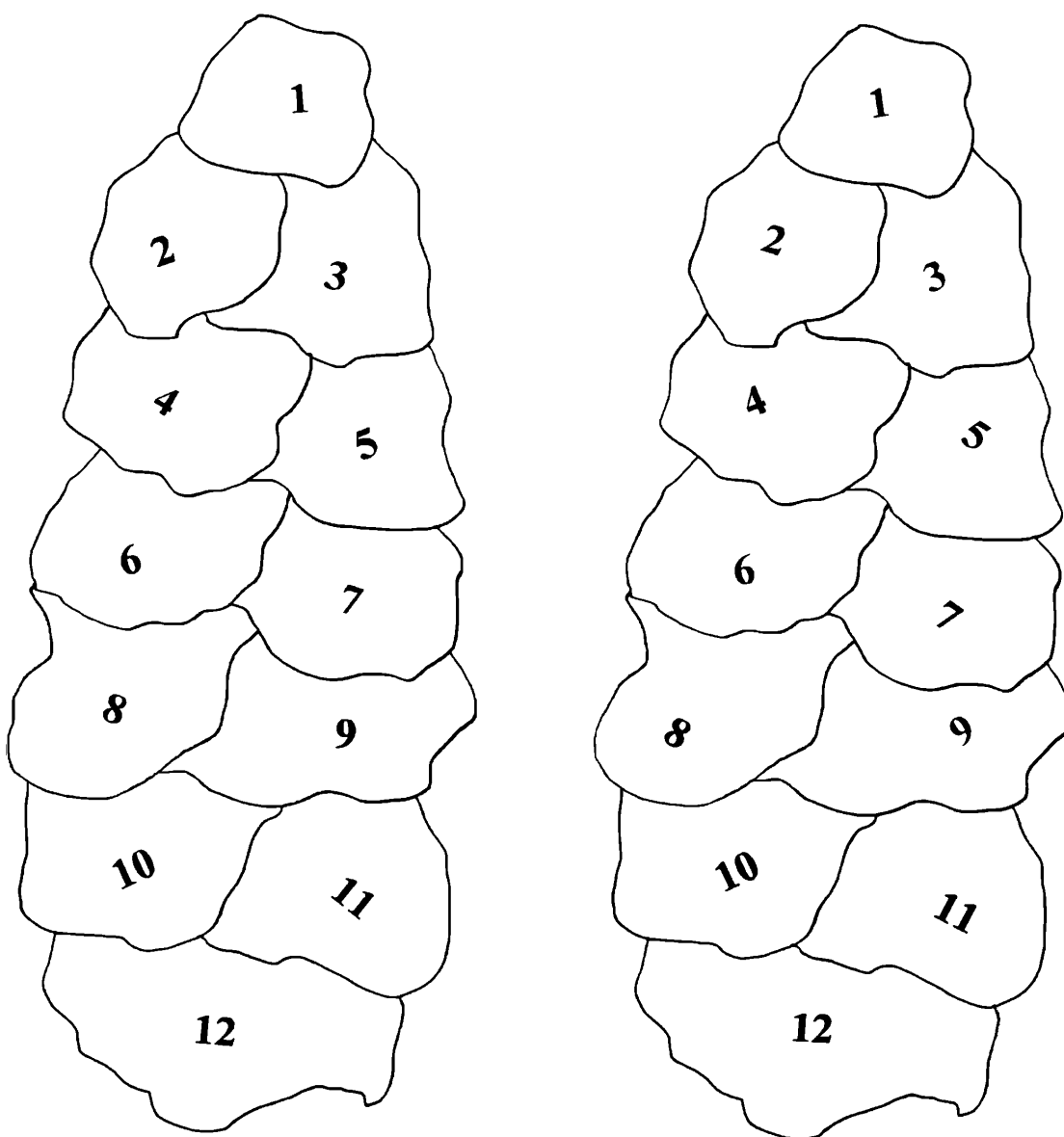
at Reed Gold Mine.



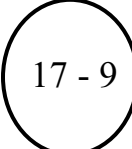
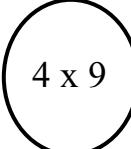
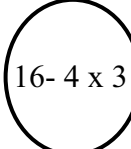
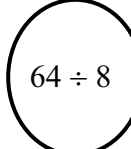
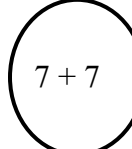
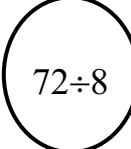
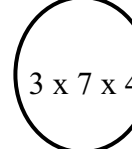
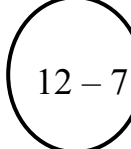
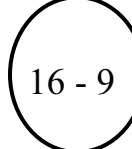
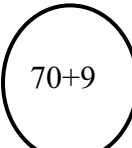

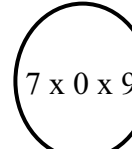
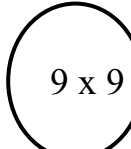
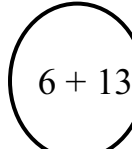
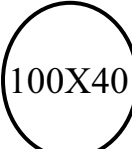

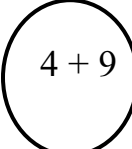
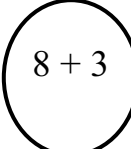
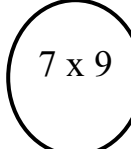

Pile on the Nuggets

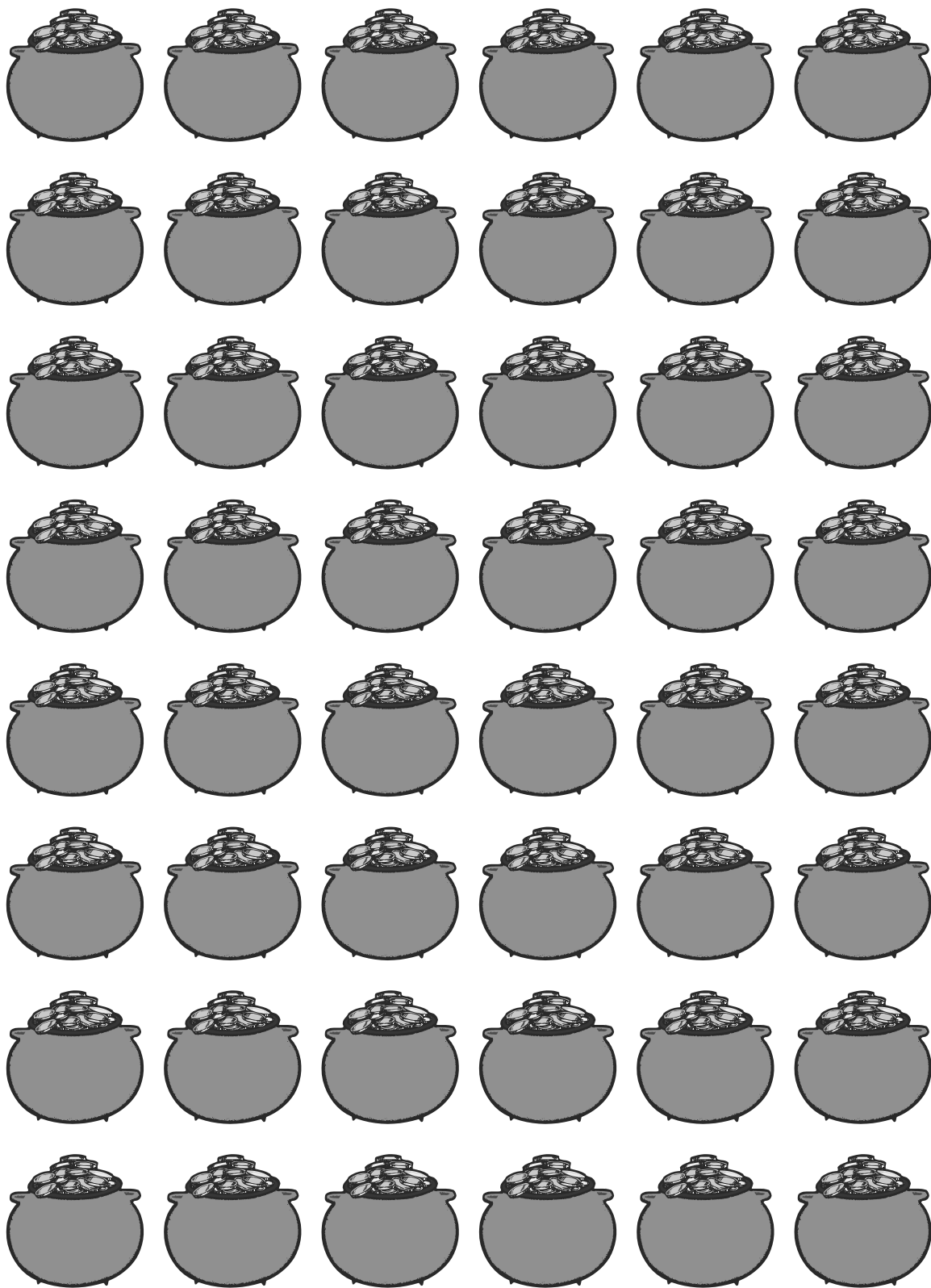
Materials: One Game Board
Pair of Dice
Two Different Color Markers

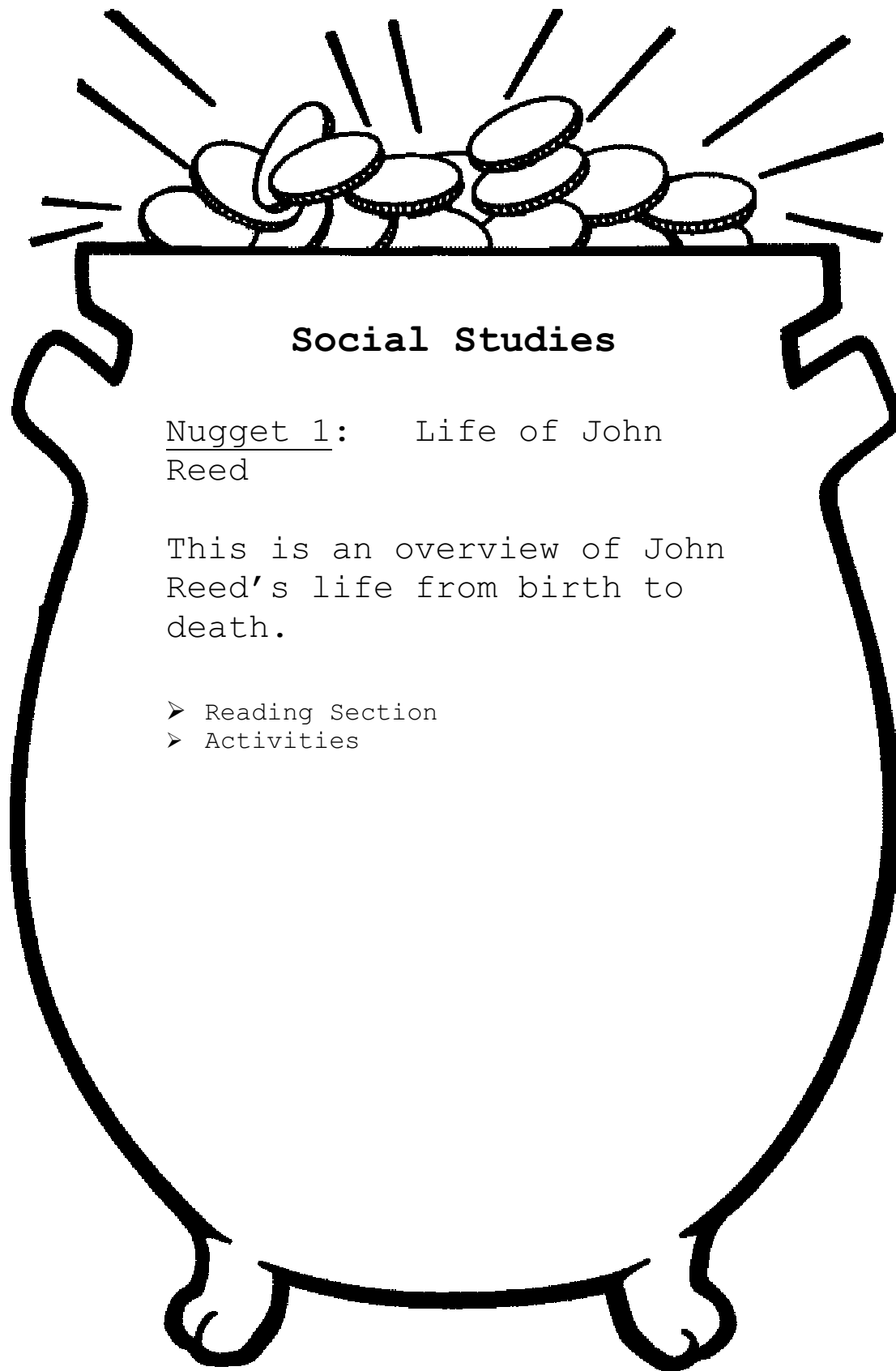
Roll the dice. Use any operation with the two numbers you rolled to match a number from your nugget piles. Then color in that number. The first one with all the nuggets colored wins. (Example: dice roll to 2 and 3; $2+3=5$ color in five OR $2 \times 3=6$ color in 6)



Race to the Gold

Start	 17 - 9	 4 x 9	 16 - 4 x 3	Go Back 3	 64 ÷ 8	 7 + 7
	Object: Everyone must reach the pot of gold. The player with the most gold chips at the end is the winner.					Roll Again
Go to Start	 72 ÷ 8	Lose a Gold Chip	 3 x 7 x 4	 12 - 7	 16 - 9	
 70 + 9	Materials: Gameboard Markers Cut out gold pieces or you may use counters, chips, pennies, etc.					
 8X7	Go Ahead 4	Take a Chip from Someone	 7 x 0 x 9	 9 x 9	 6 + 13	
 100X40	Directions: Player One rolls the die and moves forward the number of spaces. If a math problem appears in the coin, they must answer it correctly to receive a gold pot. Play continues with Player Two. If a player lands on a square, follow the directions in that square.				 6X13	
Go Ahead 4					Lose 2 Gold Chips	
 4 + 9	 8 + 3	Lose 2 Gold Chips	Lose a Gold Chip	 7 x 9		





The Life of John Reed

Johannes Ried, better known as John Reed, is a mysterious and interesting character. Because there are not many records concerning his background, there are lots of uncertainties regarding his life. However, church records, military records, and county court documents do tell us much about his life.

According to a military record, Johannes Ried was originally from a small, poor town in Germany called Appenfeld. However, Raboldshausen is most commonly referred to as the village of his birth. A church record confirms the date as April 14, 1759. Johannes was born as an illegitimate child (born of parents who were not married) to Anna Elisabeth Ried (mother) and Johann Jakob Helmerich (father). Eventually, Anna married Adam Henrich Hahn who became Johannes's stepfather. Once he began living in America, Johannes Ried took the Anglicized name of John Reed.

As John grew older, he became involved in the military. He served in Company 2 of the Garrison Regiment von Wissenbach that was part of the Hessian Militia. It is believed that Reed arrived in America as a replacement recruit. He was part of the patrols that performed military examinations and protected missions that provided food for troops and livestock maintained inside the British lines. According to military records, Reed deserted his post on June 21, 1782, somewhere outside of Savannah, Georgia. This was a dangerous feat because a group known as the Tory Militia, including Native Americans and African Americans, conducted search parties looking for deserters. When found, they could return to their post where they were usually punished severely for deserting or, if they were not willing to return, they were killed and their scalps were taken back to the military leaders. Luckily for Reed, however, it is believed that some individual Salzburgers

helped their fellow nationals who spoke German escape across the Savannah River into the backwoods of South Carolina. From there, he eventually made his way to the North Carolina area, but it is not known whether he traveled alone or with someone.

In the fall of 1782, it is believed that John Reed married Sarah “Sally” Kiser. They later had nine children including Henry (1783), Frances (1785), Conrad (1787), John Jr. (1790), George (1792), Elizabeth (1794), Catherine (1797), Mary “Polly” (1800), and Martha “Patsy” (1803). These children then had their own children, totaling 68 grandchildren for John and Sarah Reed.

Reed and his family lived in “Upper” Mecklenburg County, which is in present-day Cabarrus County. They lived on Mansion Hill, which is located about a mile south of the modern Reed Gold Mine visitor center. Reed was a farmer who became a very successful businessman later. However, he is thought to have been illiterate (could not read or write) because he always signed his deeds during land transactions with an X. Schools were not available near the Reed family, so it is not known how educated his children were either. The males, who could sign their names, were probably taught by other family or friends. Furthermore, John Reed owned as many as eighteen slaves who helped inside and outside the mansion and at the gold mine.

Even though Reed’s life was dedicated to farming, his lifestyle changed one day when his second son, Conrad, went to Little Meadow Creek. At the creek in 1799, Conrad found a mysterious yellow rock. After Conrad showed it to his father, John Reed took it to a silversmith who was unsure of what it was, so this “rock” ended up being a doorstop for two to three years. After this time, Reed took it to another silversmith where he discovered the “rock” was really 17 pounds of almost pure gold. He sold the gold for \$3.50

to the silversmith, not understanding the value of gold. The story goes that he later recovered an additional \$1,200 from that jeweler.

This discovery changed Reed's life even though he remained loyal to farming. Mining began taking place on Reed's land. John soon formed a partnership with Rev. James Love, Martin Phifer, Jr., and his brother-in-law Frederick Kiser. Together, using slave labor, they worked the mines, splitting the "finds" equally. After many years of mining, some other partners were added and much of the family became more involved. Yet as more became involved, conflicts regarding the gold being discovered became more common. After one family argument, the mine was closed by court order between 1834 and 1844.

Throughout his time with the mine, and despite his lack of capital (money or property) when first married, Reed engaged in 21 documented land transactions in Cabarrus County. During these transactions, Reed bought 2,091 acres and disposed of 1,046 acres to sons and sons-in-law of which 986 acres were sold. He also sold 250 more to John Barbee, leaving him 795 acres at the time of his death.

In 1842, at age 82, John Reed became a citizen of the United States. Not long after that on May 28, 1845, he died at age 86, just eighteen months after his wife died. According to his will, the mine and mining property were to be sold at an auction. The mine changed hands a number of times. In the 1890s, the land was sold to the Kelly family who later sold it in 1971 to the State of North Carolina. Today, Reed Gold Mine is still owned by the state and is a historic site that many people visit every year.

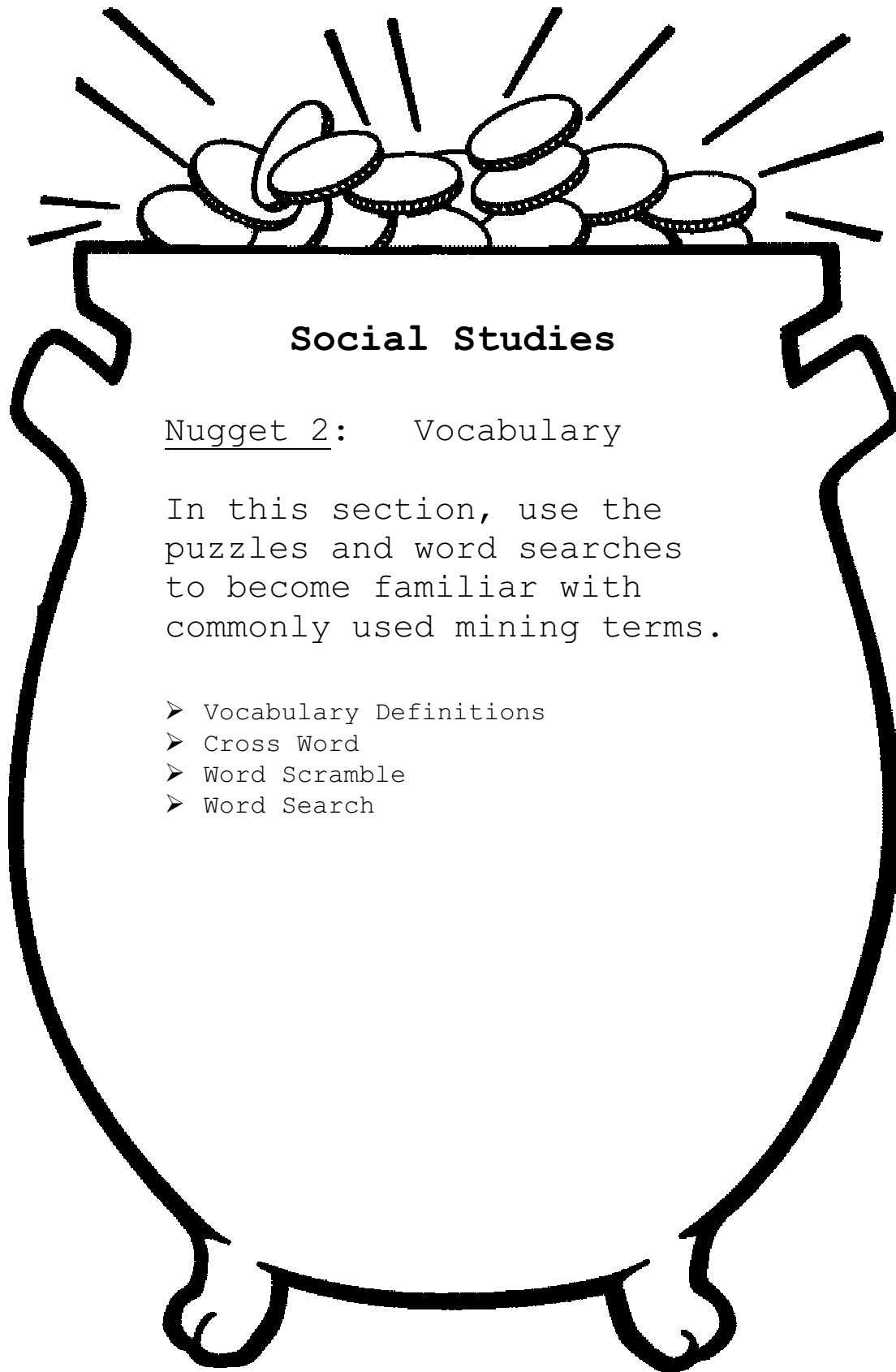
**Information based on [A Hessian Immigrant finds Gold: The Story of John Reed](#)
by M. A. Schwalm*

After reading “The Life of John Reed”, choose one of the following to complete.

- ❖ Research your family’s history. Write about your findings in a report or create a family tree.

- ❖ Choose one person you are interested in. Read a book or other sources about that person. Then write a report and construct a project about the person’s family history.

- ❖ Choose any group who settled in your county and research their history. Write a report including information such as answers to questions like, “What brought them to North Carolina?” ,“What did they do?” ,and “How did they influence their area?”



Social Studies

Nugget 2: Vocabulary

In this section, use the puzzles and word searches to become familiar with commonly used mining terms.

- Vocabulary Definitions
- Cross Word
- Word Scramble
- Word Search



WHAT IS IT ALL ABOUT?

Define these terms using information from the Reed Gold Mine Website, the Reed Gold Mine Handbook, and your visit to Reed Gold Mine.

Acre	Adit	Amalgamation	Arrastra
Assay	Chilean mill	Crosscut	Drift
Excavation	Gallery	Foot wall	Geologist
Hanging wall	Immigrants	Investments	Kibble
Ore	Pan	Placer mining	Proprietor
Prospecting	Rural	Shaft	Stamp Mill
Stope	Vein	Whim	Windlass

Suggested projects for use with definitions:

1. Imagine you are a miner at Reed Gold Mine. Every night you write in your journal about that day's experience. Write a journal entry, using at least half of the vocabulary, explaining what happened during one of your workdays.
2. As you visit the mine or the website, look and listen to how these terms are used when they are found in the movie, museum, or tour.
3. Using flash cards or some other means, have students give the definitions as cards are shown or show the definitions so they can respond with the correct term.
4. Create a board or card game based on the vocabulary, mining methods, and history the students learned about while at Reed.

REED GOLD MINE VOCABULARY TRIVIA

Fill in the correct answer

1. Which of the following processes uses mercury?
 - chlorination
 - cyanidation
 - amalgamation
 - radiation
2. You would be able to crush gold-bearing ore in which of the following?
 - Chilean mill
 - arrastra
 - Stamp mill
 - all of the above
3. What is a kibble?
 - ore bucket
 - sturdy rope
 - lazy miner
 - miner's drink
4. John Reed was an _____ from Germany.
 - ancestor
 - immigrant
 - teacher
 - artist
5. In 1799, the first authenticated gold was found in the United States in the Piedmont region of North Carolina. What does authenticated mean?
 - confirmed to be real
 - fake
 - systematic
 - speculated
6. At first, the part-time process of prospecting the creek was referred to as _____ and was considered primitive and unsystematic.
 - jaw crushing
 - speculation
 - placer mining
 - radiation
7. The proprietors realized the substantial profit they could make through mining for gold. What is a proprietor?
 - owner
 - buyer
 - property
 - banker
8. Which of the following means "a vertical entrance to a mine cut downward from the surface"?
 - adit
 - drift
 - wince
 - shaft
9. A person who studies the earth's crust, the layers of which it is composed, and its history is call a _____.
 - miner
 - meteorologist
 - geologist
 - inventor
10. Concentrations of gold were found in soil and creek sediments after the weathering of gold-quartz veins and erosive action took place. What does this mean?
 - much thinking about gold occurred
 - large amounts of gold were brought together in one place
 - equipment was used for mining
 - fake pieces of gold known as pyrite were found

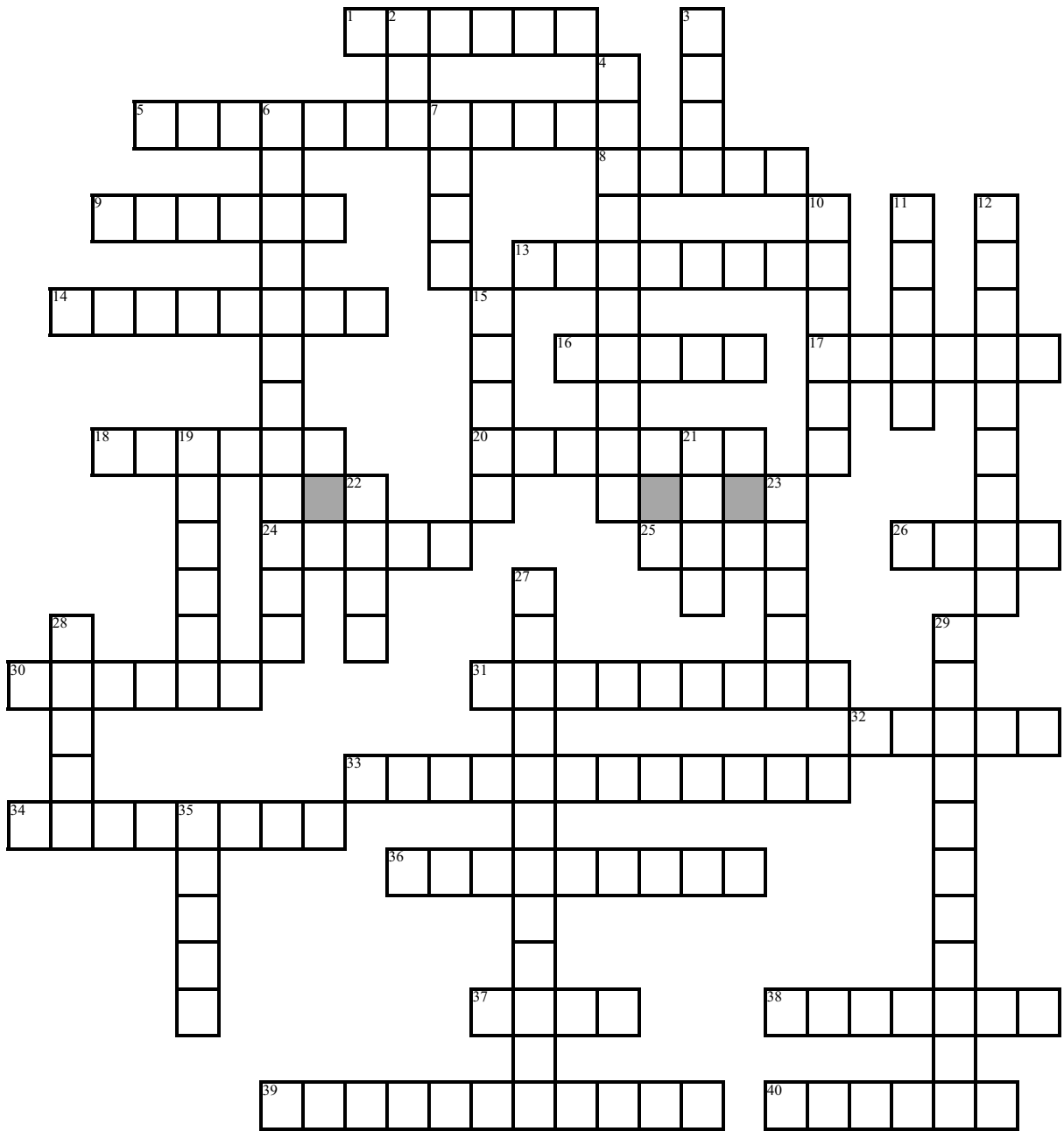
Answer Key

REED GOLD MINE VOCABULARY TRIVIA

Fill in the correct answer

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"First Gold in the United States" Reed Gold Mine Crossword Puzzle



- | | | | | | |
|--------|--------------|----------------|----------|--------------|-------------|
| Adit | Amalgamation | Arrastra | Assay | Barringer | Bechtler |
| Candle | Chilean Mill | Coins | Cornwall | Drift | Drill |
| Fish | Fools Gold | Foreman | Gangue | Gold | Jaw Crusher |
| Kibble | Linker | Little Meadow | Lode | Mecklenburg | Miner |
| Mint | Nugget | Ore | Panning | Philadelphia | Pick |
| Placer | Quartz | Reed Gold Mine | Rocker | Shaft | Stamp Mill |
| Stope | Veins | Whim | Women | | |

Clues to Reed Gold Mine Crossword Puzzle

ACROSS

1. Device used for washing earth and separating gold
5. Site of the first United States Mint
8. They commonly operated the rockers
9. White rock that sometimes contains gold
13. Area of England where many experienced miners came from
14. He started the first mint in North Carolina
16. To test quartz samples for gold
17. Early source of light worn on miners' caps
18. Conrad found one that weighed 17 pounds
20. Supervisor of a mine
24. Tool used to make blasting holes
25. Place where gold was made into coins
26. The streets of Charlotte are paved with
30. Name of an adit and shaft at Reed Gold Mine
31. Montgomery County man who first discovered gold in quartz
32. Gold was found in underground stripes of quartz called _____
33. First gold mine in the United States
34. Drag mill
36. Large machine used to crush ore
37. Digging tool used in underground mining
38. A common type of placer mining
39. Nearby county once containing over 100 mines
40. Iron bucket used as an elevator to carry men and ore

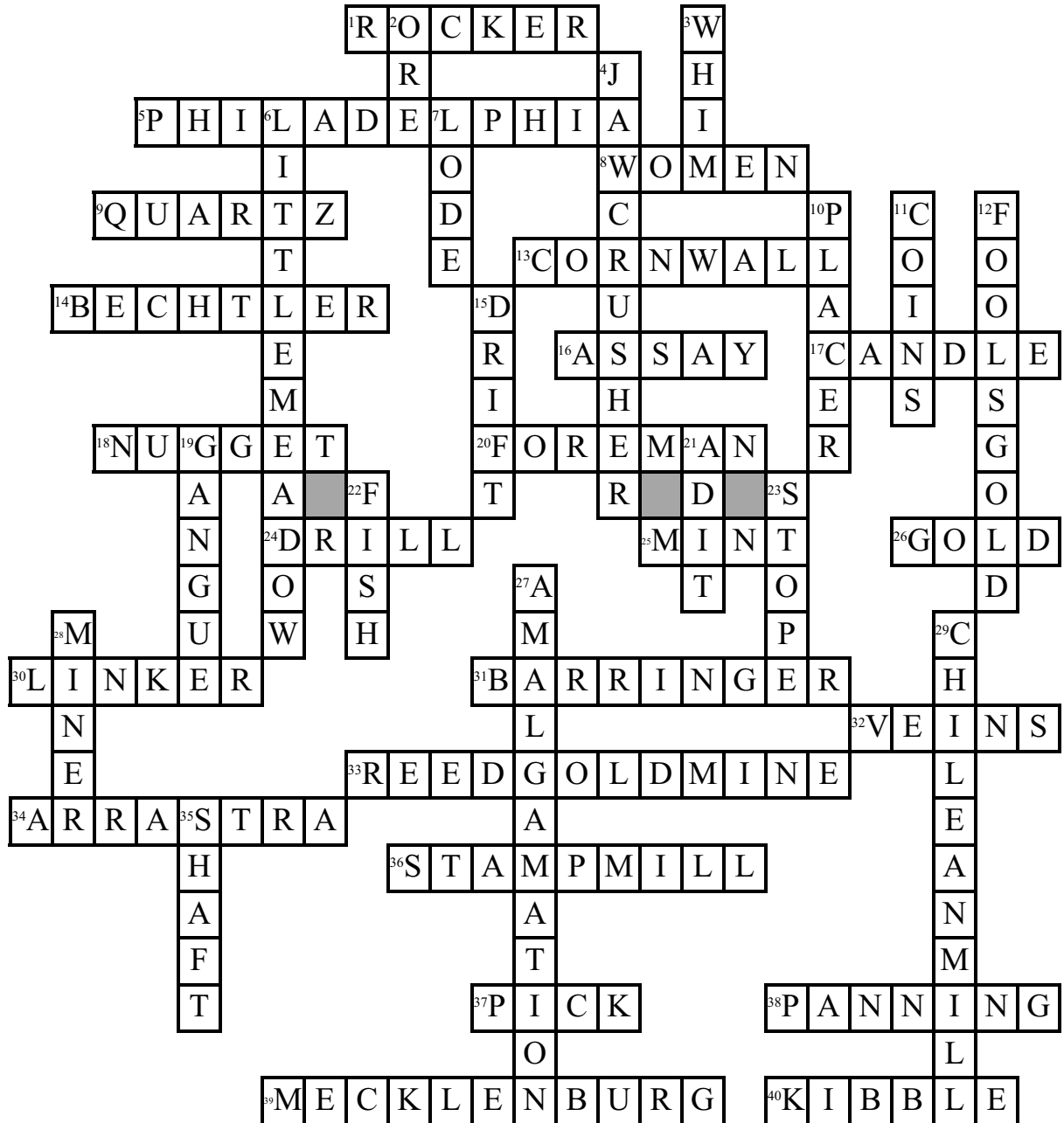
DOWN

2. Rock containing gold or other minerals
3. Hoisting device used to raise ore buckets
4. Breaks ore into smaller pieces for the mill
6. Creek where Conrad found gold
7. Underground mining
10. Surface mining
11. Gold was sometimes made into this form of currency
12. Another name for pyrite
15. Tunnel dug following a quartz vein
19. Another term for bull quartz
21. A horizontal entrance to a mine
22. What Conrad was looking for when he struck gold
23. Underground room dug to remove an ore sample
27. Process of extracting gold using mercury
28. Person who digs for gold
29. Ore crusher using large stone wheels
35. Vertical mine entrance

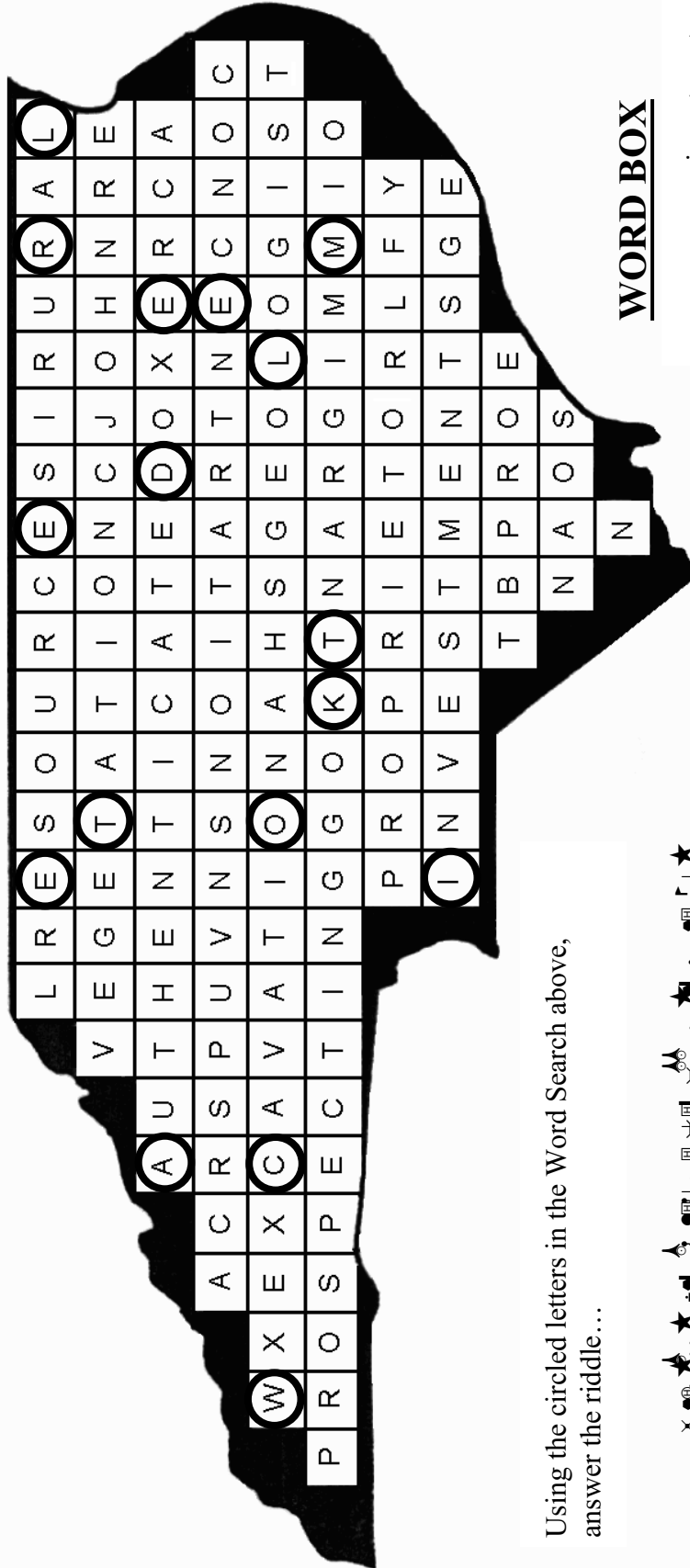


Solution

"First Gold in the United States" Reed Gold Mine Crossword Puzzle



NORTH CAROLINA



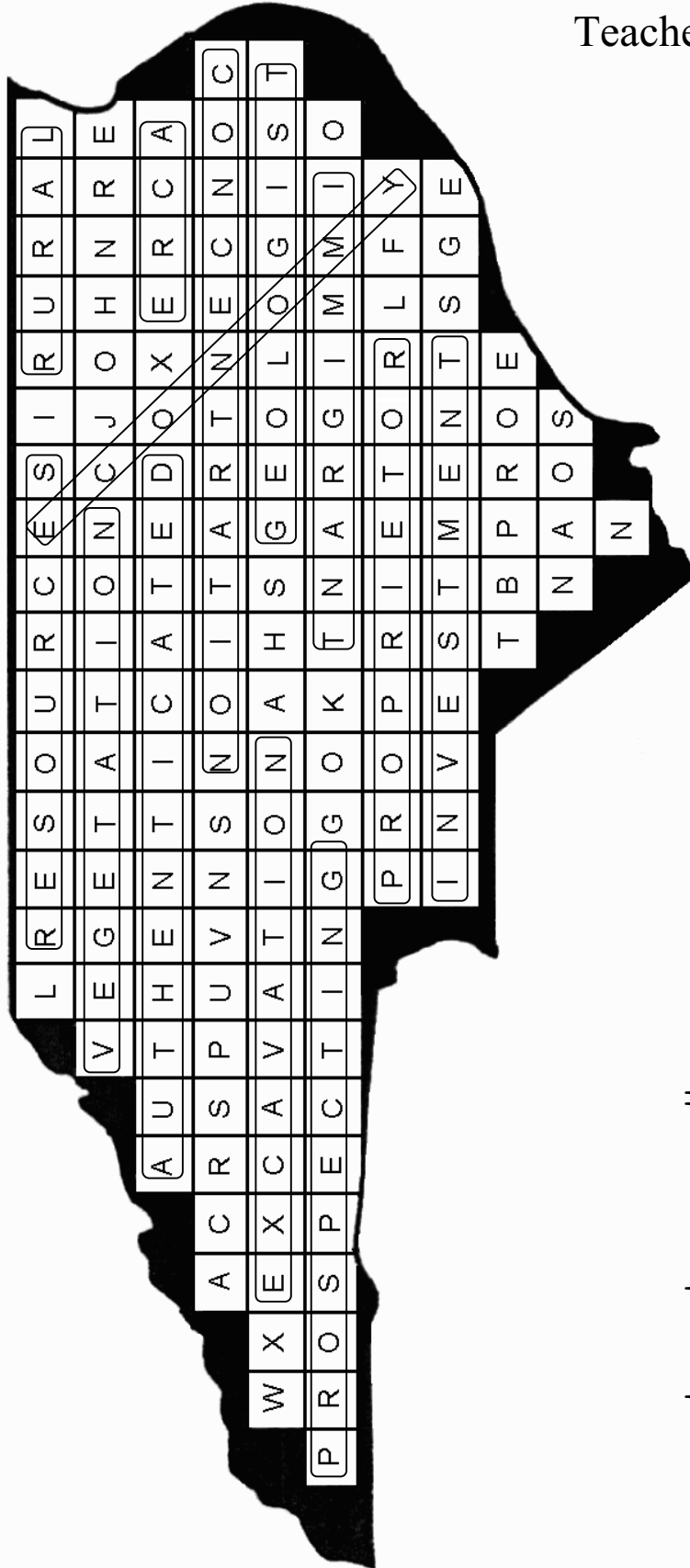
Using the circled letters in the Word Search above, answer the riddle...

WORD BOX

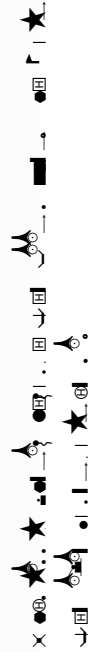
- acre
- authenticated
- concentrations
- economy
- excavation
- geologist
- immigrant
- investment
- proprietor
- prospecting
- resources
- rural
- vegetation



NORTH CAROLINA



Teacher's Key



Little Meadow Creek

Gold Mine Word Scramble

Unscramble the words and match their definitions.

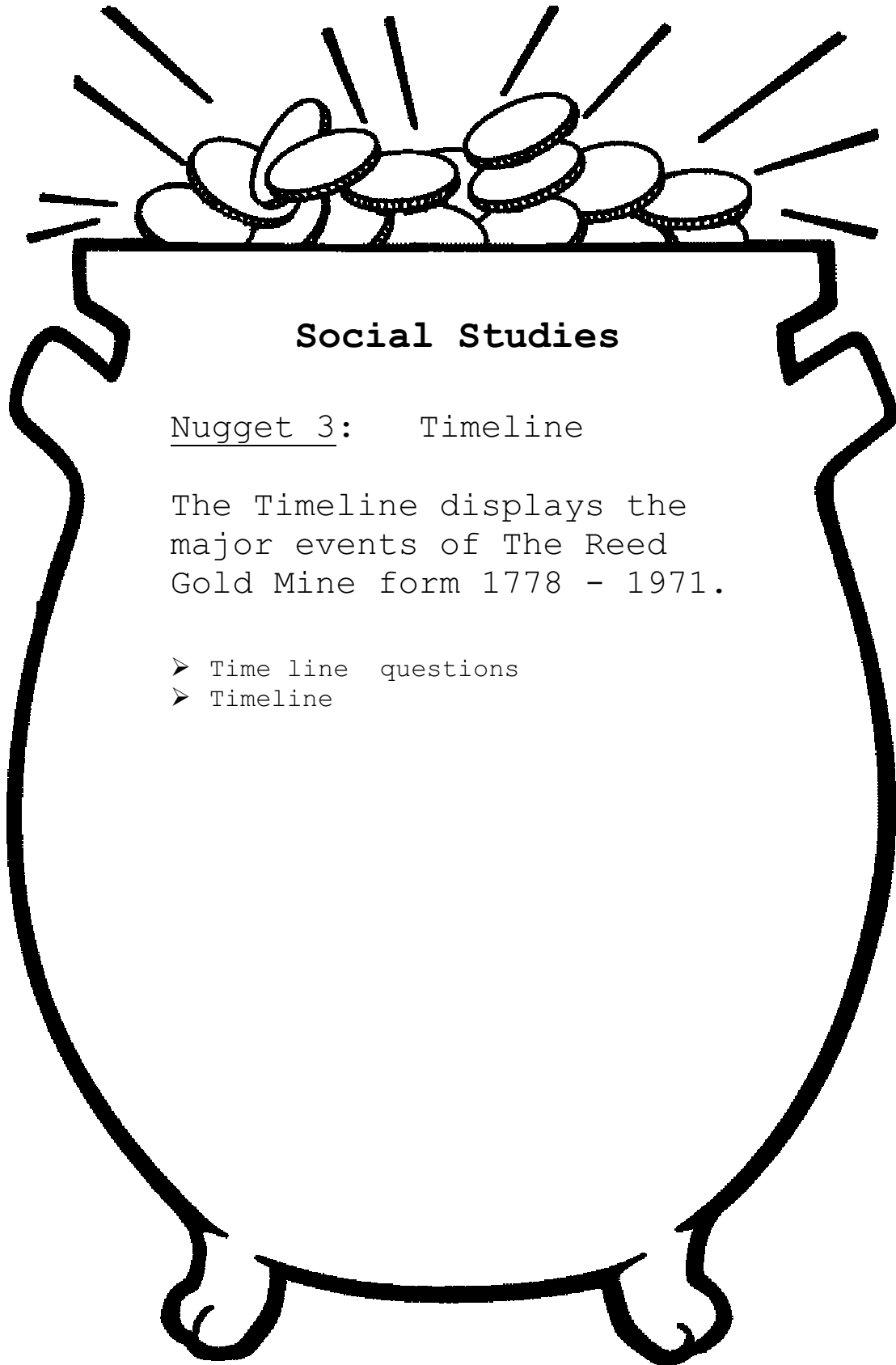
- | | | | |
|-------|--------------|-------|--|
| _____ | 1. EOR | _____ | A. A horizontal entrance to a mine. |
| _____ | 2. IGNNMI | _____ | B. To test ore to find the value and quality of gold |
| _____ | 3. EDED | _____ | C. A chopping tool with a sharp blade head fitted on a long handle. |
| _____ | 4. DLGO | _____ | D. A small piece of metal, usually flat and round, used for money. Also, to make money from metal. |
| _____ | 5. KCIP | _____ | E. A contract showing ownership of a piece of property. |
| _____ | 6. FAHTS | _____ | F. A soft yellow mineral that is found by mining and considered very valuable. |
| _____ | 7. DARRET | _____ | G. Gold in powder form. |
| _____ | 8. APN | _____ | H. A person who digs for valuable minerals. |
| _____ | 9. EGUNTG | _____ | I. The business of removing minerals (gold, coal, silver, copper) from the earth. |
| _____ | 10. DTGDSOLU | _____ | J. A place where gold is made into coins. |
| _____ | 11. ITAD | _____ | K. A solid lump of gold. |
| _____ | 12. RINEM | _____ | L. A rock or mineral which is often the source of valuable metals. |
| _____ | 13. NIVE | _____ | M. A round plate made of tin, in which dirt is washed in order to search for gold. |
| _____ | 14. ZAQRUT | _____ | N. A tool for digging through hard surfaces, made of a curved bar which is sharpened at both ends and attached to a long handle. |
| _____ | 15. XA | _____ | O. A milky white rock which sometimes has gold running through it. |
| _____ | 16. IOCN | _____ | P. A device used to weigh small items. |
| _____ | 17. YAASS | _____ | Q. A vertical opening or tunnel dug into the ground. |
| _____ | 18. LENTUN | _____ | R. A person who buys and sells. |
| _____ | 19. LACSE | _____ | S. An underground passage. |
| _____ | 20. TINM | _____ | T. A stripe or streak of quartz or other ore underground. |

Answer Key

Gold Mine Word Scramble

Unscramble the words and match their definitions.

<u>ORE</u>	1. EOR	<u>11</u>	A. A horizontal entrance to a mine.
<u>MINING</u>	2. IGNNMI	<u>17</u>	B. To test ore to find the value and quality of gold
<u>DEED</u>	3. EDED	<u>15</u>	C. A chopping tool with a sharp blade head fitted on a long handle.
<u>GOLD</u>	4. DLGO	<u>16</u>	D. A small piece of metal, usually flat and round, used for money. Also, to make money from metal.
<u>PICK</u>	5. KCIP	<u>3</u>	E. A contract showing ownership of a piece of property.
<u>SHAFT</u>	6. FAHTS	<u>4</u>	F. A soft yellow mineral that is found by mining and considered very valuable.
<u>TRADER</u>	7. DARRET	<u>10</u>	G. Gold in powder form.
<u>PAN</u>	8. APN	<u>12</u>	H. A person who digs for valuable minerals.
<u>NUGGET</u>	9. EGUNTG	<u>2</u>	I. The business of removing minerals (gold, coal, silver, copper) from the earth.
<u>GOLDDUST</u>	10. DTGDSOLU	<u>20</u>	J. A place where gold is made into coins.
<u>ADIT</u>	11. ITAD	<u>9</u>	K. A solid lump of gold.
<u>MINER</u>	12. RINEM	<u>1</u>	L. A rock or mineral which is often the source of valuable metals.
<u>VEIN</u>	13. NIVE	<u>8</u>	M. A round plate made of tin, in which dirt is washed in order to search for gold.
<u>QUARTZ</u>	14. ZAQRUT	<u>5</u>	N. A tool for digging through hard surfaces, made of a curved bar which is sharpened at both ends and attached to a long handle.
<u>AX</u>	15. XA	<u>14</u>	O. A milky white rock which sometimes has gold running through it.
<u>COIN</u>	16. IOCN	<u>19</u>	P. A device used to weigh small items.
<u>ASSAY</u>	17. YAASS	<u>6</u>	Q. A vertical opening or tunnel dug into the ground.
<u>TUNNEL</u>	18. LENTUN	<u>7</u>	R. A person who buys and sells.
<u>SCALE</u>	19. LACSE	<u>18</u>	S. An underground passage.
<u>MINT</u>	20. TINM	<u>13</u>	T. A stripe or streak of quartz or other ore underground.



Social Studies

Nugget 3: Timeline

The Timeline displays the major events of The Reed Gold Mine form 1778 - 1971.

- Time line questions
- Timeline

Reed Gold Mine Timeline



- 1778 John Reed comes to the Colonies to fight for the British as a German mercenary during the American Revolutionary War.
- 1787 John Reed receives from the state of North Carolina a land grant of 70 acres on Meadow Creek.
- 1799 Reed's son, Conrad, finds a large, shiny yellow rock in Little Meadow Creek.
- 1802 A jeweler in Fayetteville determines that Conrad's yellow rock is really 17 pounds of almost pure gold.
- 1803 John Reed joins three other men Frederick Kizer, Rev. James Love, and Martin Phifer, Jr. forming a mining partnership to search of gold in Little Meadow Creek. Peter, slave of Reed's partner Rev. Love, discovers the largest nugget ever found at Reed. The nugget weighed approximately 28 pounds.
- 1804 The United States Mint in Philadelphia processes \$11,000 in Cabarrus County gold.
- 1806 William Thornton, physician, inventor, and designer of the United States Capitol, purchases on credit 35,000 acres of land near the Reed and establishes the North Carolina Gold Mine Company.
- 1820 Gold is discovered in other counties adjoining Cabarrus.
- 1824 Reed Gold Mine becomes one of the state's three major gold mines, having unearthed an estimated \$100,000 worth of gold.
- 1827 The North Carolina state legislature charts the North Carolina Gold Mining Company.
- 1829 The stamp mill, a wood and iron structure used for crushing ore, makes its appearance in North Carolina.
- 1831 Christopher Bechtler and his son Augustus begin the minting of gold coins in Rutherford County.
John Reed's grandson, Isaac Crayton sinks the first shaft at Reed.
- 1834 A legal dispute begins between the sons and sons-in-law of John Reed over a 13-pound nugget, resulting in a court order for the closing of Reed Gold Mine.
- 1835 Congress votes to establish a branch of the Federal Mint at Charlotte.
- 1837 The Charlotte mint opens for business.
A slave named Jim is thought to be hiding at the Reed.
- 1842 John Reed becomes a U.S. citizen at the age of 82.
- 1845 On May 28, John Reed dies at the age of 86.
- 1854 The Reed Gold and Copper Mining Company fails, and many other mining corporations are either ruined or in financial difficulty.
- 1855 The sheriff of Cabarrus County auctions the Reed Gold Mine.
- 1861 The Charlotte mint closes because of disruptive effects of the Civil War.
- 1895 Oliver Kelly, Warren Kelly and Dr. Justin Lisle purchase Reed Gold Mine.
- 1912 The last underground excavations take place at the Reed Mine.
- 1915 Much work is done in the Carolina mines, and the largest amount of gold is found since 1887.
- 1942 The federal government orders that gold mining be suspended to divert production to national defense during World War II.
- 1966 The Reed is designated a Registered National Historic Landmark.
- 1971 North Carolina acquires the Reed property from the Kelly family.
- 1977 On April 23, Reed Gold Mine State Historic Site opens to the public.

In the Time of Reed Gold Mine

Name _____
Date _____

Fill in the square for the correct answer.

1. What is the range of this timeline?
 - 207 years
 - 3,749 years
 - 199 years
2. Who originally discovered the gold on the Reed's property?
 - John Reed
 - Conrad Reed
 - Rev. James Love
3. How much did the first gold nugget weigh?
 - 17 ounces
 - 17 pounds
 - 27 pounds
4. All of the following *except* _____ were partners with John Reed.
 - Frederick Kizer
 - William Thornton
 - Martin Phifer
5. Who established the North Carolina Gold Mine Company?
 - William Thornton
 - Christopher Bechtler
 - Rev. James Love
6. How many years elapsed between the opening and closing of the Charlotte mint?
 - 36 years
 - 24 years
 - 76 years
7. Why did the federal government stop gold mining in 1942?
 - There was very little gold left to mine.
 - The government wanted to be in control of all gold production in the United States.
 - The United States wanted to decrease gold production in order to increase production of supplies needed for World War II.

8. In which year did the State of North Carolina acquire Reed Gold Mine?
- 1971
 - 1778
 - 1835
9. How many years after John Reed came as a German mercenary, did he die?
- 46 years
 - 67 years
 - 36 years
10. In what year was the first shaft dug at the Reed?
- 1824
 - 1799
 - 1831
11. The jeweler that determined Conrad's rock was gold was located in what town?
- Charlotte
 - Raleigh
 - Fayetteville
12. In 1834, the Reed was closed because of a dispute over a ____ pound nugget.
- 18
 - 28
 - 13
13. Christopher Bechtler and his son began minting gold coins in this county in 1831.
- Cabarrus
 - Rutherford
 - Mecklenburg
14. A wood and iron structure that is used for crushing ore is called a _____.
- pick
 - Stamp mill
 - nugget
15. A slave named _____ found the largest nugget ever discovered at Reed in 1803.
- John
 - Conrad
 - Peter
16. Warren Kelly, Oliver Kelly and Dr. Justin Lisle purchased the Reed in this year.
- 1799
 - 1977
 - 1895

Answer Key
In the Time
of

Name _____

Date _____

Reed Gold Mine

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Activities for Time Lines

I. Read Reed Gold Mine Timeline to gain background knowledge. See Activity entitled “In the Time of Reed Gold Mine” for questions related to the timeline.

II. Choose one of the following activities:

A. Choose a key era from the time line and describe your life and lifestyle. Be sure to include the following:

economy

schools and education

social activities

religion

entertainment

important people

key historical events of the period

B. Research changes in one of the following areas:

population

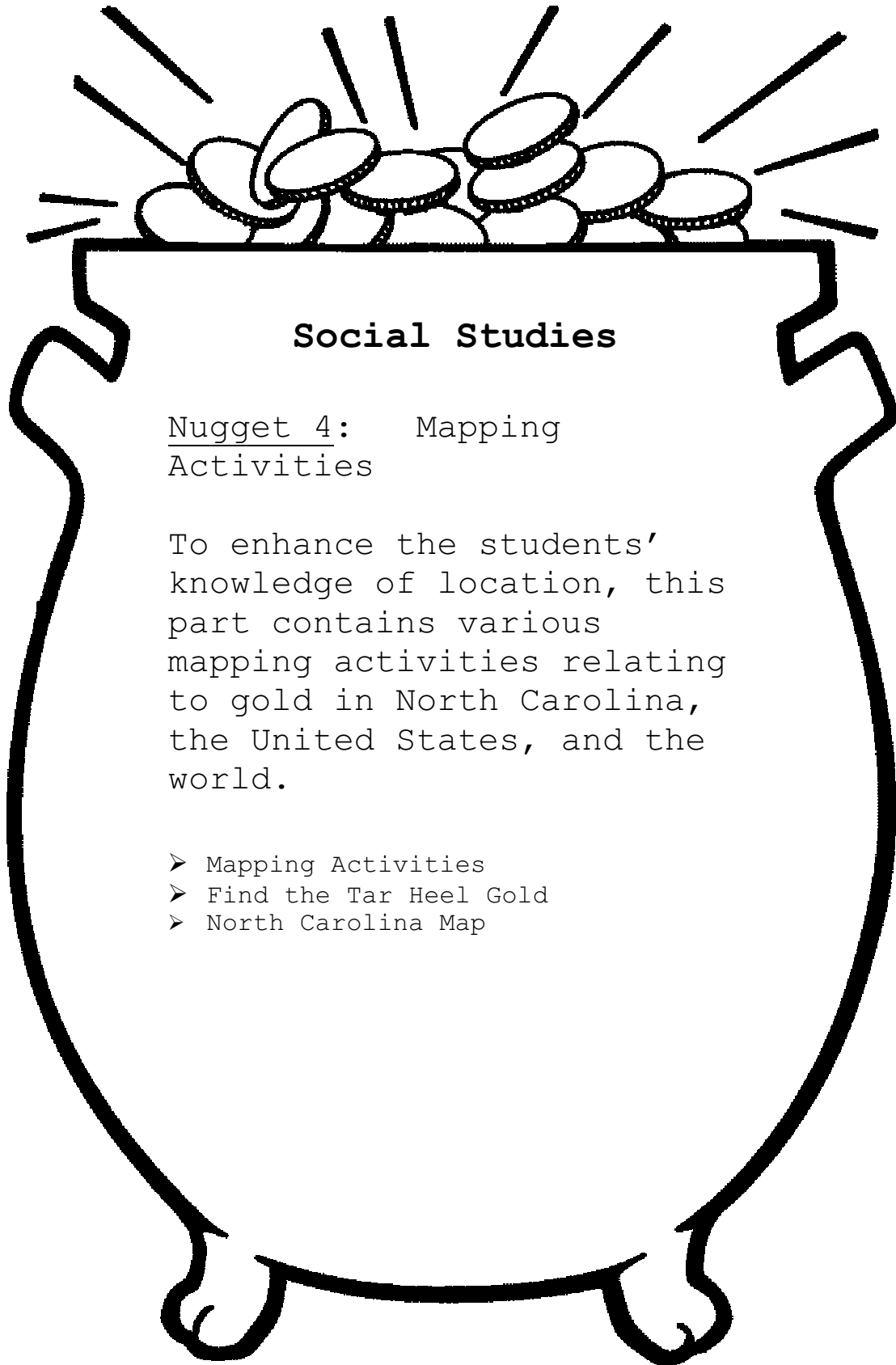
environment

landform

industry

C. Based on your research, create and illustrate your own timeline.

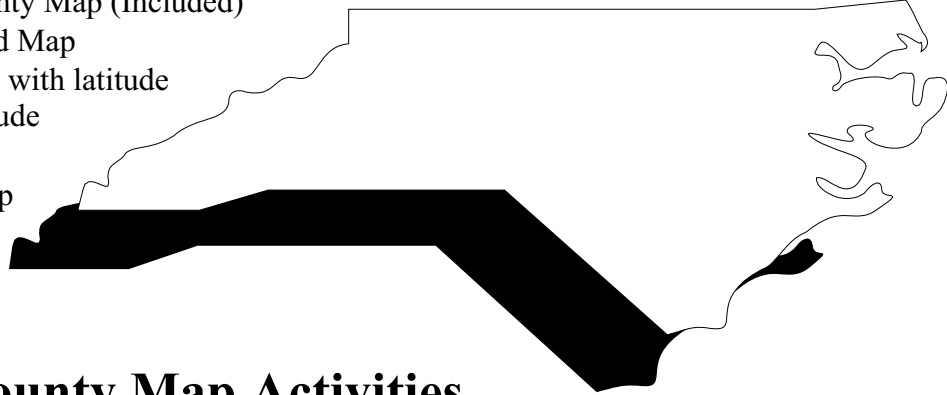
D. Using the Internet, search the North Carolina Gold Mine or North Carolina Historic Sites home page and create a new timeline of major events relating to Reed Gold Mine.



Reed Gold Mine Mapping Activities

Materials

- ◆ N. C. County Map (Included)
- ◆ N. C. Road Map
- ◆ N. C. Map with latitude and longitude
- ◆ U. S. Map
- ◆ World Map



N. C. County Map Activities

1. Using the county map of North Carolina, locate and star * your county in green.
2. Using the Map Activity Sheet # 1, complete the different tasks.
3. On paper, classify the “gold” counties by regions using a tree diagram or chart.
4. Using various resources, identify and list the other kinds of mining done in these areas.
5. Create a graph showing the types and amounts of mining in each region of North Carolina.

North Carolina State Map Activities

1. Using the state map of North Carolina, determine the mileage from your hometown to Reed Gold Mine.
2. Using the above map, determine location of your county and the distance from your county to at least 10 different other mining counties in North Carolina.
3. Using both cardinal and intermediate directions, determine your county’s location to each mining county.
4. Create a database on the computer using data you have collected on mining counties in North Carolina.

United States and World Map Activities

1. Using different resources, identify and place on a map of the United States the locations where gold has been found.
2. Find out what other types of mining were or are being done in these same areas and in other areas of the world.
3. Predict the other types of mining that may have been or are in these same places.
4. Now find out the other types of mining and list them. Compare your predictions to your actual finding.

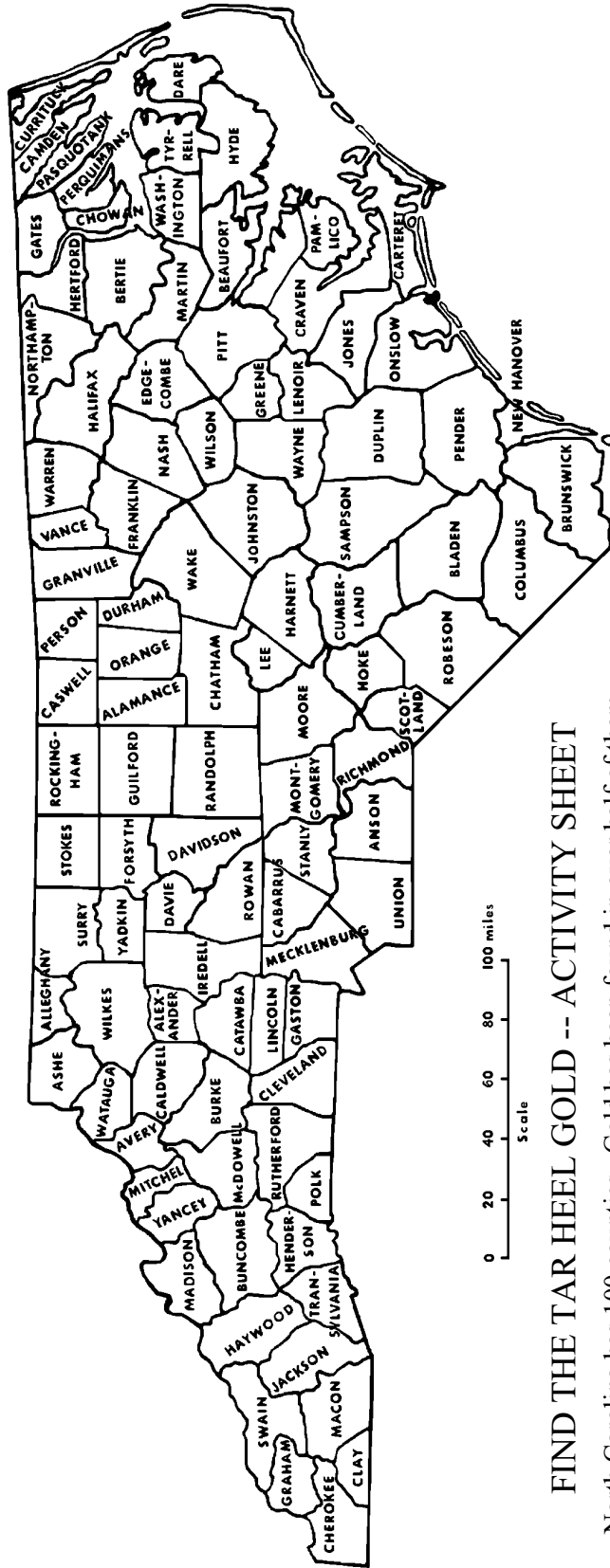


Critical Thinking

1. Based on your findings from all of the above activities, draw a Venn Diagram using North Carolina, the United States, and the rest of the world depicting the differences and similarities in what was being mined.
2. What is the most common mineral, ore, or gem that is mined globally?
3. How do you think the knowledge of mining spread from one place to another over the thousands of years of reported history? Support your answer.

Projects

1. Using the information you have researched, create a display showing all the places gold has been found and/or mined in the world throughout history.
2. Using the blueprints found on-line and pictures of Reed Gold Mine, recreate a three-dimensional model of the gold mine.



FIND THE TAR HEEL GOLD -- ACTIVITY SHEET

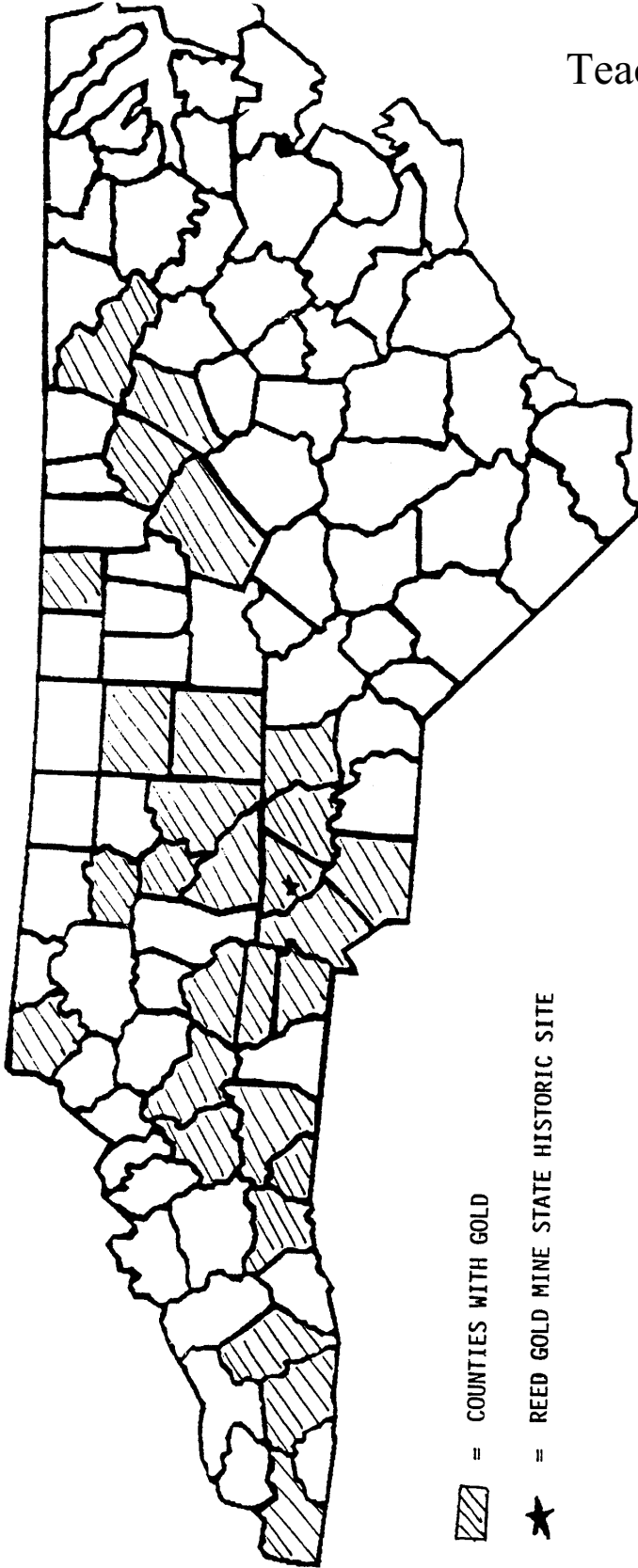
North Carolina has 100 counties. Gold has been found in over half of them. Six belts of rock in the state contain gold. The most important are the slate belt, stretching from South Carolina to Virginia, and the Charlotte belt.

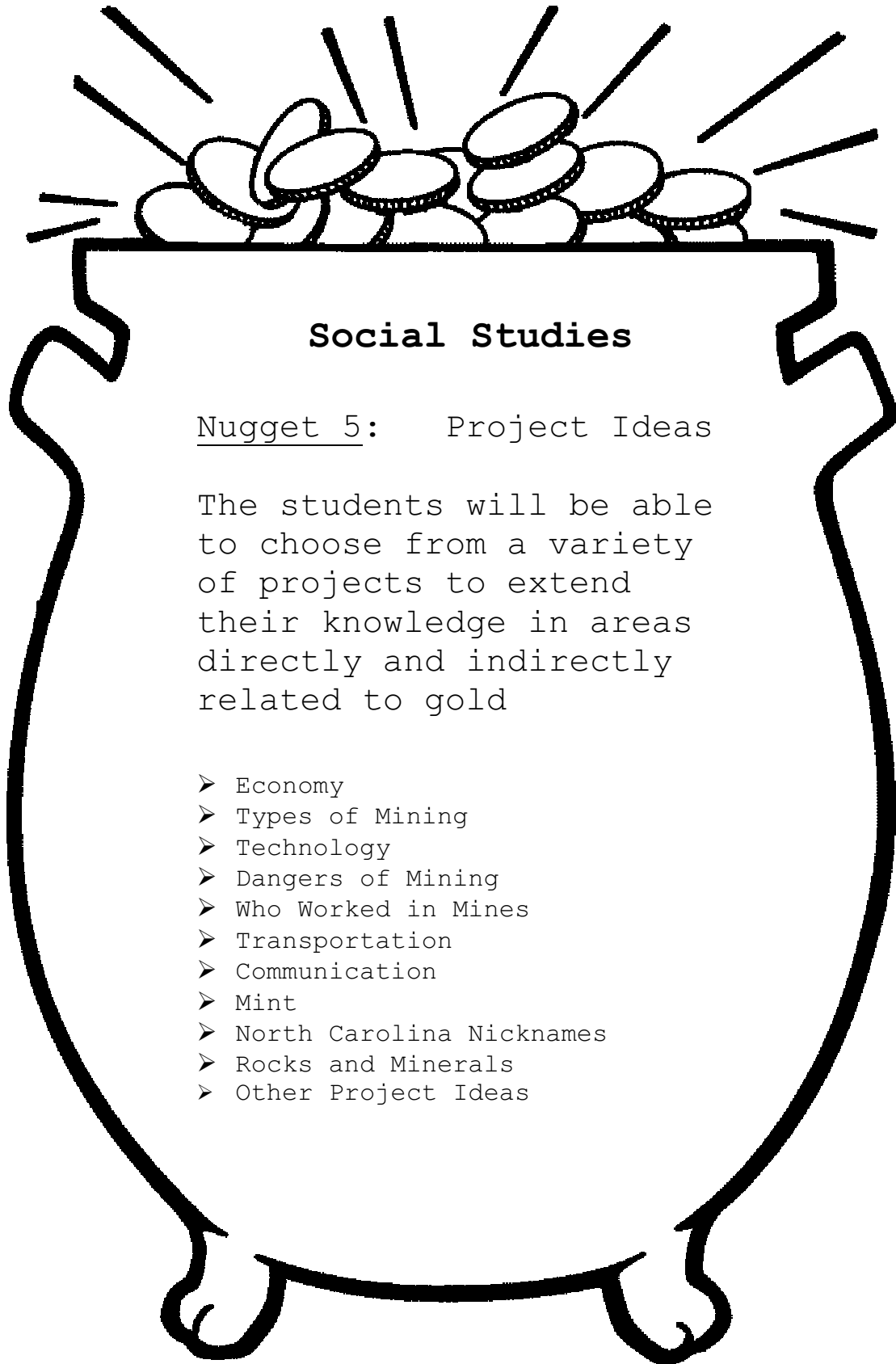
1. Color the major mining counties:

Ashe	Davie	Jackson	Nash	Stanly
Burke	Gaston	Lincoln	Person	Union
Cabarrus	Guilford	Macon	Polk	Yadkin
Catawba	Franklin	McDowell	Randolph	Wake
Cherokee	Halifax	Mecklenburg	Rowan	Warren
Davidson	Henderson	Montgomery	Rutherford	

2. Outline your home in red. Add your school.
3. Reed Gold Mine is in southeastern Cabarrus County. Put a red dot at the mine.
4. Draw a line from your school to Reed Gold Mine.

Teacher Key





Social Studies

Nugget 5: Project Ideas

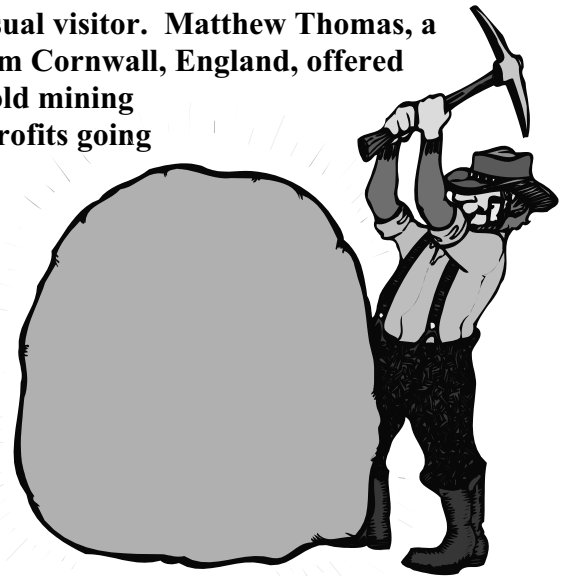
The students will be able to choose from a variety of projects to extend their knowledge in areas directly and indirectly related to gold

- Economy
- Types of Mining
- Technology
- Dangers of Mining
- Who Worked in Mines
- Transportation
- Communication
- Mint
- North Carolina Nicknames
- Rocks and Minerals
- Other Project Ideas

Project Ideas

A. *Economy-*

1. Pose the question: how many of you have used gold in the last 24 hours? Have a discussion.
2. Using the internet, encyclopedias, and other sources, have the students research the past and present uses of gold. As they conduct the research, have them list their findings.
3. Have students read, "The Discovery: How America's First Gold Was Found in 1799."
 - Discuss how the value of money and gold has changed through the years.
 - Bring up issues such as bartering with goods versus gold coins or hard currency.
 - Ask and discuss why gold isn't used as money anymore.
4. Present the students with the following information:
In 1826, when Reed was 67 years old and Reed Mine had been established for several years, Reed had an unusual visitor. Matthew Thomas, a mining engineer and speculator from Cornwall, England, offered Reed a ninety-nine year lease for gold mining activity- with a fair percentage of profits going to Reed. However, Reed turned Thomas down.
5. Discuss why they think Reed turned down Thomas.
6. Talk about what they would have done if they had been in Reed's situation.
7. To find out more, have the children read "The Price of Progress."
8. After the children have gained a background of gold uses, have them predict how gold might be used in the future.



B. *Types of Mining-*

1. Introduce the children to two types of mining:
 - ◆ **placer mining** (above ground)-sometimes referred to as creek mining, because a miner obtains loose deposits of gold. Creek mining can be done in current creeks or dry creek beds.
 - ◆ **lode mining** (below ground)- ore deposits are separated from adjoining rocks.
2. Have them read "Matthias Barringer Goes Underground."
3. Discuss what they found out.

4. Have the students create a chart including the possible problems and benefits of each type of mining. End by asking the students, “If you were a miner during the 1800s, which type of mining would you prefer?” Explain.

C. *Technology-*

1. Have the students read “Squeezing Gold from a Rock” to have them learn more about the evolution of machinery in regards to mining.
2. Using other sources, find out more about the arrastra, the Chilean mill, and the Stamp mill.
3. Have them compare the efficiency of each type of machinery.
4. For more information, have the students find out more about James Watt, the steam engine, Cornish pumps, and Worthington steam pumps, which all eventually had their effect on mining.
5. Discuss the **kibble** (an iron Cornish bucket used to hoist ore and miners to the surface). Relate the process of being lowered and raised by the kibble to something familiar to them, like an elevator.
6. As you discuss, talk about the possible advantages and disadvantages of the kibble.
7. Then present the students with the miners’ other option, the **manway** (similar to a large ladder). Ask the children to explain which method of getting in and out of the mine they would choose.

D. *Dangers of Mining-*

1. Discuss issues such as child labor, blasting practices, cave-ins and timbering.
2. Have children research to find out if and how mining has become safer today
3. Ask the students what safety devices are used today.

E. *Who Worked in the Mines? -*

1. Have the students read “Foreigners in the Mines” to obtain a basic knowledge of who worked in the mines.
2. After discussing the story, have the students research more to find out about life as a miner. To help them organize their research, have them use the worksheet attached as a guide. When they have learned a lot and taken good notes, have them compile their findings in a report.
3. Share with the class the following facts about John Reed:
John Reed was illegitimate. Illegitimate means that his father and mother were not married at the time of his birth. His father and mother did public penance in the church at Raboldshausen, Germany a few months before he was born. Penance is punishment given to a person by the church to be forgiven for a sin. In that time it was considered a sin for a man and woman to have children without being married. His gravestone gives his birth date as January 1757, but church records indicate he was born on April 14, 1759.
 NOTE: Be sure to further define *illegitimate* and *penance* if the children do not understand.
4. Discuss why Reed’s birth date on his gravestone could be different.

5. Then let the children create an epitaph of a miner. Discuss what might be included.

NOTE: Define *epitaph* for the children if necessary.

F. *Transportation-*

1. Discuss these points with the class:
In order to mine for gold, the owners of the mines had to get much machinery from larger cities that were often many miles away. After the gold was mined, the miners had to transport the gold to the cities so it could be assayed and/or traded.
2. Ask the students questions concerning the transportation of the time.
3. The following are some examples:
 - ◆ How was machinery and gold transported to and from Reed?
 - ◆ How were the road conditions?
 - ◆ What effect did the railroad expansion of the 1850s have on mining in North Carolina?
 - ◆ How long would it take for the products to get from Reed to Fayetteville?
4. After discussion has taken place, have the students research to find out some of the answers. Then have them compare transportation of the past to that of the present.

G. *Communication-*

1. Discuss the following with the students:
Like transportation, communication was quite different in the past. For instance, the Chilean mill dates back to Biblical times, but it was not heard about in the Reed Gold Mine area until much later. Also, people in Europe knew how to mine underground for gold long before this process was discovered at Reed. These and many other instances make a person wonder, “Why did they have to rediscover the knowledge?” Brainstorm possible problems with communication during that time.
2. Then have the students research to find out what types of communication existed during the time of Reed Mine. Have them create a timeline to display the evolution of communication. Ask the students, “Has communication improved throughout time?” Let them explain why or why not.
3. Have the students read, “The Kelly Family and Reed Gold Mine.” Discuss how communication could have affected the Kelly’s during their involvement with the mine.

H. *NC Nicknames-*

1. Share this fact:
North Carolina early on earned a reputation as an economically slow state, for which it was called the Rip Van Winkle State. That reputation persisted, even a good while after gold was discovered, and one New York writer characterized North Carolina as “the last state in the world, from which we would expect any good thing to come.” Still, by 1828, North Carolina earned another nickname: the Golden State.

2. Have the students find other nicknames associated with North Carolina.
3. Let the students create their own nickname based on their experience living in North Carolina.

I. *Mint-*

Share these facts with the students:

- **Before 1831 all coins made from North Carolina gold were minted at the United States Mint in Philadelphia.**
 - **In 1831 Christopher Bechtler and his son Augustus began the minting of gold coins in Rutherford County.**
 - **In 1837 the Charlotte branch mint opened for business.**
 - **In 1838 the Charlotte branch mint began making gold eagle coins.**
 - **Perhaps only one-third of gold mined in North Carolina ever made it to a United States Mint.**
1. If possible, take a trip to the Mint Museum of Art in Charlotte to learn more about what it was like as a mint and what it is like now as a museum.
 2. Let the children design their own coin.
 3. Retell the history of the Charlotte mint.
 4. Write a script and present a newscast of the opening day of the Charlotte branch mint in 1837.

J. *Rocks and Minerals-*

1. Share these facts with the students:

There are many other rocks and minerals, besides gold, found in North Carolina. Have the students choose one listed below and research to find out more about it, including uses.

Gemstones	Talc
Pyrite	Mica
Granite	Feldspar
Kaolin	Phosphates

2. Let the students create a poster including the following information: where it's found, uses, qualities, importance in relation to North Carolina, and a picture.
3. After researching the different minerals and rocks of North Carolina, create a simple database based on the information.



K. *Other project ideas-*

1. Choose a topic relating to Reed Gold Mine and create a project based on your findings and research.
2. Construct 3-D models, draw pictures, create mobiles, make 3-D maps or flat maps relating to Reed Gold Mine.

Miner Research

Description:

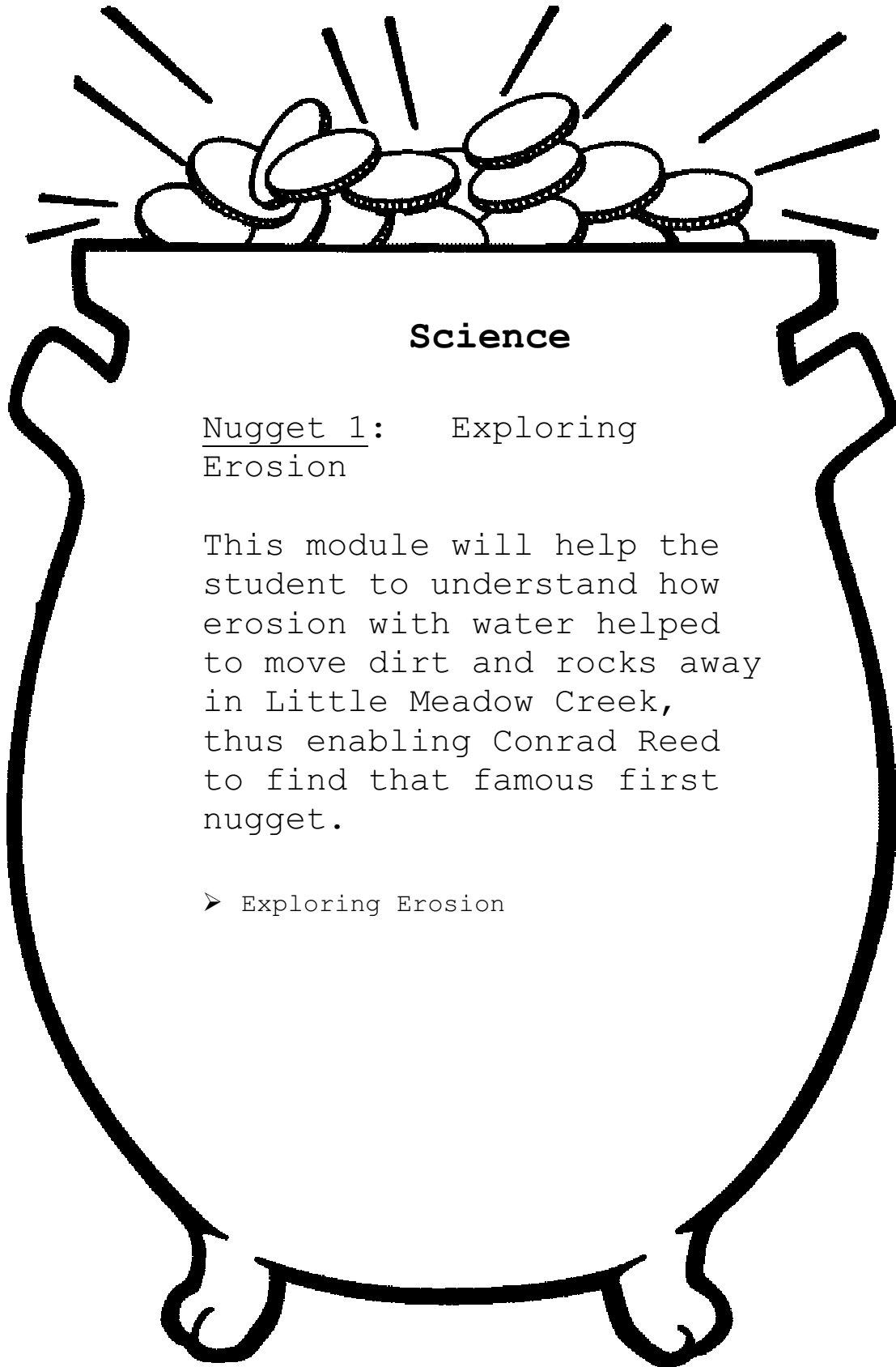
Living Habits:

Habitat:

Tools and Materials Used:

Other Interesting Facts:





Science

Nugget 1: Exploring Erosion

This module will help the student to understand how erosion with water helped to move dirt and rocks away in Little Meadow Creek, thus enabling Conrad Reed to find that famous first nugget.

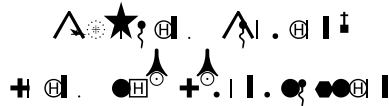
➤ Exploring Erosion



Conrad Reed found that first nugget of gold while he was bow-and-arrow fishing at Little Meadow Creek. Years later, when people in that area found out what gold was, they continued to look for gold in the creek beds. Why were creek beds a good place to find the precious metal? The reason is because of something called *erosion*. Erosion is the process by which the surface of the earth (soil, rocks, and minerals) is worn away by the movement of wind and water. In the case of gold at John Reed's farm, the water from Little Meadow Creek was moving soil and rocks, and leaving the heavier gold to be discovered. To understand how this works, you can build a model of a stream bed with a mixture of soil, rocks (pebbles) and some small samples of metals. Then, by raising one end of the model, you can add water to the elevated end and simulate the action of a stream. The results will give you a good idea of how mother nature revealed the shiny golden metal to Conrad two centuries ago.

You will need the following materials to do this demonstration:

- a long tray (This could be a tray from a garden shop, a long plastic kitchen tray, or you could use a long cardboard box and line it with a piece of plastic.)
- a plastic bucket large enough to catch water and dirt that will run off the tray
- two cups of fine dry dirt and (if available) sand mixture
- about a half cup of pebbles (smaller than marbles), and a shiny penny - get pebbles of different shapes (some flat and some rounded)
- about half a gallon of water



* *Note* - Before doing the demonstration, give students a copy of the questions that go with this lesson. Take a few minutes to go over them and talk about predictions. This should make the demonstration more meaningful.

First, take the water-tight tray and make a hole at one end so water will be able to flow down the tray and drain out through the hole.

Next, set the tray at about a 20-degree angle so that water can be poured at the top of the tray and run down to the bottom and through the drain.

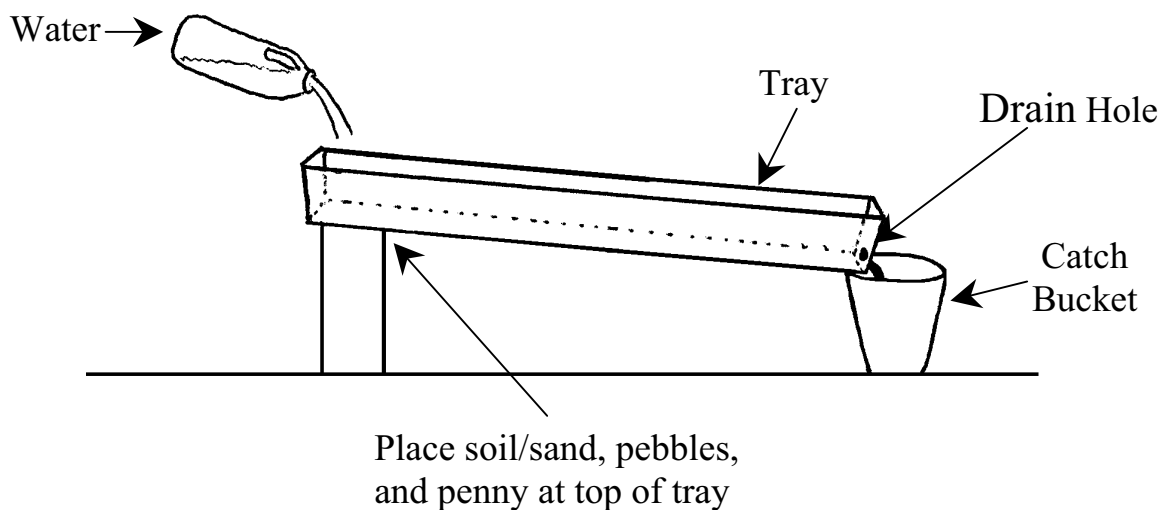
Place a catch-bucket under the drain hole to catch the run-off.

Give the students an opportunity to look at the different sizes and shapes of the pebbles. Remember, the pebbles should be both rounded and flat. Their size and shape will have an effect on to how they react to the erosion process.

Then, take the dirt/sand mixture and add the pebbles and the penny.

Mix the dirt/sand, pebbles, and penny well. Spread the mixture evenly at the raised end of the tray. This simulates a stream bed.

Now, slowly pour the water over the mixture and observe what happens. Remind the students that as the water moves the different materials down the tray, this is called **erosion**. Which materials travel down the tray and empty into the catch-bucket? Which materials stay behind? Do the size and shape of the pebbles affect how they react to the movement of the water?





Name _____

Date _____

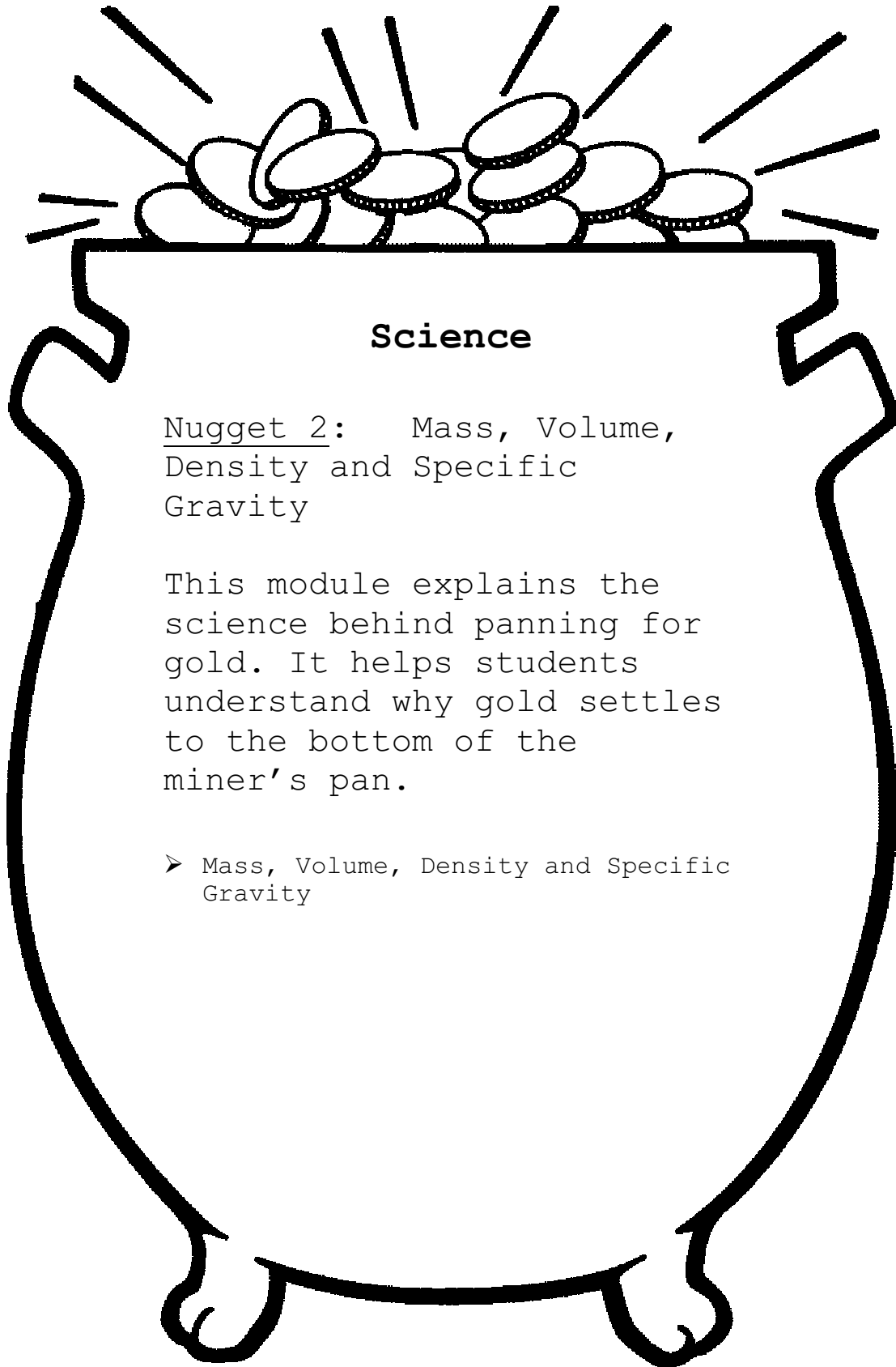
1. The wearing away of soil, rocks, and minerals by water and wind is called _____.

2. If two rocks were the same weight, but one rock was round and the other was flat, which rock would be moved easier by stream water? Why? _____

3. If two rocks were the same shapes, but the rocks weighed different amounts, tell which rock would be moved easier by stream water and tell why. _____

4. Why did the dirt wash away and leave the other materials behind? _____

5. Little Meadow Creek had probably been flowing for thousands of years. Why do you think Conrad was able to find the large nugget of gold so easily? _____



Mass, Volume, Density and Specific Gravity

When the old-timers were squatting along the banks of a creek panning for gold, they were taking advantage of several scientific properties of gold.

One of those is a scientific property called **density**. If you had two rocks **that were the same size**, but one rock was much heavier than the other, the heavier rock would be more dense. Density also means that the rock's materials are more closely compacted together.

When we find the density of a material, we are finding out how many grams each cubic centimeter of the material weighs. When we weigh the material, we are determining the **mass**. When we find out how many cubic centimeters of space the material takes up, we are determining the **volume**. When we divide the volume into the mass, we then determine the **density** of the material.

This is the formula for finding density:

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

We are all familiar with the fact that some minerals seem heavier than others and that this can help us to identify them. In attempting to determine whether one mineral is heavier than another, geologists also use a property called **specific gravity**. **Specific gravity** is the number of times a mineral is as heavy as an equal volume of water. Real gold has a specific gravity of 19.3. This means that one ounce of gold will be 19.3 times heavier than one ounce of water.

A famous scientist named Archimedes discovered the following formula for finding specific gravity:

$$\text{Specific Gravity} = \frac{\text{Mass of Mineral in Air}}{\text{Mass in Air} - \text{Mass in Water}}$$

The early miners knew that a piece of gold was much heavier than a rock of the same size. They figured that by adding water to the dirt and rocks in their pan and sloshing the mixture around, the heavier gold would eventually work its way to the bottom of the pan. After giving the gold time to work its way to the bottom, the miner would remove all of the other materials and then look for the gold. This sounds pretty easy, but it takes patience, practice, and some scientific knowledge of density to become a panning expert.

While doing the following activity, you will find the density of some different materials. Then, you can compare their densities to the density of gold.

Mass, Volume, Density and Specific Gravity Lab

MATERIALS:

graduated cylinder (try a baby bottle marked with milliliters)

water

string

balance scale, with weights

calculator

materials to measure (such as copper (pennies), lead (fishing weights), iron (carpenter's nails), quartz rock, and granite rock)

STEP 1: Mass:

1. Use a balance scale to weigh each specimen to the nearest gram.
2. Record the weight in grams.

STEP 2: Volume:

1. Put water into a graduated cylinder until it reaches an even number and is deep enough to submerge each specimen.
2. Tie a string to the specimen and completely submerge it into the cylinder.
3. Count the number of milliliters the water rises. This tells how much space the specimen takes up.
4. Each milliliter of water is equal to one cubic centimeter.
5. Record the number of cubic centimeters (cc) of volume.

STEP 3: Density:

1. Using your calculator:
2. Enter the mass of the material, then press the "division" key.
3. Enter the volume of the material and press the "equals" key.
This will give you the number of grams per cc, or the density, of the material.

4. If you get a reading with several places after the decimal, then round the number off to the nearest tenth. Record the density.

STEP 4: Specific Gravity:

1. Use the information from Step 1.
2. Put water into the graduated cylinder until it reaches an even number and is deep enough to submerge each specimen.
3. Place each specimen into the cylinder separately.
4. Use the balance scale to weigh the cylinder with each specimen, separately.
5. Record the masses for the water, cylinder and the specimen.
6. Using the formula for specific gravity, your information, and a calculator, calculate the specific gravity for each specimen.

Note: Use enough of each material to register several cc's in the cylinder. If you bundle several pennies or nails, be sure to weigh all of them together on the scale.

Mass, Volume, Density and Specific Gravity Data Sheet

Name _____ Date _____

Material	Mass	Volume
_____	_____ g	_____ cc
_____	_____ g	_____ cc
_____	_____ g	_____ cc
_____	_____ g	_____ cc
_____	_____ g	_____ cc
_____	_____ g	_____ cc

Material	Density	Specific Gravity
_____	_____ g/cc	_____
_____	_____ g/cc	_____
_____	_____ g/cc	_____
_____	_____ g/cc	_____
_____	_____ g/cc	_____
_____	_____ g/cc	_____

1. Rank the materials on your chart from the least dense to the most dense.

1. _____
 2. _____
 3. _____
 4. _____

5. _____
 6. _____
 7. _____
 8. _____

2. Do you notice any differences between the least dense and most dense materials? _____ If so, what do you notice? _____

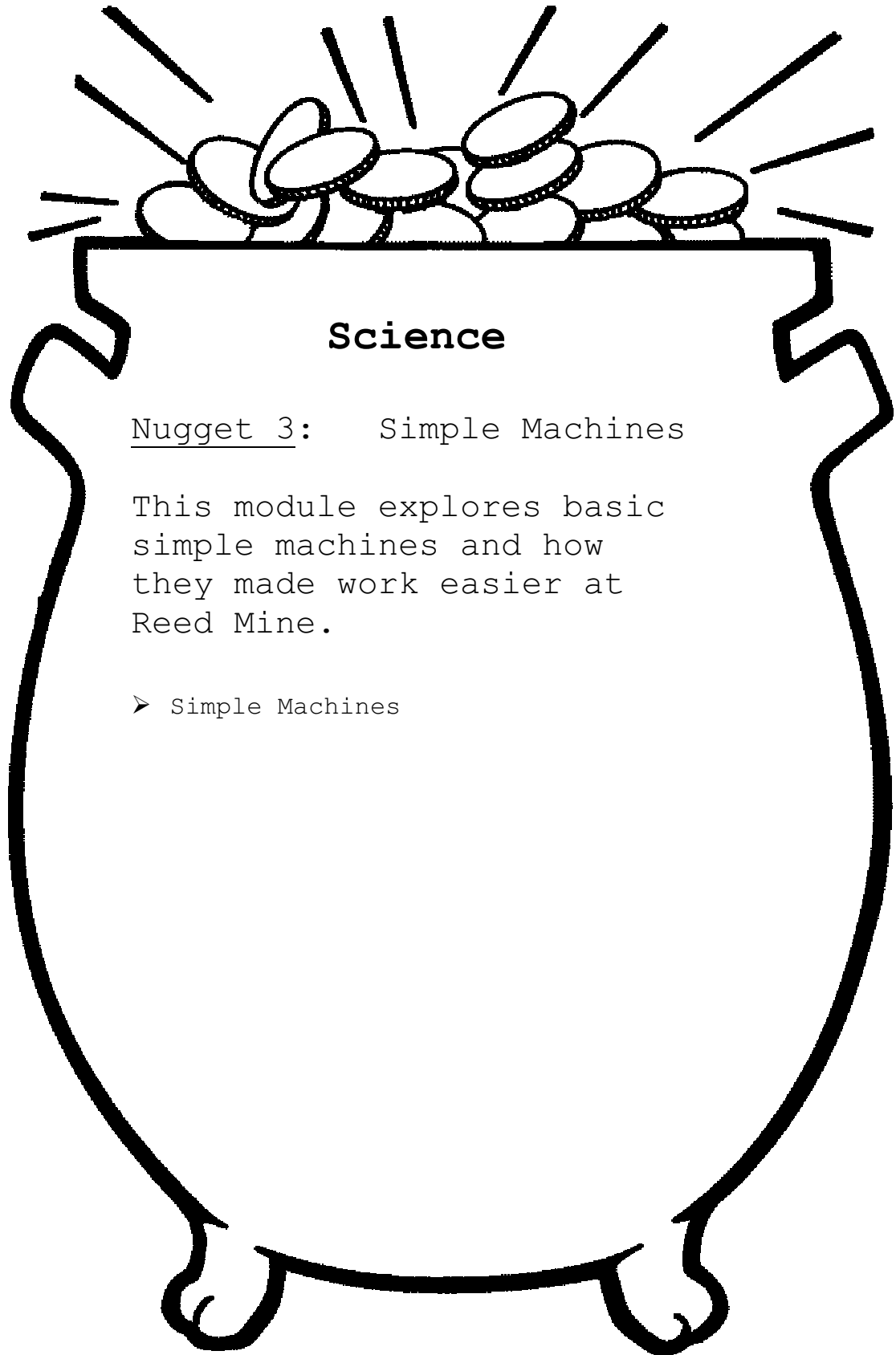
3. If gold were not a very dense material, would panning have been a good way to find the nuggets? _____ Why? _____

4. If gold would have been the least dense material, where would it have been found in the pan? _____

5. Rank the materials on your chart from the lowest specific gravity to greatest specific gravity.

1. _____	5. _____
2. _____	6. _____
3. _____	7. _____
4. _____	8. _____

6. Do you notice any differences between the material with the lowest specific gravity and the material with the highest specific gravity? _____ If so, what do you notice? _____



Simple Machines

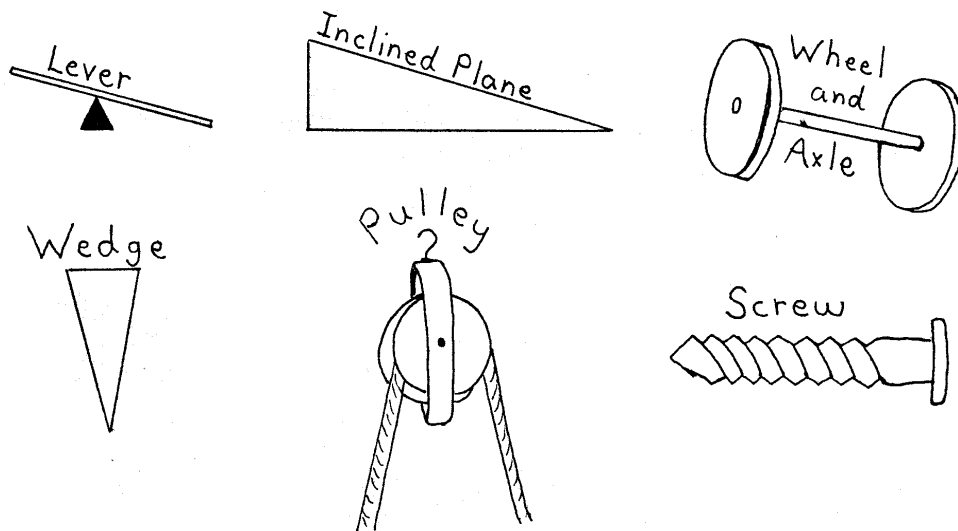
A machine is any kind of tool that makes work, such as lifting or moving things, easier. There are six basic kinds of simple machines. They are the **inclined plane, the wedge, the pulley, the screw, the wheel and axle, and the lever**. These six simple machines can work alone, or they can work in combinations. If two or more simple machines are put together, then you have a **complex machine** that makes the work even easier.

There was a great deal of heavy work to be done at Reed Gold Mine. Without the use of both simple machines and complex machines, the work would have been much harder on the miners, and it would have taken much longer to complete the tasks that needed to be done.

We can measure the effectiveness of a machine by calculating the **MECHANICAL ADVANTAGE**. The mechanical advantage can be used to see how much easier a job has become, and it can be used to see how much help we have in one situation compared to another situation. To find the mechanical advantage, divide the load by the force. The quotient is the "mechanical advantage."

$$\text{LOAD} / \text{FORCE} = \text{MECHANICAL ADVANTAGE}$$

For instance, if a rock weighed 100 lbs. and it took 50 lbs. of force to lift it, the mechanical advantage would be "2" because $100 / 50 = 2$. If that same 100 lb. load could be lifted with a force of 25 lbs., then the mechanical advantage would be "4" because $100 / 25 = 4$. The higher a number is for the mechanical advantage, the easier it has become to do the work.

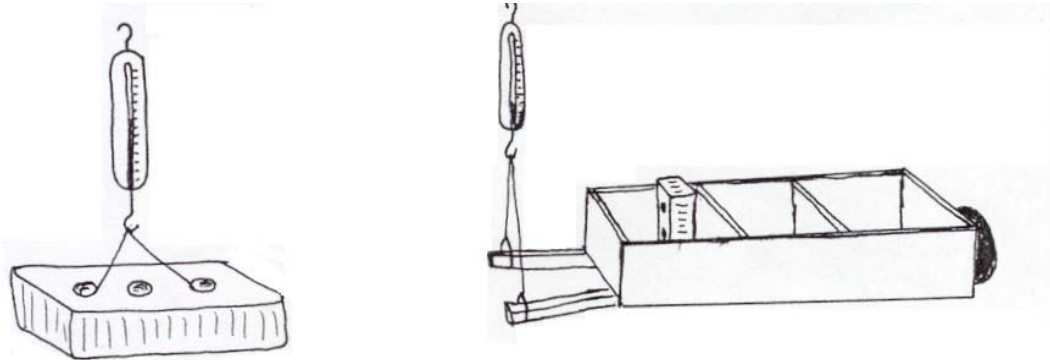


Wheelbarrow Activity

This activity will give students a chance to test the placement of a load in a wheelbarrow to see if it affects the mechanical advantage of the machine. First, the students must understand that a wheelbarrow is a complex machine, made of a wheel and axle at the end of two levers. Construct a simple version of a wheelbarrow so that the bed of the wheelbarrow is divided front-to-back into sections. The more sections you have, the more data you will be able to collect. It is not even necessary to use a wheel and axle in this activity.

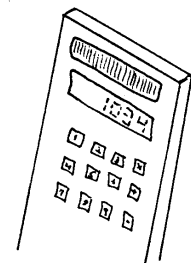


Using a spring scale, weight the load you will be putting in the wheelbarrow. Then place the load in each section and use the same spring scale to measure the force needed to lift the handles.



Calculate the mechanical advantage each time and see if it makes a difference where the load is placed in the wheelbarrow. Ask students to draw conclusions as to how they would design a wheelbarrow with the greatest mechanical advantage.

$$\text{LOAD} / \text{FORCE} = \text{MECHANICAL ADVANTAGE}$$

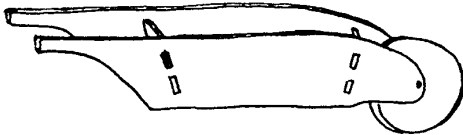


Miners' Tools

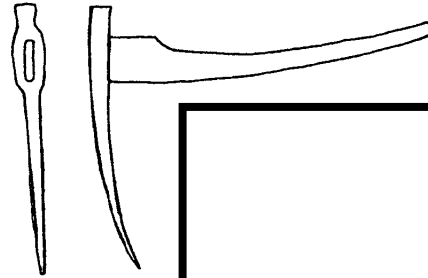
Shown below are sketches of some of the tools used at Reed Gold Mine during the 1800s. Which simple machine or combinations of simple machines can you find in each one? Write your answers in the box that goes with each miners' tool.

screw inclined plane wheel and axle pulley lever wedge

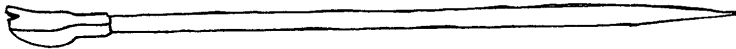
Miner's Wheelbarrow



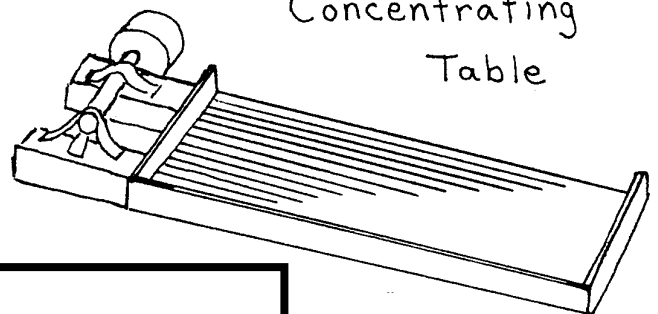
Cornish Poll Pick



Crow Bar



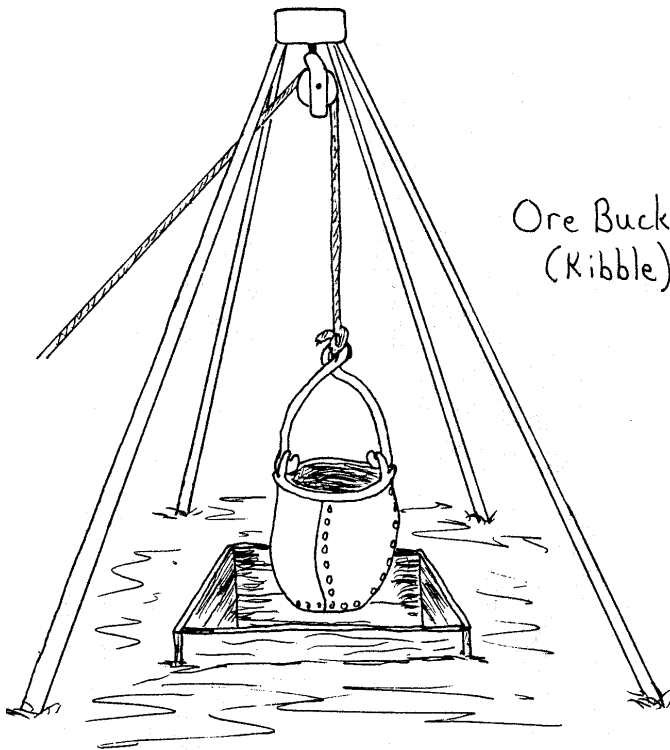
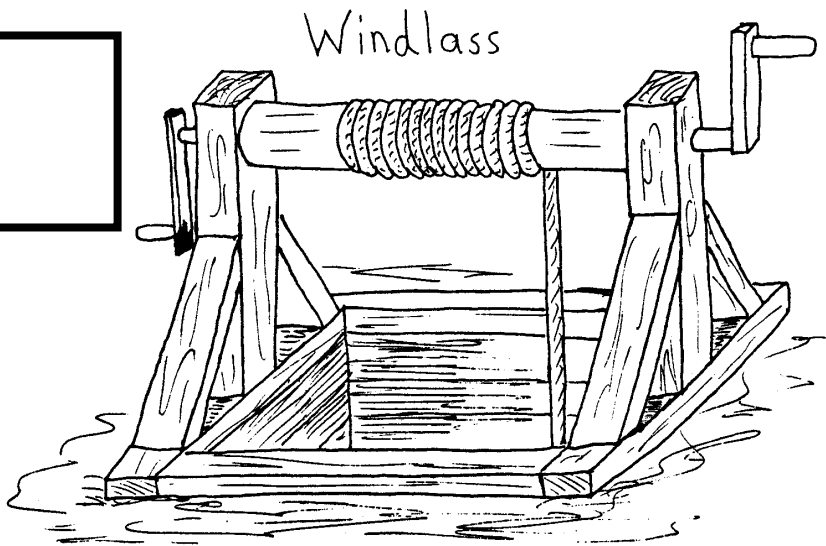
Concentrating
Table



Miners' Tools

(Continued)

screw inclined plane wheel and axle pulley lever wedge



Ore Bucket
(Kibble)



Answer Key Miners' Tools

Shown below are sketches of some of the tools used at Reed Gold Mine during the 1800s. Which simple machine or combinations of simple machines can you find in each one? Write your answers in the box that goes with each miners' tool.

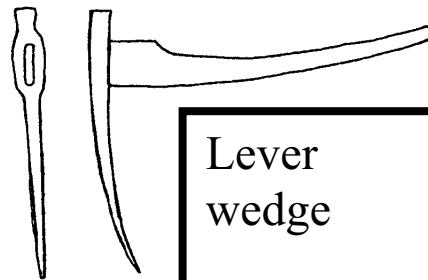
screw inclined plane wheel and axle pulley lever wedge

Miner's Wheelbarrow



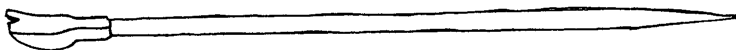
Wheel and axle
Levers
Screws

Cornish Poll Pick



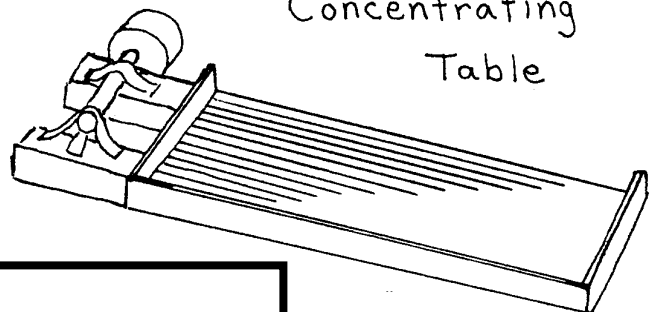
Lever
wedge

Crow Bar



Lever
Wedge

Concentrating
Table



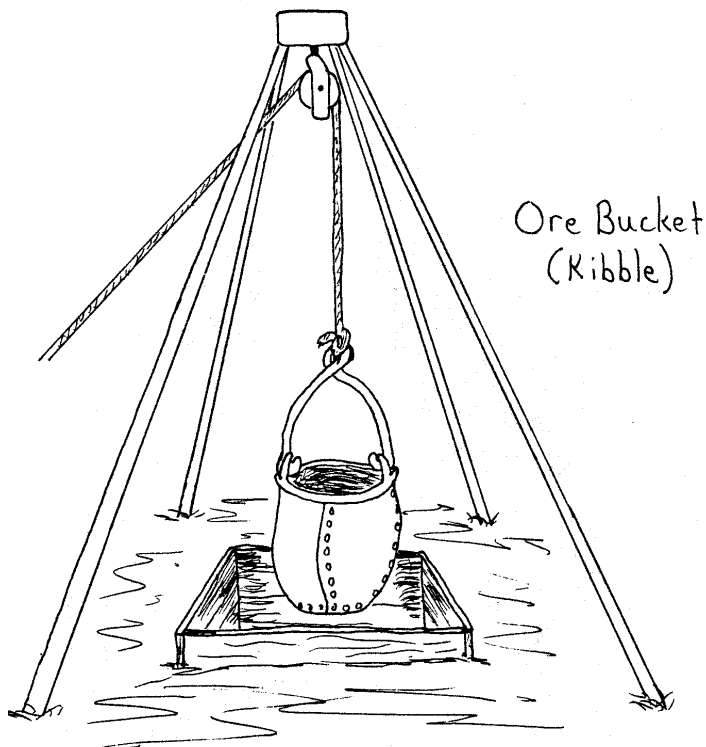
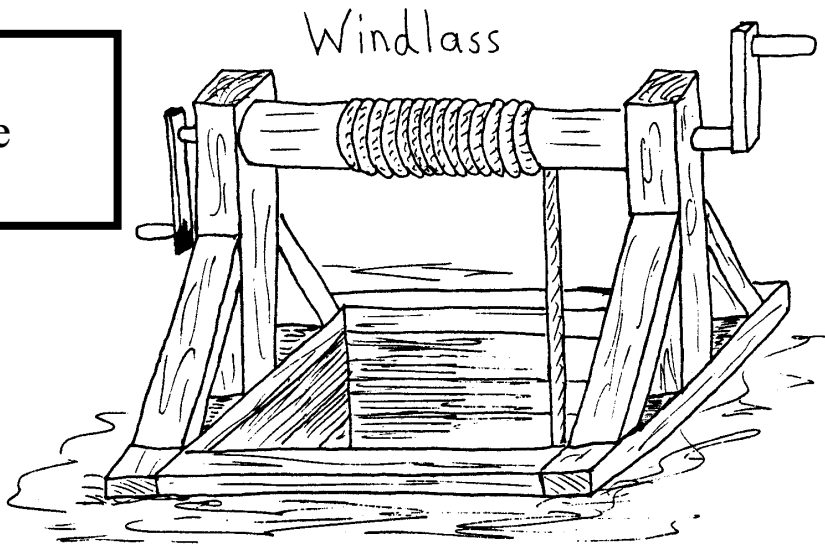
Inclined plane
Wheel and axle
Screws

Answer Key Miners' Tools

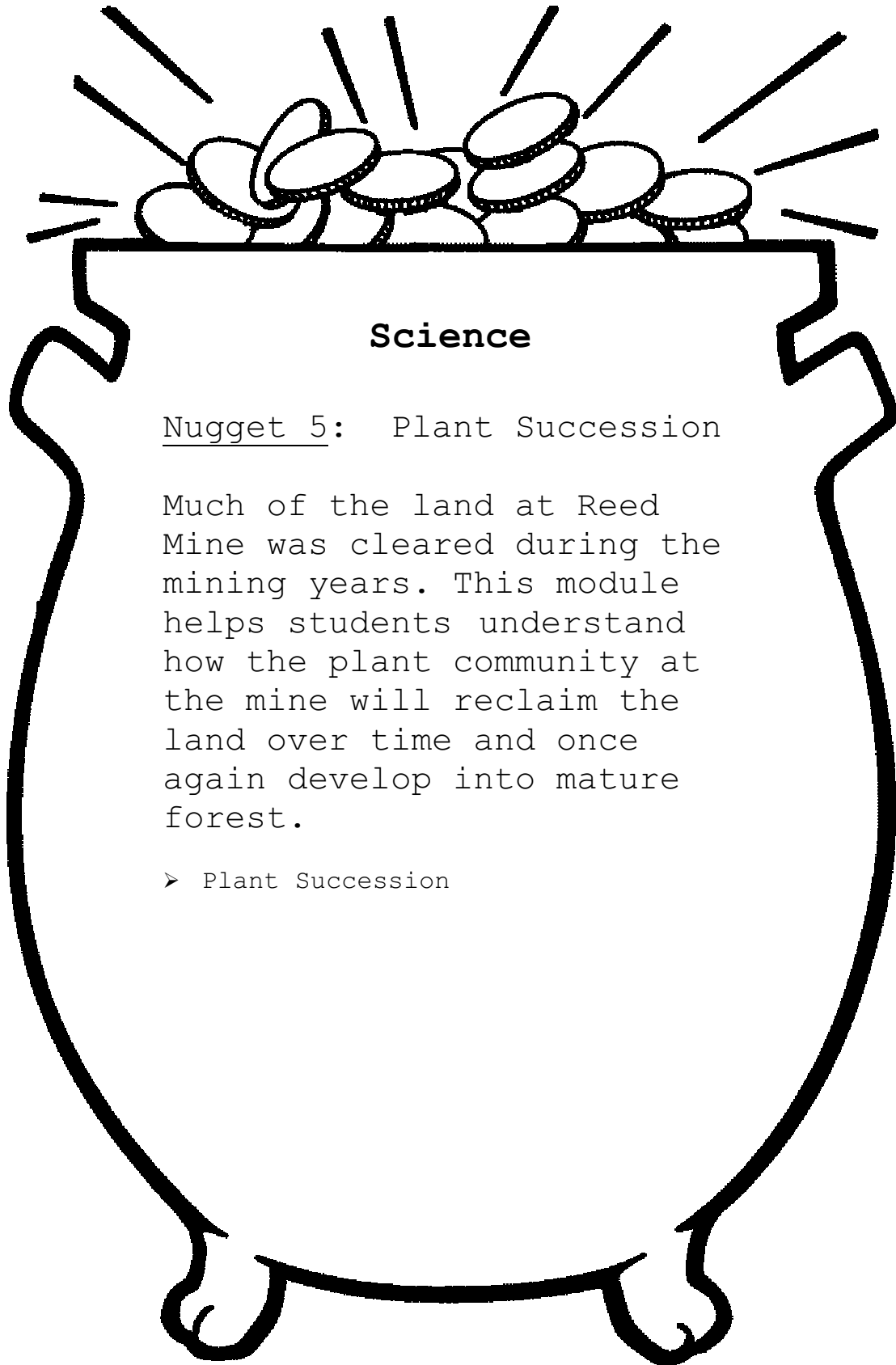
(Continued)

screw inclined plane wheel and axle pulley lever wedge

Lever
Wheel and Axle
Screw



Pulley
Screw
Wheel and
Axle





The way a plant community naturally changes over time is called plant "succession." When land is cleared and then left alone again, a predictable sequence of plant communities will gradually reclaim the land. Different geographical areas will have their own kinds of mature plant communities based on altitude, climate, landforms, and various other factors. In the Piedmont area of North Carolina, hardwood forests are indicators of a mature plant community. If you come upon one of these forests, you are in an area that has not been disturbed or destroyed for a long time.

At one time, the land around Reed Gold Mine was a mature plant community. Then changes began to happen. After gold was first discovered, land was cleared. Pits, ditches, and shafts were dug. Most of the hardwoods that had been growing on the land for hundreds of years were cut. Their wood was used to make timbers and fuel fires. During the days of mining at the Reed Gold Mine, the natural growth pattern of the plant life was interrupted. Finally, after mining operations stopped, the plants began to have a chance to reclaim the land with the natural process of succession.

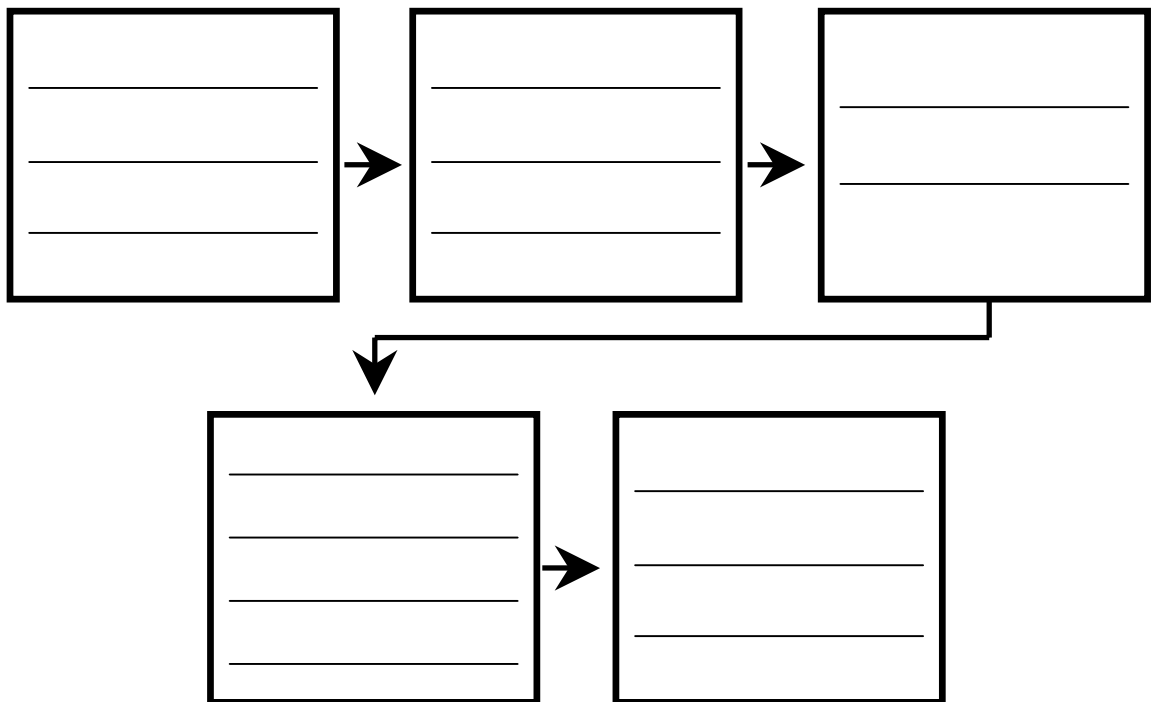
According to the Reed Gold Mine guide book, which was published in 1979, there are certain kinds of plants that contribute to the plant succession around the mine. The first kinds of plants to emerge on land that has been cleared are broomsedge, goldenrod and asters. Then, you will begin to notice short-leaf pines mixed with red cedars. As time goes on, the short-leaf pine forest will begin to be mixed with hardwoods. Finally, the hardwood forest of white oak, sweetgum, and others, will take over. The plant community will then be considered as mature. The whole process, from broomsedge to hardwood forest, takes about 100 years. The next time you see a timber crew cutting down a hardwood forest, keep in mind that it took nature at least 100 years to form that forest.

At the Reed Gold Mine there is a very special tree. It is a 250 year-old white oak that was not cut down during the days of mining. This grand old hardwood was probably no more than a sapling on the day Conrad Reed found that first nugget in Little Meadow Creek. It was digging its roots deep on the day the first shaft was dug. It survived during the Civil War. It was standing strong and tall on the day the mine finally closed. Today, it still stands over the land that gave Cabarrus County claim to the first documented discovery of gold in the United States of America.



Based on the information in the third paragraph, take the following plant names and place them in their proper place on the flow chart. Since the land at Reed Gold Mine was made up of hardwood forest, let those kinds of plants go in the first cell. Since they will eventually reclaim the land, let them also go in the last cell.

- short-leaf pine broomsedge white oak sweetgum
- goldenrod red cedar aster other hardwoods



What is the oldest tree at Reed Gold Mine? _____



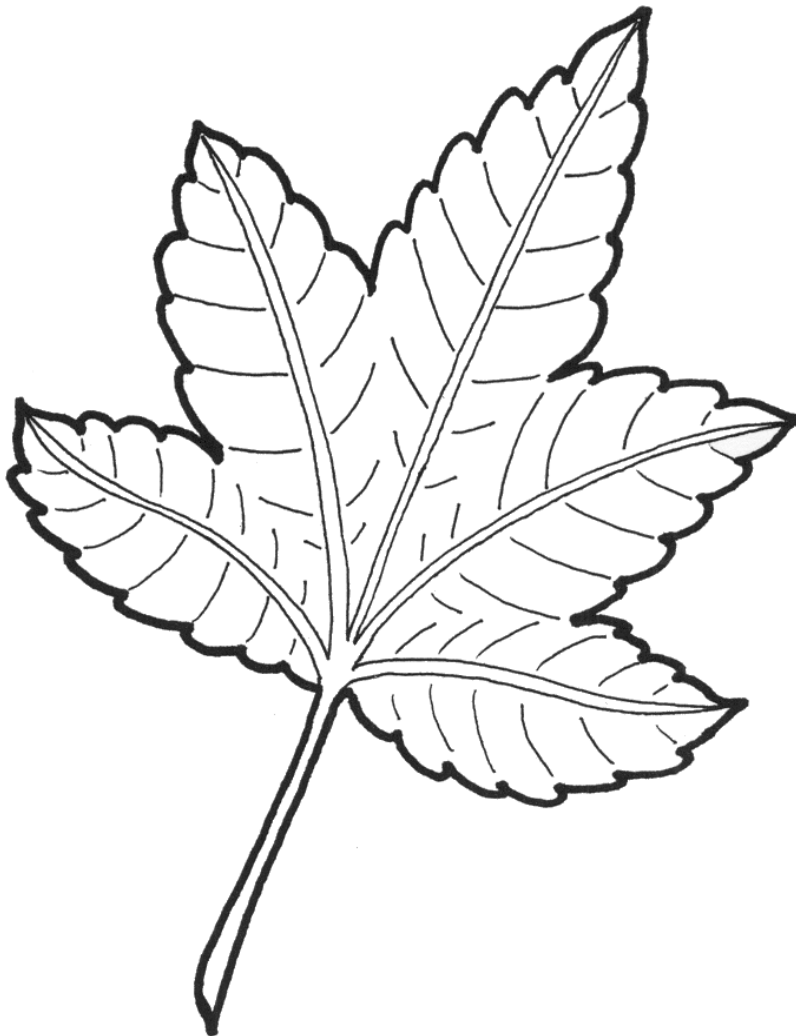
A good scientist is a careful observer. Look at the picture of the white oak leaf. The white oak bears leaves that usually vary from 4 to 9 inches in length. Cut out the leaf and lay it on a piece of centimeter graph paper. Trace the leaf and count its area in square centimeters. First, measure the length and width of the leaf and estimate the area.

Length = _____ cm

Width = _____ cm

Estimated Area = _____ sq. cm

Counted Area = _____ sq. cm





A good scientist is a careful observer. Look at the picture of the sweetgum leaf. The sweetgum bears leaves that usually vary from 3 to 6 inches in length. Cut out the leaf and lay it on a piece of centimeter graph paper. Trace the leaf and count its area in square cm. First, measure the length and width of the leaf and estimate the area.

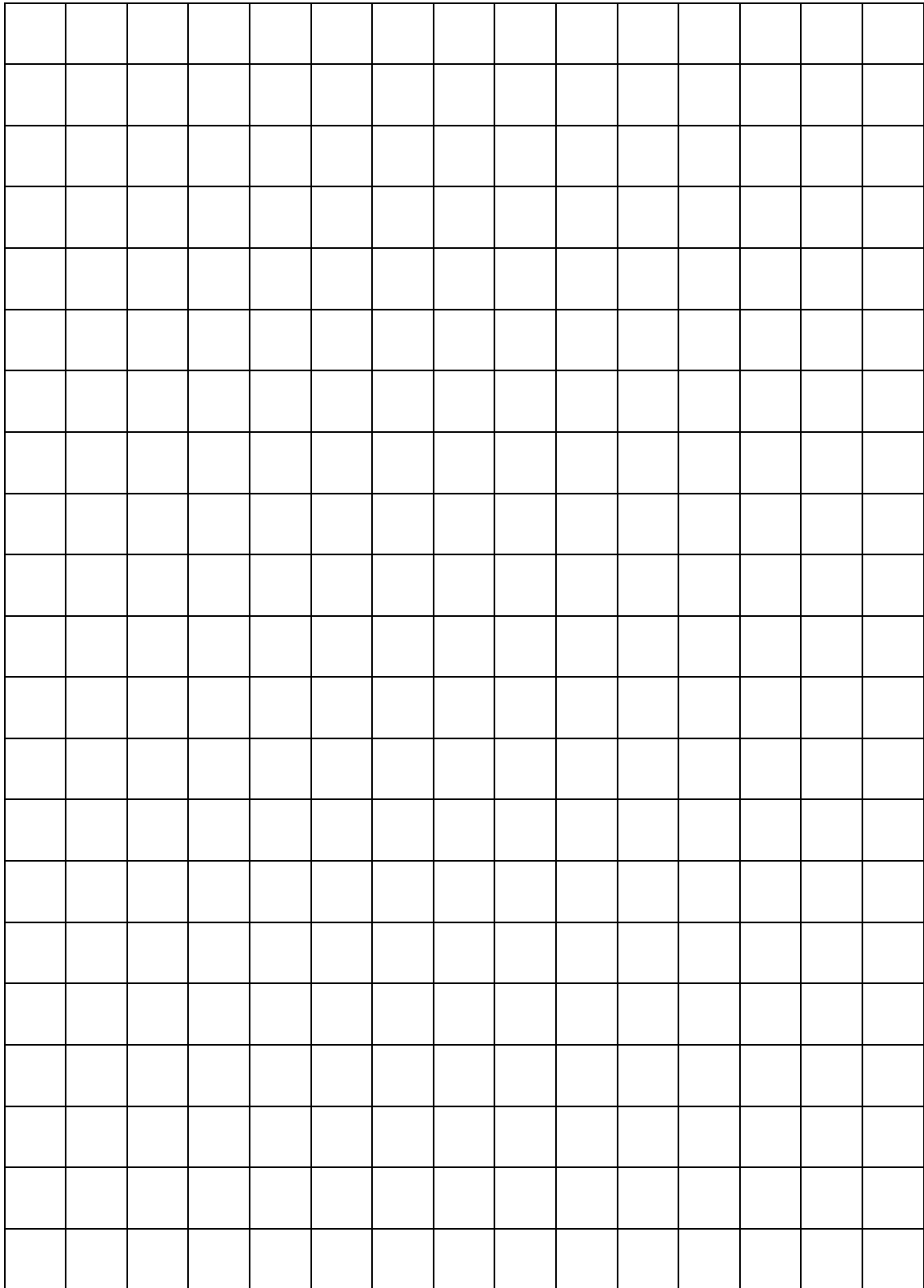
Length = _____ cm

Width = _____ cm

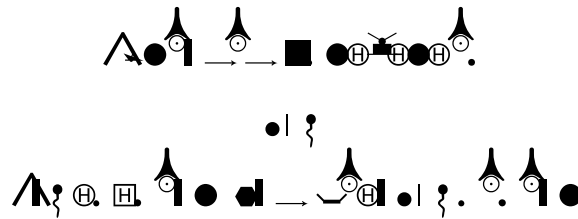
Estimated Area = _____ sq. cm

Counted Area = _____ sq. cm

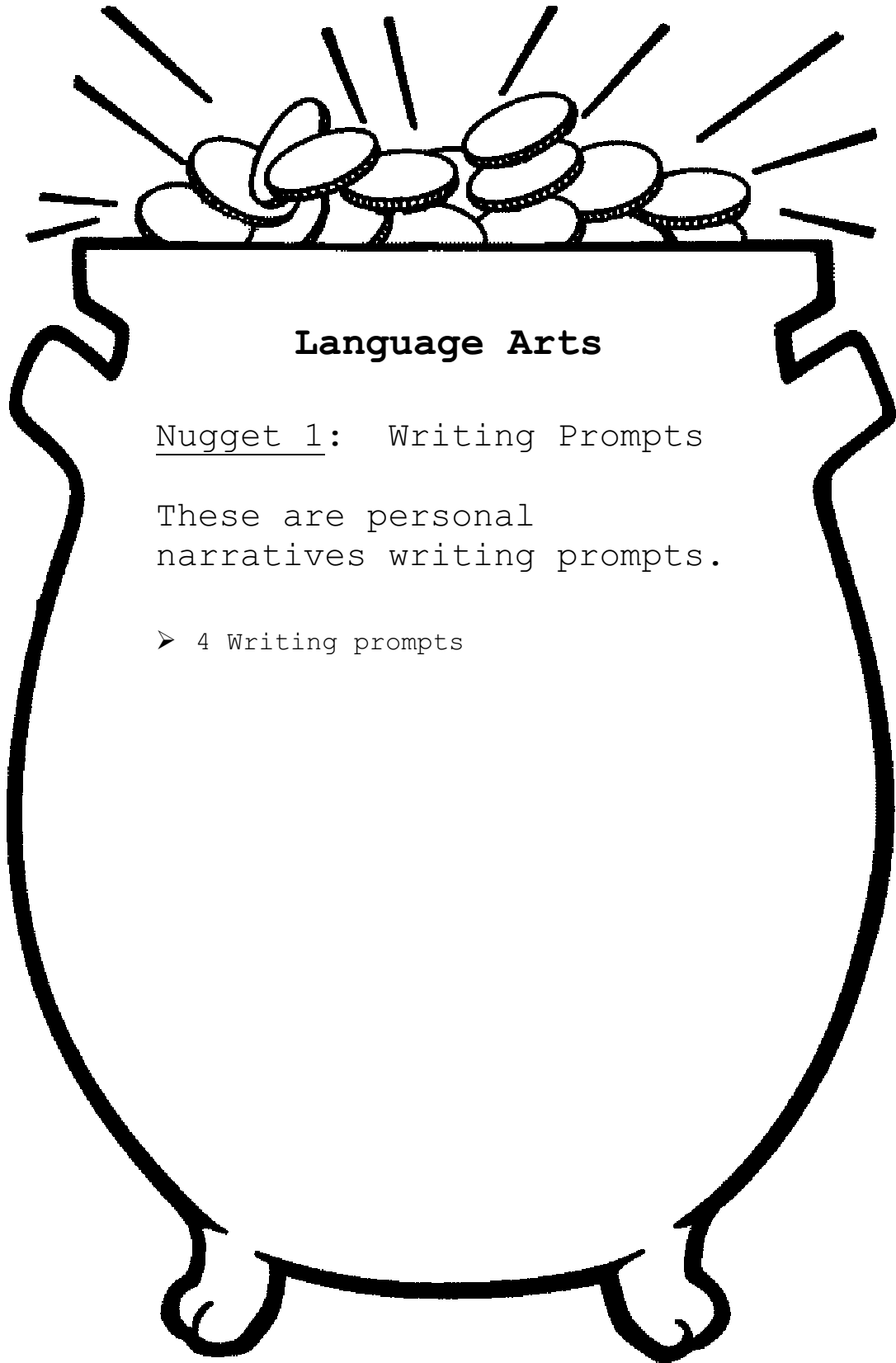




1-Centimeter Graph Paper



- ◆ Make a leaf collection (as a class or on an individual basis). Collect samples in individual zip-lock baggies. With adult supervision, leaves may be placed between two sheets of wax paper. Lay a towel over the wax paper and heat with a hot iron. This will seal the leaf between the wax paper. Identify and label the leaves using a guidebook. Sort them into categories according to deciduous, evergreen, etc. Measure length, width, and area.
- ◆ Grow your own trees. In the fall, collect seeds. Soak them in water overnight. Peel off the hard shell, and plant them in potting soil. Keep the pots in a cool place and keep the soil moist.
- ◆ Make leaf skeletons. Boil water in a sauce pan. Let some leaves simmer for around 30 minutes. When the water is cool, drain it and rinse the leaves in cold water. Let them dry. Use a toothbrush and brush the leaf from the veins.



Imagine that one day you find a gold nugget worth a million dollars. Write a story about what happens after you find the nugget.

As you write your story, remember to:

- Write about what happened after you found the nugget.
- Be sure that your story has a beginning, middle, and end.
- Write in complete sentences.
- Use correct grammar, spelling, punctuation, and capitalization.

You have just been on a field trip to Reed Gold Mine. Write a story about this trip.

As you write your story, remember to:

- Write about the events in the beginning, middle, and at the end of the trip.
- Write in complete sentences.
- Use correct grammar, spelling, punctuation, and capitalization.

Write a story about an important event that has occurred in your life. Explain why the event was important and how it changed your life.

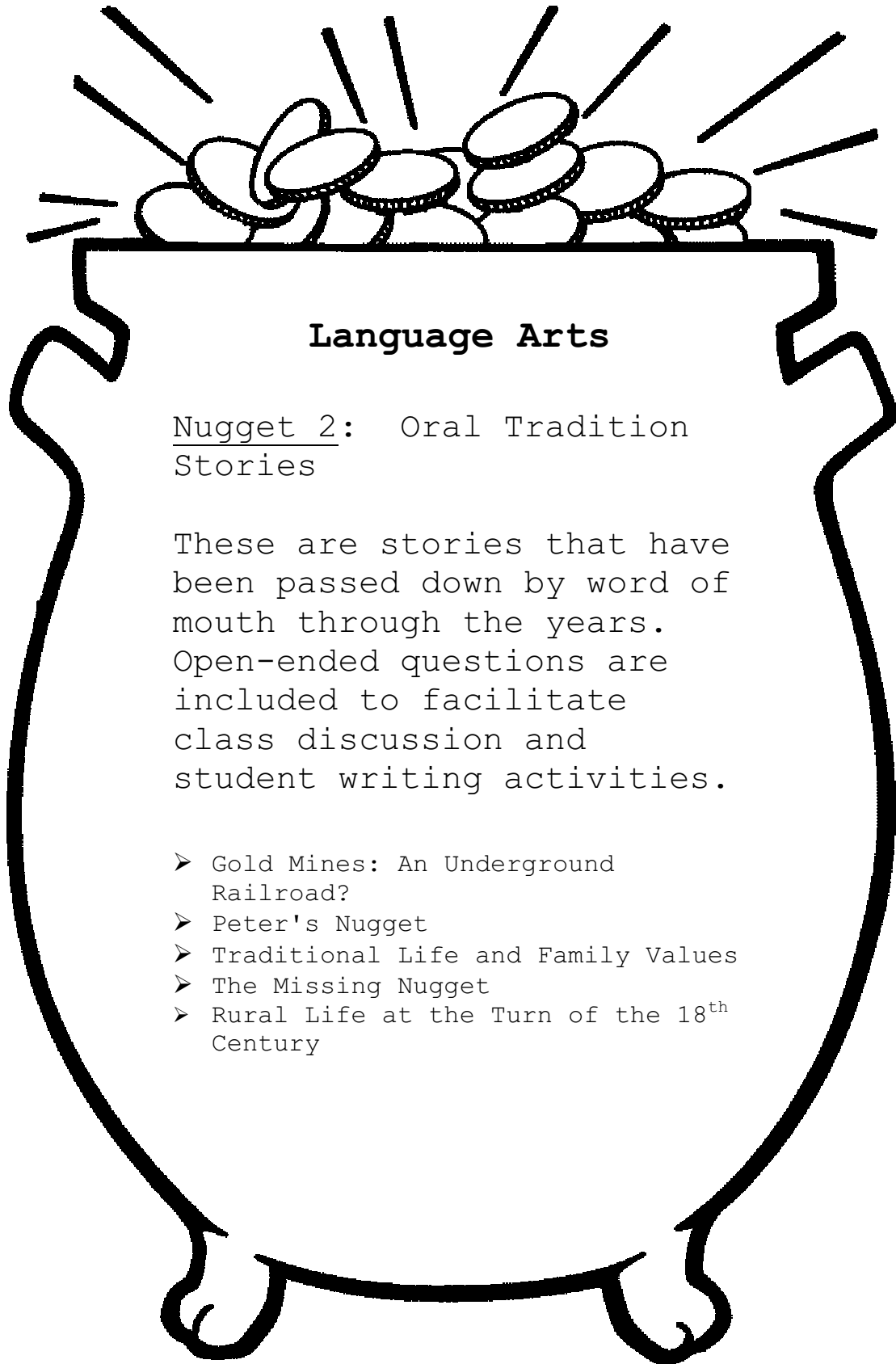
As you write your story, remember to:

- Write about an important event.
- Be sure that your story has a beginning, middle, and end.
- Write in complete sentences.
- Use correct grammar, spelling, punctuation, and capitalization.

It is the 1800s and you are a miner working at Reed Gold Mine. You have just met a slave who is also working at the mine. The slave would like to escape to freedom, and you agree to help. Write a story about your experience.

As you write your story, remember to:

- Write about the events before, during, and after the escape.
- Write in complete sentences.
- Use correct grammar, spelling, punctuation, and capitalization.



Language Arts

Nugget 2: Oral Tradition Stories

These are stories that have been passed down by word of mouth through the years. Open-ended questions are included to facilitate class discussion and student writing activities.

- Gold Mines: An Underground Railroad?
- Peter's Nugget
- Traditional Life and Family Values
- The Missing Nugget
- Rural Life at the Turn of the 18th Century

African American Slaves in Gold Mines

Slaves who worked at gold mines generally labored during the off-seasons. They had to do some of the most dangerous work. Gold mine operators who were after quick profits sometimes made slaves dig directly into hillsides without giving them the opportunity or time to make sure the roof was secure. The earth, according to one historian, “often gave way and crushed the workers.”

Some slaves, however, were able to use the mines to better purposes. A few were allowed to use some of the gold they found to buy their freedom. Slave miners also earned money for doing “extra work”, and made up to thirty dollars a month that way. Some slaves used Sundays and holidays to prospect on their own.

Overseers did not trust slaves, apparently, and watched them carefully.

Perhaps that lack of trust was the result of one basic reality: when slaves could, they often ran away from their white masters. One advertisement described a slave named Reuben and his wife Jinney, who were thought to be hiding in or around Smart’s Mine in Mecklenburg County. John K. Harrison of Mecklenburg claimed that his slave, missing in 1837, was “lurking about Reed’s Gold Mine.” This claim was never authenticated.

1. How was work in the mines both an opportunity and a danger for 19th century slaves?
2. We know that some slaves ran away from their masters. What do you think the consequences would be for those slaves that were caught and returned to work in the mines?

Peter's Nugget

In 1803 a slave named Peter found the biggest nugget ever discovered at Reed Gold Mine. The find occurred in the first real mining season on Reed's land. The nugget weighed 28 pounds, and was worth, in today's terms, \$131, 264.

Peter belonged to Rev. James Love, a Baptist minister, partner to John Reed, and friend to the Reed family. Two of John Reed's children married Love's children.

In later years George Barnhardt, John Reed's son-in-law, told a story about the day when the nugget was found. Barnhardt said that Love offered Peter the opportunity to pry a knob off the gold nugget with his fork as a reward for his good work. Love reportedly said that if Peter succeeded in prying the knob off the nugget he could keep that piece.

According to Barnhardt, Peter responded, "No, master. I don't want to do that. I might break my fork." Both Peter and Rev. Love knew his fork, a valuable possession, had no chance of breaking apart the gold.



1. If Peter had real access to some of the gold he found, for what purpose could he have used it?
2. Some accounts say Peter was an old man at the time, but historical documents indicate that Peter was probably a young adult, possibly even a teenager at the time. Why would Peter's age be important?
3. Imagine that you are Peter. Rewrite the story through his eyes.

Traditional Life and Family Values

Of the more than 700 acres John Reed owned, only 70 were mined in the 19th century. John Reed rarely did mining work himself, preferring to have partners who did the labor while giving him, for the use of his land, a share.

Reed continued to farm his entire life (he died at the ripe old age of 86 in 1845). And even when his plow turned up a gold nugget or two in the fields where he sowed and harvested, he made sure those fields stayed off-limits to his partners.

He made those rules and stuck by them. Later, when his sons and sons-in-law managed Reed Gold Mine, they were expressly forbidden to work anywhere that Reed cultivated his crops.



John Reed was born the illegitimate son of a Hessian woman who later married a day laborer (not the boy's father, by the way). His first years were almost certainly hungry ones. Later, he fought with Hessian troops in the American Revolutionary War, escaping from Savannah, Georgia. That trek was a dangerous one, given the fact that bounty hunters were paid for bringing back scalps of deserters.

Reed made his way through the roads in three colonies, settled, and married in Cabarrus County. Eight of his nine children were born when he discovered that his land was literally a golden one.

1. Why do you think John Reed was so determined to protect his land?

2. The passage states, "His first years were certainly hungry ones." Explain what this statement means.

3. Based on this text, how would you describe John Reed's character?

The Missing Nugget

In the first thirty years or so after John Reed discovered he had gold on his land, he and his three partners controlled mining operations. Each partner was to supply the manpower (initially, through two slaves apiece) and John Reed supplied the land. Profits were divided equally among the four men.

Martin Phifer, a prominent local businessman in Cabarrus County, routinely assayed gold nuggets found at the mine. In later years of his life he told the following story.

He had received three nuggets, each weighing about twenty pounds a piece, for assaying. When he examined the pieces closely, he discovered that they fit together perfectly.

But there was a large gap where a fourth piece, also about twenty pounds, would have fit. Clearly, the pieces had somehow been broken apart. Just as clearly, one piece was missing.

No one ever discovered where the missing nugget went. No legal battles happened afterwards. The partnership continued its existence without blame or harsh feelings.

Curiously, the same could not be said of a dispute among the next generation of partners. After the original partners died, John Reed allowed his sons and sons-in-law to operate the mine while giving him one-ninth of the profit.

One day, George Reed (John's son) could not get to the mine because his wife and son were ill. He sent his 16-year-old son in his place. That day, a 13-pound nugget was discovered.

George's partners refused to give him a share of the nugget. They insisted that his son was not capable of performing an adult's share of work. George, therefore, did not deserve any share of the nugget.

75 year old John Reed attempted to pay George off, using his personal resources. But George was not appeased. He took his brothers and brothers-in-law to court, and the mine shut down for 10 years because of the legal wrangle, which George eventually won. He recovered a sum of money that just about covered 10 years of legal expenses.

1. How did John Reed's role change throughout this passage?
2. Why didn't George just take the money and run when his father offered it to him?
3. Do you think the legal battle was worth it for George? Explain.

Rural Life at the turn of the 18th Century

John Reed's twelve-year-old son Conrad made the first documented discovery of gold in the United States. But no one had any idea what Conrad had found for three years.

After the boy lugged the 17-pound "rock" home to his parents, the folks used it as a doorstop. For three years, the nugget sat at everyone's feet.

Once during those years, John Reed brought the nugget to a silversmith in Concord, but he couldn't identify it. Not until 1802, when Reed left for his annual trip to Fayetteville, did the secret come out.



At that point, Reed's curiosity got the better of him once again, and he hauled the nugget all the way to the "big city." A jeweler there asked Reed to leave the nugget with him, and while he was gone, the jeweler melted the bar of gold down to a bar about nine inches in length.

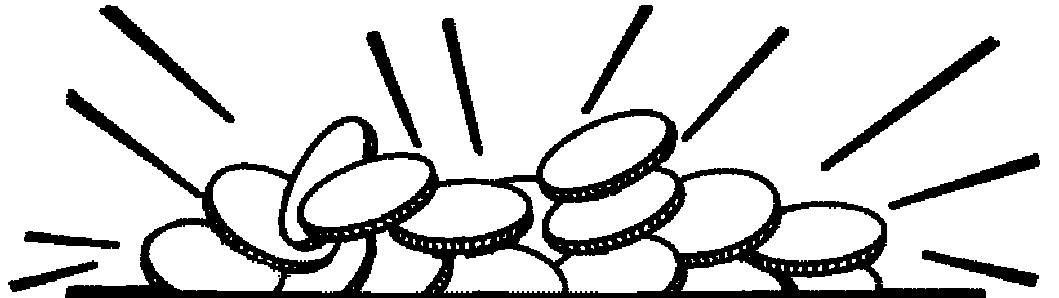
When Reed returned, the jeweler asked him to name his price. Reed suggested \$3.50, a week's worth of wages back then for a farmer, and the jeweler paid---gladly.

The nugget was worth at least 100 times that much in those days (about \$3600, that's about \$75,000 in today's world). Reed discovered later that he'd been cheated. Oral tradition tells us that Reed went back to the jeweler to demand more money and that he did receive an additional \$1,000.

But back in 1802, three dollars and fifty cents seemed like an awful lot of money. Reed, the story goes, bought his wife, Sarah (Sally), linen for a new dress and coffee beans.

The story continues: when Sally got the beans, she tossed them in a pot of water with a bit of meat and was astonished to find that the beans could not be cooked soft. After John tasted the beans, Sally tossed the mess on the hill beside the house (maybe that accounts for the expression "it's not worth a hill of beans").

1. Why do you think the jeweler paid John Reed "gladly"?
2. Do you feel the jeweler owed John Reed more money even though Reed named his price? Explain why or why not.
3. What does John and Sally Reed's behavior tell us about rural lifestyle of the time?



Language Arts

Nugget 3: Oral Tradition Vocabulary

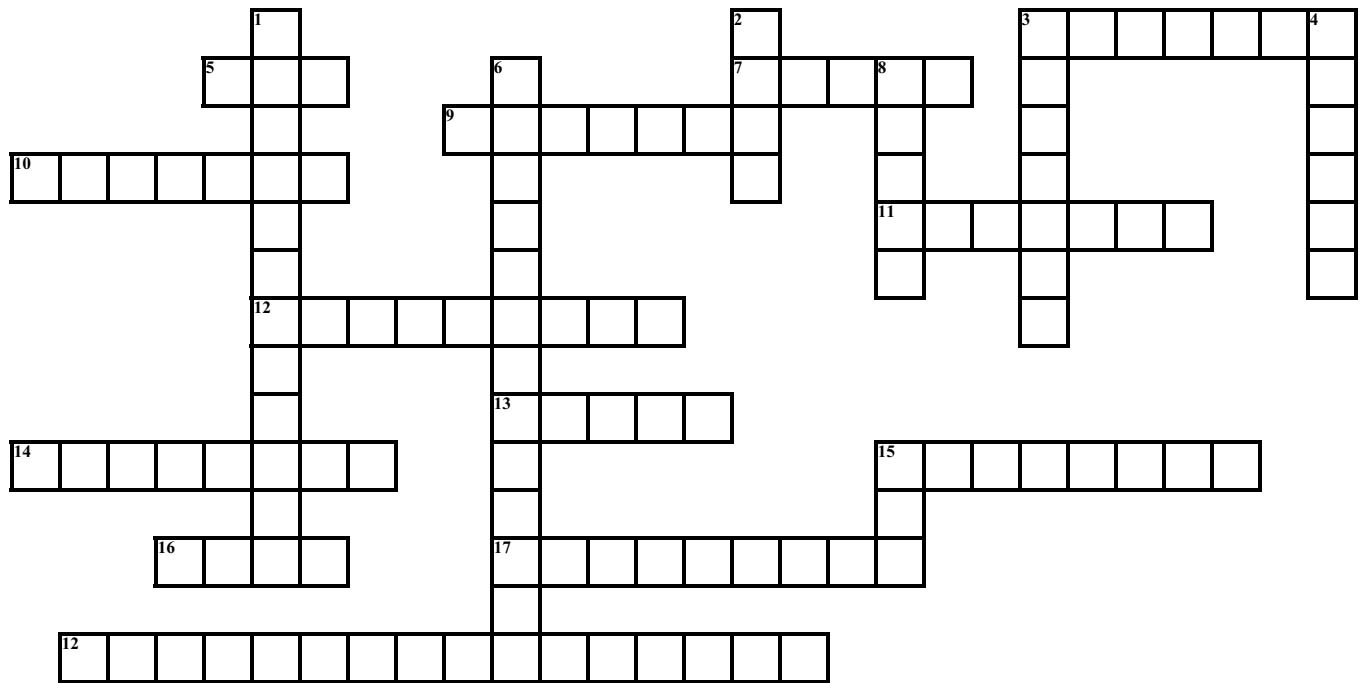
This section gives a number of vocabulary words related to the oral tradition stories.

- Oral Tradition Vocabulary List
- Oral Tradition Cross Word Puzzle
- Oral Tradition Hidden Message Puzzle

Oral Tradition Vocabulary

1. **oral tradition** – stories passed along by word of mouth
2. **historian** – a writer or student of history
3. **prospect** – to search for or explore for gold
4. **asserted** – expressed forcefully or boldly
5. **lurking** – to sneak; to lie in wait
6. **depot** – a railway or bus station
7. **nugget** – a small lump of gold
8. **fork** – a piece of equipment with two or more prongs used for raising, carrying, piercing, or digging
9. **pry** – to raise, move, or force open with a lever
10. **sow** – to scatter seed over the ground for growing
11. **harvest** – gathering a crop
12. **Hessian** – a German soldier paid by the British to fight the colonists in the Revolutionary War
13. **Revolutionary War** – the war fought by the colonies in America for their independence from Great Britain (1775-1783)
14. **War for Independence** – another term for the Revolutionary War
15. **bounty hunter** – one who hunts for criminals or outlaws for money
16. **trek** – a slow hard journey
17. **rural** – having to do with the country; rustic
18. **initially** – occurring at the beginning
19. **assay** – to test an ore (gold) to determine its value
20. **appease** – to satisfy; to relieve; to pacify
21. **wrangle** - argue

Oral Tradition Crossword Puzzle



Across

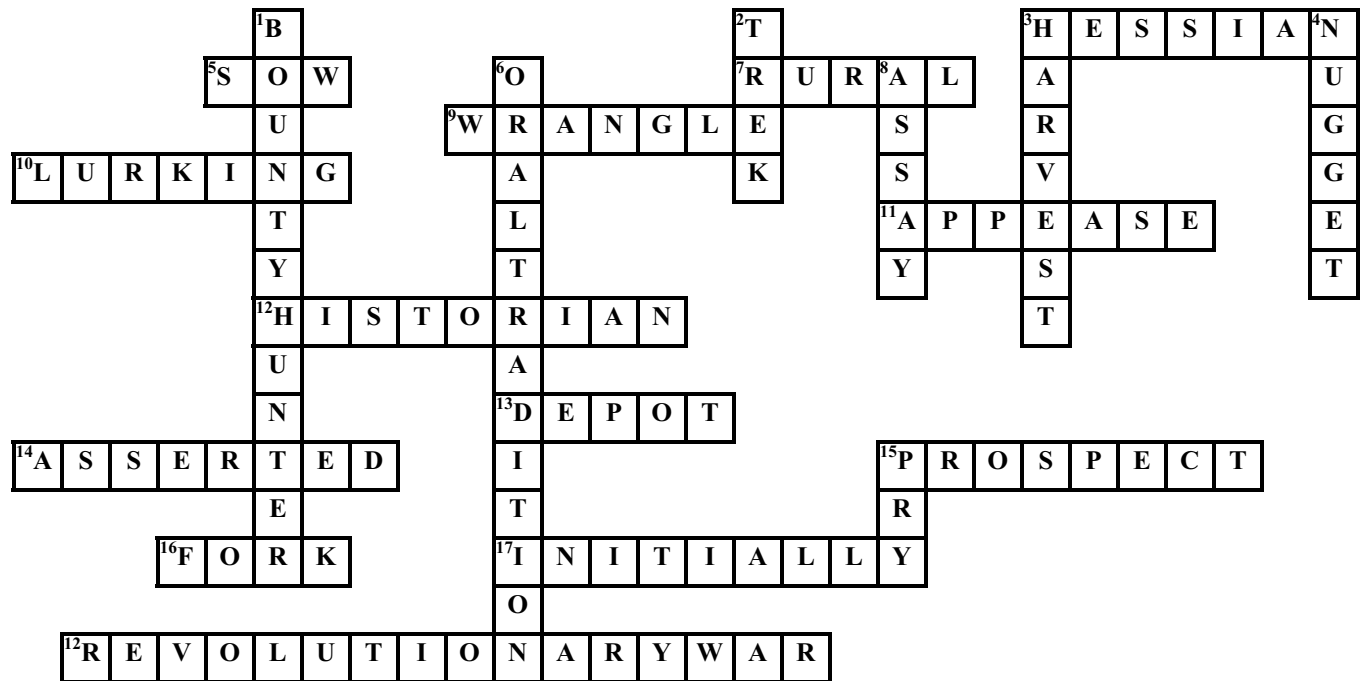
-
1. a German Soldier
 5. to scatter seed over the ground for growing
 7. having to do with the country; rustic
 9. argue
 10. to sneak; to lie in wait
 11. to satisfy; to relieve; to pacify
 12. a writer or student of history
 13. a railway or bus station
 14. expressed forcefully or boldly
 15. to search for or explore for gold
 16. a piece of equipment with two or more prongs

17. occurring at the beginning
18. fought by the colonies in America for their independence

Down

-
1. one who hunts for criminals or outlaws for money
 2. a slow hard journey
 3. gathering a crop
 4. a small lump of gold
 6. stories passed along by word of mouth
 8. to test an ore (gold) to determine its value
 15. to raise, move, or force open with a lever

Solution - Oral Tradition Crossword Puzzle



Across

- | | |
|--|---|
| <p>2. a German Soldier</p> <p>5. to scatter seed over the ground for growing</p> <p>7. having to do with the country; rustic</p> <p>9. argue</p> <p>10. to sneak; to lie in wait</p> <p>11. to satisfy; to relieve; to pacify</p> <p>12. a writer or student of history</p> <p>13. a railway or bus station</p> <p>14. expressed forcefully or boldly</p> <p>15. to search for or explore for gold</p> <p>16. a piece of equipment with two or more prongs</p> | <p>17. occurring at the beginning</p> <p>18. fought by the colonies in America for their independence</p> |
|--|---|

Down

- | | |
|---|--|
| <p>1. one who hunts for criminals or outlaws for money</p> <p>2. a slow hard journey</p> <p>3. gathering a crop</p> <p>4. a small lump of gold</p> <p>6. stories passed along by word of mouth</p> <p>8. to test an ore (gold) to determine its value</p> <p>15. to raise, move, or force open with a lever</p> | |
|---|--|

Oral Tradition Hidden Message Puzzle

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

ASSAY

BOUNTY

FORK

HISTORIAN

INITIALLY

ORAL

REVOLUTIONARY

TRADITION

WRANGLE

APPEASE

DEPOT

HARVEST

HUNTER

LURKING

PROSPECT

RURAL

TREK

ASSERTED

FOR

HESSIAN

INDEPENDENCE

NUGGET

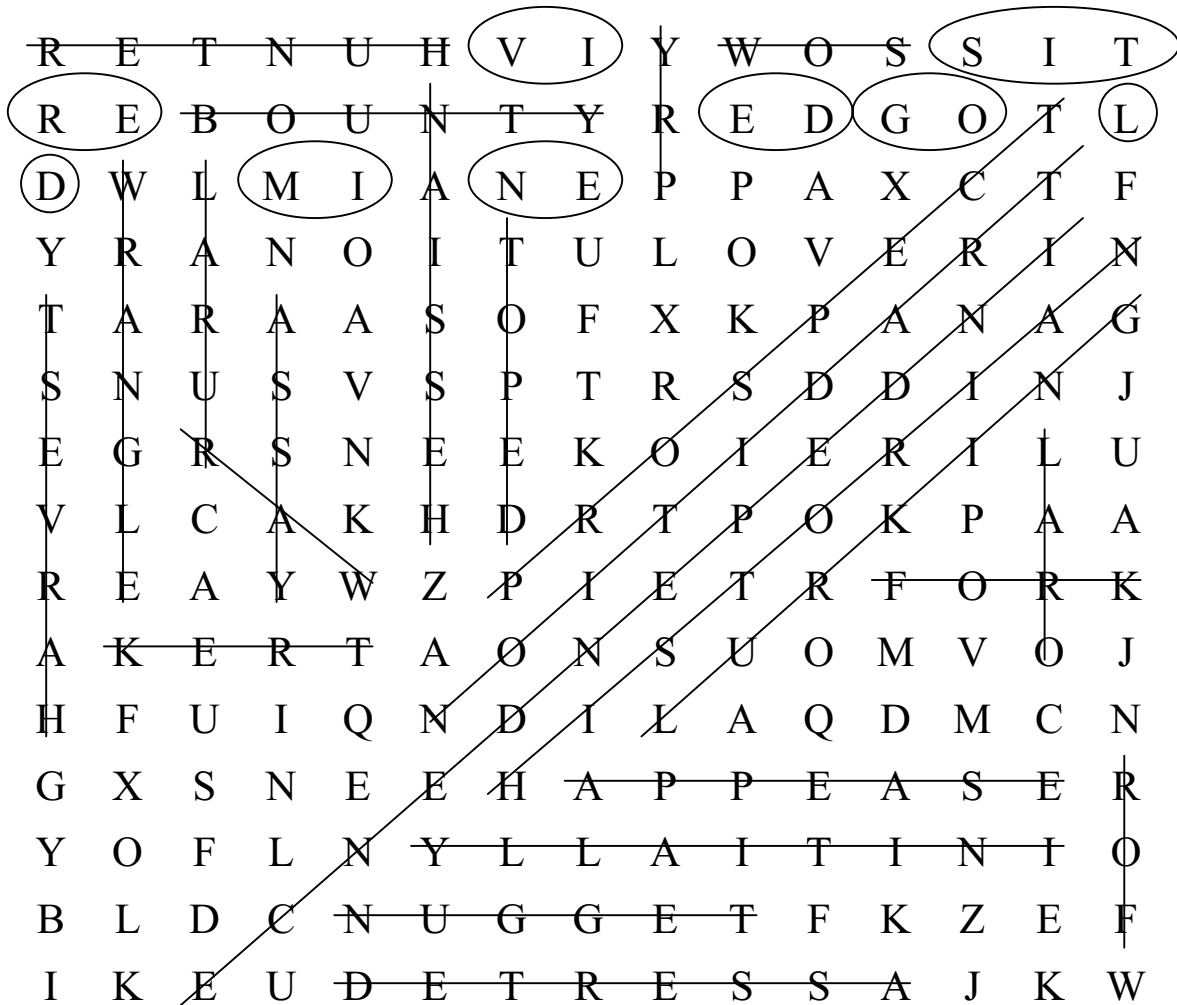
PRY

SOW

WAR

➤ Record the first 17 unused letters to find the hidden message:

Solution - Oral Tradition Hidden Message Puzzle



ASSAY

BOUNTY

FORK

HISTORIAN

INITIALLY

ORAL

REVOLUTIONARY

TRADITION

WRANGLE

APPEASE

DEPOT

HARVEST

HUNTER

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INDEPENDENCE

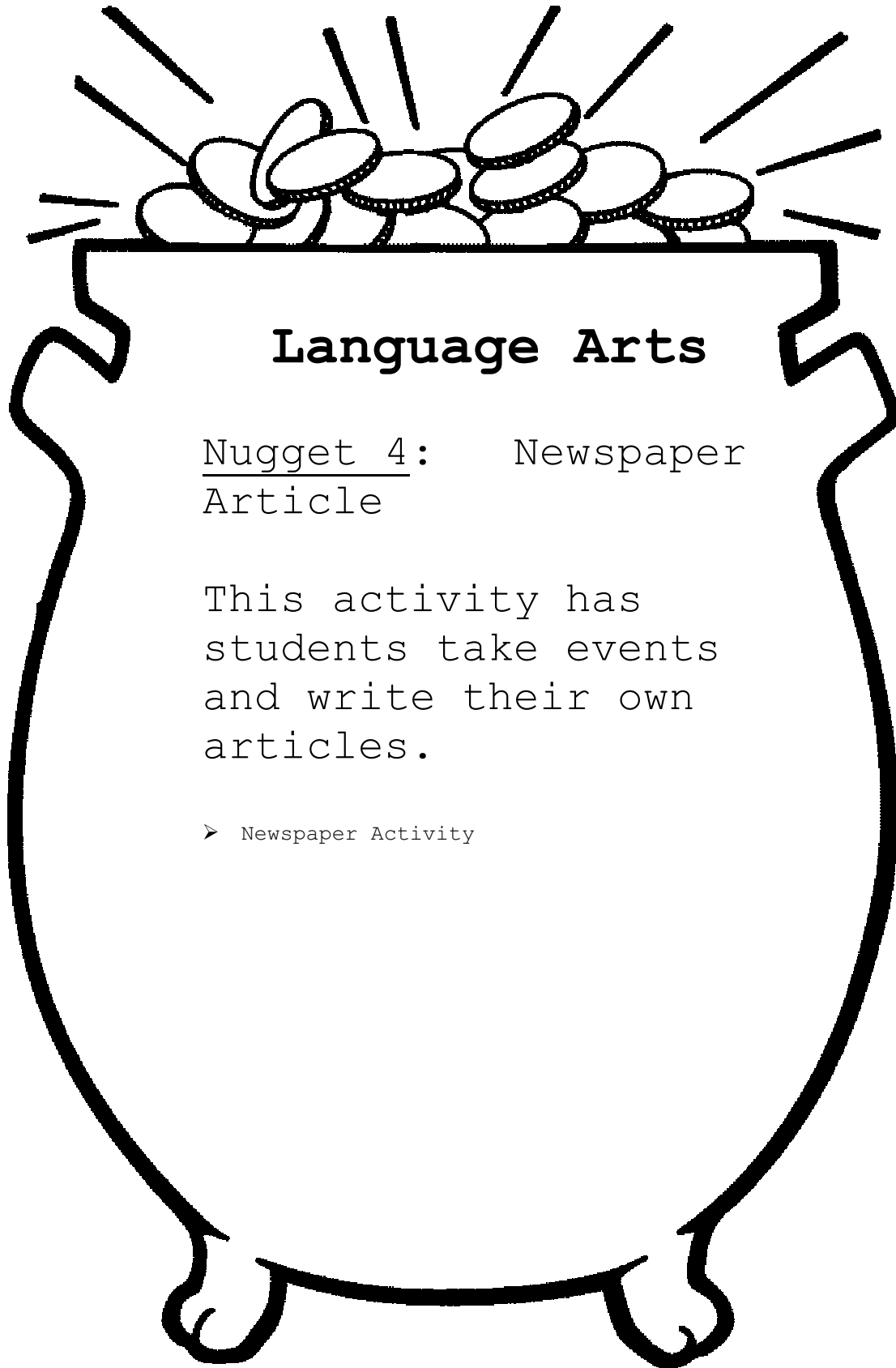
NUGGET

PRY

SOW

WAR

Hidden Message: Visit Reed Gold Mine





Newspaper Activity

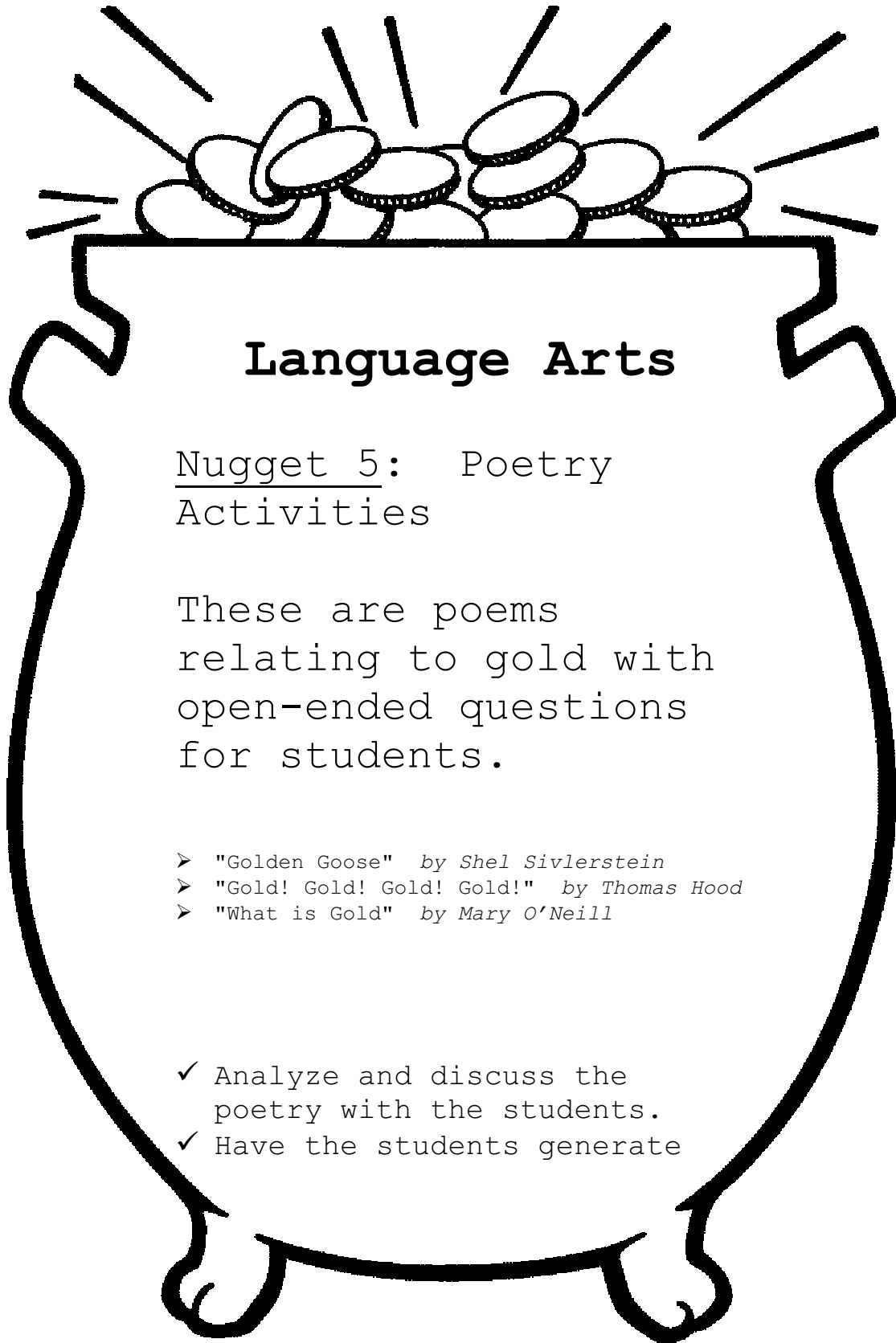
Take the following events and create a newspaper. Be sure to include titles, advertisements, and illustrations. (Refer to oral tradition stories.)

**“Gold Discovered
on John Reed’s farm in Cabarrus County”**

**“Slaves Found Hiding
at Reed Gold Mine”**

“John Reed Cheated by Local Merchant”

**“George Reed in Family Feud
Over Gold Partnership”**



Language Arts

Nugget 5: Poetry Activities

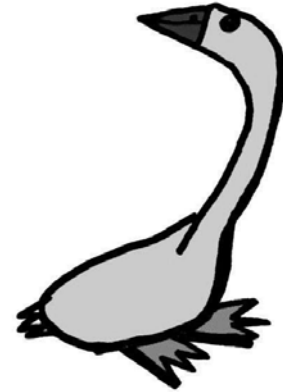
These are poems relating to gold with open-ended questions for students.

- "Golden Goose" by *Shel Sivlerstein*
- "Gold! Gold! Gold! Gold!" by *Thomas Hood*
- "What is Gold" by *Mary O'Neill*

- ✓ Analyze and discuss the poetry with the students.
- ✓ Have the students generate

“Golden Goose”

Yes, we cooked that fat ol’goose.
You say we were insane
Because she laid those golden eggs,
But you don’t know the pain
Of trying to boil a golden egg
While you just starve away.
If she’d laid *ordinary* eggs
She’d be with us today.



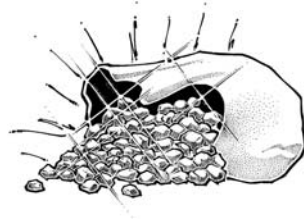
Shel Silverstein

Read the poem and do the following activities.

1. Generate a list of words or phrases that uses “gold.”
Examples: golden touch
heart of gold
2. Create a poem using one or more of the phrases from the list created in activity 1.
 - Types of poetry could include haiku, limerick, acrostic, or free verse.
 - Share poems with the class.

1. Read and discuss the following poem with the class.

Gold! Gold! Gold! Gold!
 Bright and yellow, hard, and cold,
 Molten, graven, hammer'd, and rolled;
 Heavy to get, and light to hold;
 Hoarded, barter'd, bought, and sold,
 Stolen, borrow'd, squander'd, doled;
 Spurn'd by the young, but hugged by the old
 To the very verge of the churchyard mould;
 Price to many a crime untold:
 Gold! Gold! Gold! Gold!



Thomas Hood

2. Have the students create a title for the poem.
Be Creative!
3. Have the students choose one of the following phrases from Thomas Hood's poem and write a short paragraph explaining what they think the author means.
 - "Hoarded, barter'd, bought, and sold"
 - "Spurn'd by the young, but hugged by the old"
 - "Price to many a crime untold"
4. Illustrate several images expressed in the poem.

11/11/11