

EXPLORING THE WORLD OF CHEMISTRY

Chapter 1 Supplemental Questions

1. How did the Egyptians extract iron from iron ore?

2. How is iron quenched, and how does it change the property of the iron?

3. Pewter is an alloy made up of what two elements? _____

4. Bronze is an alloy made up of what two elements? _____

5. Three of the seven ancient elements known as the working elements:

1. _____
2. _____
3. _____

EXPLORING THE WORLD OF CHEMISTRY

Chapter 2 Supplemental Questions

1. Gold is said to be the most malleable of all the metals. What does this mean, and how is this property useful to man?

2. What metal is mixed with gold to give it strength? _____

3. How is the purity of gold expressed in carats? What does the term 10-carat mean?

4. What is the makeup of sterling silver?

5. How did the phrase “mad as a hatter” come about?

6. There are 7 ancient metals – fill in the names of the metals that fit the definitions.

a. Coinage metals: _____, _____, _____

b. Working metals: _____, _____, _____

c. The only metal that is liquid at room temperature: _____

EXPLORING THE WORLD OF CHEMISTRY

Chapter 3 Supplemental Questions

1. Carbon exists in two different forms. What are the names of these two forms of carbon, how are they different, and how is each used today?

2. What U.S. laboratory made the first synthetic diamonds in 1955? How was it done, and what use are these diamonds to industry?

3. What is alchemy and the purpose of the philosopher's stone?

4. One of Robert Boyle's greatest contributions to science was his definition of an element. What is his definition of an element, and what did this do to the pseudoscience (false science) of alchemy?

5. How is an atom different from an element, and how many natural occurring elements are there?

6. What is the Royal Society, and what was Robert Boyle's relationship to the society? What is the motto of the Royal Society, and what does it mean?

EXPLORING THE WORLD OF CHEMISTRY

Chapter 4 Supplemental Questions

1. Explain two ways to produce hydrogen in the laboratory.

2. What are the properties of hydrogen?

3. Describe Daniel Rutherford's experiment in discovering nitrogen, and the properties of nitrogen.

4. What are some of the uses of nitrogen compounds?

5. Jöns Jakob Berzelius came up with a way of symbolizing the elements of the 1700s. Describe that method.

EXPLORING THE WORLD OF CHEMISTRY

Ch. 1-4 Review

Matching:

- _____ iron and oxygen
- _____ gold, copper, silver
- _____ 12-carat
- _____ pewter
- _____ mercury
- _____ alchemy
- _____ Isaac Newton
- _____ carbon
- _____ Joseph Priestley
- _____ brass
- _____ iron
- _____ diamond and graphite
- _____ painting
- _____ oxygen
- _____ meteorites
- _____ bronze
- _____ Henry Cavendish
- _____ Daniel Rutherford
- _____ Jöns Jakob Berzelius
- _____ another element

- A. a metal used by the Aztecs that "fell from the sky"
- B. shooting stars
- C. two elements that are contained in iron ore
- D. cast iron, steel, and wrought iron differ only by the amount of this element in them
- E. a process that prevents iron from rusting
- F. the coinage elements
- G. 50% gold by weight
- H. a mixture of zinc and copper
- I. a mixture of tin and lead
- J. a mixture of copper and tin
- K. the element used in liquid barometers and some thermometers
- L. two forms of carbon
- M. false science
- N. famous scientist born the same year Galileo died (1642)
- O. cannot be made by chemically combining two or more elements
- P. discovered hydrogen
- Q. discovered carbon dioxide
- R. the element necessary for combustion
- S. discovered nitrogen
- T. came up with modern method for writing the symbol for an element

Short Answer:

1. How did the Egyptians extract iron from iron ore?

2. How did the phrase "mad as a hatter" come about?

3. What U.S. laboratory made the first synthetic diamonds in 1955? How was it done, and what use are these diamonds to industry?

4. One of Robert Boyle's greatest contributions to science was his definition of an element. What is his definition of an element, and what did this do to the pseudoscience (false science) of alchemy?

5. a. What metal is mixed with gold to give it strength? _____

b. How is the purity of gold expressed in carats? What does the term 10-carat mean?

c. What is the makeup of sterling silver?

EXPLORING THE WORLD OF CHEMISTRY

Ch. 1-4 Test

Name _____ Date _____ Score _____

35 pts. total

Matching: (1 pt. each)

- _____ Joseph Priestley
- _____ painting
- _____ Daniel Rutherford
- _____ pewter
- _____ Jöns Jakob Berzelius
- _____ Isaac Newton
- _____ bronze
- _____ iron and oxygen
- _____ another element
- _____ mercury
- _____ brass
- _____ gold, copper, silver
- _____ Henry Cavendish
- _____ iron
- _____ diamond and graphite
- _____ meteorites
- _____ alchemy
- _____ carbon
- _____ oxygen
- _____ 12-carat

- discovered hydrogen
- discovered nitrogen
- came up with modern method for writing the symbol for an element
- the element necessary for combustion
- discovered carbon dioxide
- cannot be made by chemically combining two or more elements
- famous scientist born the same year Galileo died (1642)
- false science
- two forms of carbon
- the element used in liquid barometers and some thermometers
- a mixture of copper and tin
- a mixture of tin and lead
- a mixture of zinc and copper
- 50% gold by weight
- the coinage elements
- a process that prevents iron from rusting
- cast iron, steel, and wrought iron differ only by the amount of this element in them
- two elements that are contained in iron ore
- shooting stars
- a metal used by the Aztecs that "fell from the sky"

Short Answer: (3 pts. each)

- How did the phrase "mad as a hatter" come about?

2. What U.S. laboratory made the first synthetic diamonds in 1955? How was it done, and what use are these diamonds to industry?

3. How did the Egyptians extract iron from iron ore?

4. One of Robert Boyle's greatest contributions to science was his definition of an element. What is his definition of an element, and what did this do to the pseudoscience (false science) of alchemy?

5. a. What metal is mixed with gold to give it strength?

b. How is the purity of gold expressed in carats? What does the term 10-carat mean?

c. What is the makeup of sterling silver?
