

Fun Facts About Gold

- 1) Gold is an element and is one of about a hundred substances from which all other mixtures and compounds are made.
- 2) It has seventy-nine protons (nothing else has this number of protons) in each atom's nucleus.
- 3) It has an atomic symbol of Au from the Latin word "aur" which means gold.
- 4) Gold is 19.3 times heavier than water (so it has a specific gravity of 19.3).
- 5) It is about six times heavier than ordinary rock.
- 6) It does not oxidize (rust) so it is always shiny and bright yellow.
- 7) It is so malleable that it can be pounded into sheets so thin that it would require over 200,000 sheets to form a stack an inch high.
- 8) It is very heavy—a cubic foot of gold would weigh about 1,200 pounds.
- 9) In gold panning, we take advantage of the fact that gold is heaviest of all the particles in the soil—since gold is very heavy, it stays in the bottom of the gold pan.

Legal Aspects of Gold Prospecting

- ✓ You can't just dig for gold anywhere you want. It is forbidden to prospect on Indian and military reservations, parks, monuments, wilderness areas, private land without permission, or someone else's gold claim.

Background Knowledge for Gold Prospecting

- Gold is usually associated with ancient volcanic activity but just because you have volcanic rocks in your area does not mean there will be gold in them.
- The best way to find gold is to go to a place where it has been found before. There are many books, maps and websites which can provide information on historic gold finds in Arizona.
- If you find a site and gain permission to explore for gold, you have to know a little about how to look for it. If the gold is within rock, it is called lode gold. In this form, it is very expensive to extract.

More on other side.....

- We are interested in placer gold, where many years of erosion has released some of the gold from the rock. This placer gold is the gold we can more easily dig and pan for. In times of heavy rains and flooding of washes, gold can be transported downhill by water.
- Since gold is so heavy, it tends to drop to the bottom of the streambed when the floodwaters slow down. These are the places where you look for gold—where the stream channel widens, or the slope of the stream decreases. Water flows slower on the inside bend of a stream or where the water encounters large rocks or logs. These are all good places to look.
- The gold will not be on the top of the soil, but near the bottom. You have to dig down past the loose sand until you encounter clay, caliche, or bedrock. When you dig into the clay, save it for your gold pan. If you find caliche or bedrock, use a whisk broom to carefully sweep the soil on top of the caliche or bedrock into a shovel and save this material for your gold pan.
- Where a stream is located now may not be where it was hundreds or thousands of years ago. Stand back and take a look at the whole area near the streambed. Use your imagination and try to picture where an inside bend was thousands of years ago, and try your luck digging there. One sign that you are on the right track is finding rounded rocks where the rough edges of the rock were knocked off as it flowed down an ancient flooding streambed.
- Another sign is finding black sand as you pan for your gold. Black sand is mostly hematite and magnetite which, like gold, are very heavy, indicating that you are finding where the heavy materials in the soil are settling.
- If you have never panned for gold before, it is best to have an experienced prospector show you how to accomplish the method. It is not too difficult, but it does require technique and a little practice. You can find videos of gold panning technique at online sites such as Youtube. Good Luck, and may the bottom of your pan always be yellow.

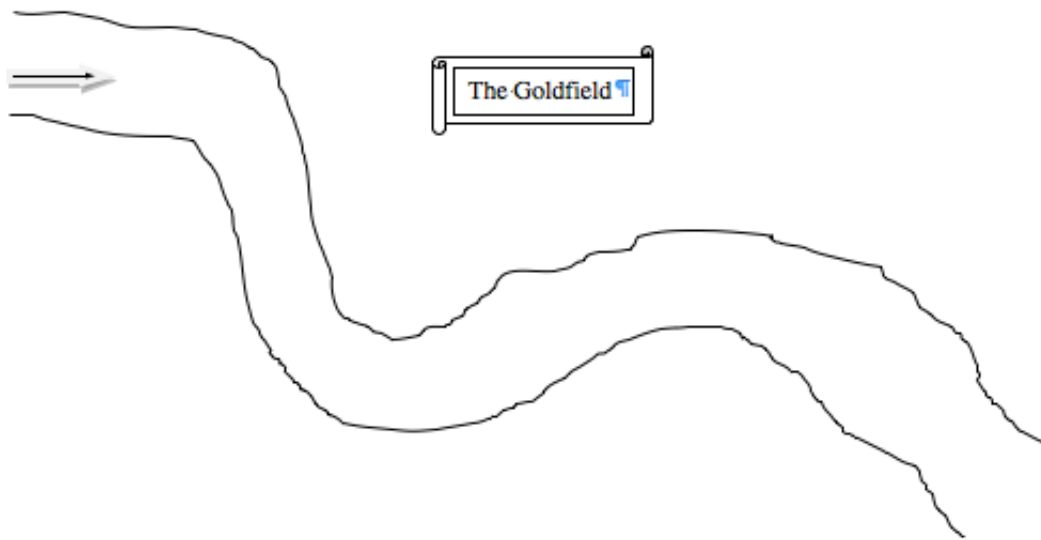
Name _____ Date _____ Period _____

Thar's Gold in Them Hills!: Gold Panning

1. Use references such as books, magazines, or the internet to research the various physical properties of gold. Write a paragraph in which you describe these properties. Be sure to include gold's color, ductility (malleability), melting point, and hardness.
2. Using a newspaper or an on-line news source, locate the current value of gold in dollars per ounce and record it here. _____.
3. If the specific gravity of gold is 19.3 and the specific gravity of magnetite (which is part of the black sand often found with gold) is 5.2, how much heavier is gold than the magnetite? _____.
4. Practice panning for gold. When you feel comfortable with your technique, show your technique to your teacher and he/she will place their initials here to give you credit for your successful technique. _____.
5. Malleability Test: Take a small piece of gold and place it on your lab table. Then using a hammer, tap on the piece of gold to test its malleability. Describe what happens to the gold as you tap on it.
6. Use references such as books, magazines, or the internet to research the one time in history when gold impacted where humans decided to settle or or how

gold mining changed the natural environment. Write a paragraph describing this time in history.

7. The map below shows a gold bearing streambed. The arrow shows the direction of water flow. Use a pencil to mark on the map where you think you might have the best chance of finding gold.



8. What would you have to do to get the gold out of the soil and separated from the soil?

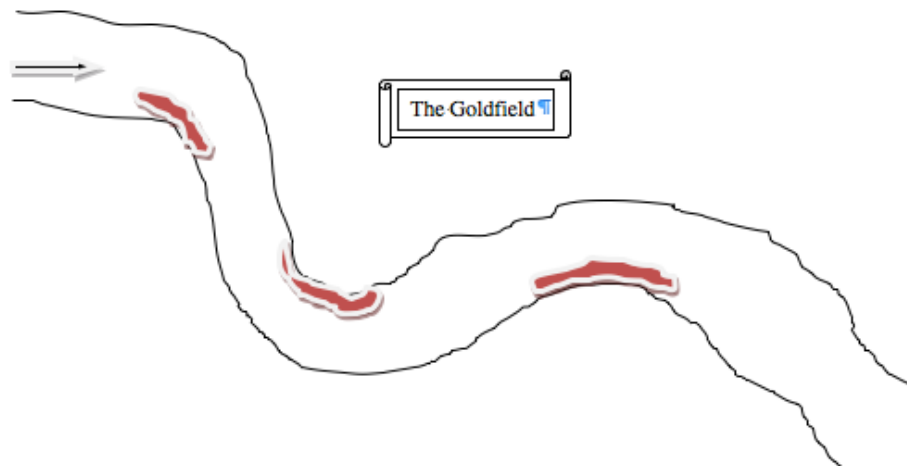
KEY
35 point assignment

Thar's Gold in Them Hills: Gold Panning

1. Use references such as books, magazines, or the internet to research the various physical properties of gold. Write a paragraph in which you describe these properties. Be sure to include gold's color, ductility (malleability), melting point, and hardness. *Students find lots of neat facts about gold: Its color is (surprise!) gold (or yellow). It is so ductile that an ounce of it can be drawn into a wire about fifty miles long. It has a melting point of 1,337.33 K, and a mineral hardness of 2.5. Students may find lots of other facts about gold such as its conductivity, and the fact that the only other metal heavier than gold is platinum, which has a specific gravity of 21.4. (6 pts)*
2. Using a newspaper or an on-line news source, locate the current value of gold in dollars per ounce and record it here. *This varies. You need to look it up. (2 pts.)*
3. If the specific gravity of gold is 19.3 and the specific gravity of magnetite (which is part of the black sand often found with gold) is 5.2, how much heavier is gold than the magnetite? *The answer is 19.3 divided by 5.2 = 3.7 times heavier (2 pts.)*
4. Practice panning for gold. When you feel comfortable with your technique, show your technique to your teacher and he/she will place their initials here to give you credit for your successful technique. *Teacher's initials here if student demonstrates that they can pan. (5 pts for participation).*
5. Malleability Test: Take a small piece of gold and place it on your lab table. Then using a hammer, tap on the piece of gold to test its malleability. Describe what happens to the gold as you tap on it. *Students should observe that the gold is very malleable and flattens out. If it crushes to powder, it is not gold, but fool's gold! (5 pts for participation). (Note: if they found no gold, you may need to provide a little for the students to hammer. It is available on the internet.*
6. Use references such as books, magazines, or the internet to research the one time in history when gold impacted where humans decided to settle or how gold mining changed the natural environment. Write a paragraph describing this

time in history. Answers will vary with their research. Accurate and thorough answers will receive 5 pts.

7. The map below shows a gold bearing streambed. The arrow shows the direction of water flow. Use a pencil to mark right on the map where you think you might have the best chance of finding gold. Students should draw on the inside bend: See below. (2 points per bend = 6 pts.)



8. What would you have to do to get the gold out of the soil and separated from the soil?

Students need to write that they have to dig down to a layer where the gold will settle (on top of bedrock or caliche, or in a layer of hard clay) and then have a way of picking up the material (using a whisk broom to whisk material onto a shovel). The material can be panned (some students may have found out through research that this material on the shovel could also be concentrated prior to panning by placing it in a drywasher, sluice, highbanker, or trommel, which gets rid of a lot of waste to make panning easier). (4 pts)