Name: _____ Date: _____ Period: ____

Weekly Reading HW HW Wk ___

Directions: Read and annotate the passage below. Then answer the questions.

Gold in Trees May Hint at Buried Treasure

Money may not grow on trees, but gold does – or at least it accumulates inside of them. Scientists have found that trees growing over deeply buried deposits of gold sport leaves with higher-than-normal concentrations of the glittering element. The finding provides an inexpensive, excavation-free way to narrow the search for gold deposits.

Scientists have previously noticed the anomalous levels of gold in the leaves of trees, but where the gold came from – the soil or the wind – was unclear. To answer this question, one group of Australian scientists gathered leaves, twigs, and bark from eucalyptus trees growing above a known gold deposit. The deposit is about the size of a football field and lies 30 meters underground, but at today's gold prices, it's too small to be worth excavating. The team also gathered the same parts from trees growing 200 meters away from the deposit. Normal concentrations of gold in plants are typically less than 2 parts per billion (ppb), but the leaves from the trees growing above the gold deposit –not those 200 meters away – had levels of 80 ppb.

To further prove the gold came from the ground, and not from being carried there by winds, the scientists then grew the seeds of the trees in greenhouses insulated from airborne dust and watered them with gold-laced solutions. The scientists showed that trees actually picked up the metal from soil and deposited it within their leaves. The new research provides "a conclusive set of evidence…from a very nicely constructed set of experiments," says Clifford Stanley, a geochemist. "The tree is a conveyor belt bringing gold to the surface," he notes. Like other such elements in the earth, gold gets sucked up by the plants as they absorb nutrients in the soil. But the trees don't have a biological need for the element; in fact, it may be toxic to them.

Don't think about mining trees, however. Average concentrations of gold in the leaves are much higher than normal, but individual particles of the metal are still very small, few, and far between. Even the largest particles were no more than 8 micrometers across, about half the diameter of the finest human hair. However, the trees can serve as a sign that gold deposits may lie nearby.

Developing and using new techniques to find gold is becoming increasingly important, says Stanley. By analyzing leaves and twigs, prospectors would waste no money on digging and cause no environmental damage. All that's required is a field trip to gather samples of leaves and then some chemical and x-ray analyses of the material back in the lab. "It's relatively inexpensive and the trees are doing the work for you," he says.

1. (RST.9-10.1) The main idea of the passage is that:
    a. Scientists are now using trees to determine where there are gold deposits instead of using more environmentally damaging methods.
    b. Scientists have determined that trees pick up gold from the soil and deposit them in their leaves.
    c. Trees that are living above known gold deposits are being slowly poisoned by the gold in the soil.
    d. The wind can blow gold dust onto the leaves of trees making it seem like there is gold inside of the trees.

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2. (RST.9-10.4) As it is used in the passage, the word *anomalous* means:
   a. Huge
   b. Abnormal
   c. Average
   d. Respectable

3. (RST.9-10.1) It can reasonably be inferred that:
   a. A tree's leaves are gold in appearance when a there is gold inside of them.
   b. A tree's roots can reach at least 30 meters below ground to reach the gold deposit.
   c. The only way a tree can acquire gold is from picking it up from soil.
   d. Trees are attracted to gold and will always try to absorb it when it is available.

4. (RST.9-10.2) One of the main points the author is trying to make in the fourth paragraph is that:
   a. Testing trees for the presence of gold is the best way to find underground gold deposits.
   b. It is difficult to mine gold because it can only be found in extremely small particles.
   c. Trees are only able to absorb very small particles of gold – otherwise it would kill them.
   d. Even though there is gold in the leaves of trees, it is too little to try to mine it.

5. (RST.9-10.1) What was the purpose of the second part of the experiment – growing trees in a greenhouse?

   _____
   _____
   _____
   _____

6. (RST.9-10.1) How might the information learned from this experiment be used in the future?

   _____
   _____
   _____
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Adapted from the article, "Gold in Trees May Hint at Buried Treasure" by Sid Perkins for Science Magazine*, on October 22, 2013.*