

Write one important fact from each paragraph in this space.

## Science Shorts -6

### History of Chemistry

In very early times, people learned how to produce chemical changes. They made these changes work for them long before it was understood why the changes took place. For example, metal smiths knew how to get metals out of rocks. They knew how to mix metals to make jewelry and weapons like swords and spears. Other workers knew how to make alcoholic beverages such as beer and wine from fruit and grains. Glassmakers were able to combine and heat substances in order to form them into delicate glass vases and ornaments. All of these skills required the control of chemical changes, but people did not understand how the changes happened.

As long as 3000 years ago, people from different countries began developing theories about the nature of the world around them. They did not, however, have enough knowledge to test their theories. Early Chinese scholars suggested that all things were made of earth, fire, metal, water and wood. The Greeks thought that all things were made of only four materials, earth, fire, water and air.

One of the earliest forms of chemistry was alchemy. During the Middle Ages, alchemists spent much of their time trying to turn metals of low value, such as iron and lead into gold. Although none of them ever achieved that miraculous change, alchemists did make some very important contributions to early chemical knowledge.

Robert Boyle, who lived in the 1600's, is usually considered to be the first real chemist. He understood that theories should be backed by careful experimentation. He is very famous in the science world for being the first scientist who kept accurate experiment logs.

In the 1700's there was a scientist by the name of Antone Lavoisier who performed experiments that disproved the Four Element Theory of the Greeks. He found there were many gases instead of "air." He found there were elements of Hydrogen and Oxygen that made up "water." He also found that the metal compounds studied by the alchemists were 17 different elements!

In 1814, John Berzelius introduced a system of abbreviations for the elements that is still in use today. The symbol was determined by using the first letter of the element, plus another letter, or one or two letters from the Latin name. Thus, O stands for oxygen, Al for aluminum, and Fe (ferrum) for iron.

1. Which of the following is NOT an example of a chemical change mentioned in the reading?
  - A. Mixing metals to make jewelry
  - B. Making alcoholic beverages such as beer and wine
  - C. Combine and heat substances to form glass vases and ornaments
  - D. Grinding up wood to make paper
2. Which of the following lists tells what early Chinese scholars suggested all things were made of?
  - A. earth, fire, metal, water and wood
  - B. earth, fire, water and air
  - C. earth, air, metal, wood and water
  - D. earth, metal, water and wood
3. Which of the following lists tells what the Greeks thought all things were made of?
  - A. earth, fire, metal, water and wood
  - B. earth, fire, water and air
  - C. earth, air, metal, wood and water
  - D. earth, metal, water and wood
4. One of the earliest form of chemistry is called \_\_\_\_\_.
5. Which of the following things did alchemists try to do?
  - A. Invent flying machines
  - B. Make water out of sand
  - C. Turn metals of low value such as iron and lead into gold
  - D. Use the sun to make electricity
6. Which of the following is NOT what Robert Boyle is known for?
  - A. Being the first real chemist
  - B. Understanding that theories should be backed by careful experimentation
  - C. Turn metals of low value such as iron and lead into gold
  - D. Keeping accurate experiment logs
7. Which of the following is Antone Lavoisier known for?
  - A. Found there were many gases instead of just air
  - B. Found the elements of hydrogen and oxygen made up water
  - C. Used the sun to make electricity
  - D. Found that the metal compounds of the alchemists were 17 different elements.
8. Who introduced a system of abbreviations for the elements? \_\_\_\_\_