

Chapter 2 Outline

Section 2.1: Properties of Matter

- _____ is anything that has _____ and occupies _____.
- All _____ exists of tiny particles called _____.
- The _____ of an object is the measure of the _____ the object contains.
- The _____ of an object is the measure of the _____ by an object.
- An _____ is a property that depends on the _____ of matter in a sample.

Ex.

- An _____ is a property that depends on the _____ of matter, not the _____ of matter.

Ex.

- A _____ is a type of matter with a _____ composition.

Ex.

- _____ are characteristics of a substance that can be observed without the substance changing _____.

Ex.

- A _____ involves a change in one or more physical properties, but no change in the _____ of the substance.

Ex.

- Physical changes can be _____ or _____.
- A _____ is a state of matter that has a definite _____ and _____.
- _____ are not easily _____.
- A _____ has a definite _____, but it takes the shape of its container.
- _____ are not easily _____.
- A _____ has no _____ volume or shape.
- _____ can be _____.
- A _____ is the gaseous state of a substance that is generally a _____ at room temperature.

Ex:

- A _____ is an ionized gas-like phase consisting of _____ and _____.

Section 2.1 Assessment

1. Name two categories used to classify properties of matter.
2. Explain why all sample of a given substance have the same intensive properties.
3. Name four states of matter.
4. Describe the two categories used to identify physical changes.

5. In what ways are liquids and gases alike? In what ways are liquids and solids different?

6. Is the freezing of mercury a reversible or irreversible physical change?

Section 2.2: Mixtures

- A _____ is a material of _____ composition that contains _____ or more substances.

Ex.

- An _____ is a mixture that has _____.

Ex.

- A _____ mixture is a mixture that has _____ properties in different parts of the mixture.

Ex.

- A _____ mixture is a mixture that has a _____ composition. It is also called a _____.

Ex.

- _____ is a method for separating components of a mixture containing a _____ and a _____.
- _____ is a method for separating the components of a mixture based on the different _____ of the components.

Section 2.2 Assessment

1. How are mixtures classified?

2. Classify each of the following as a homogeneous or heterogeneous mixture.
- a. food coloring
 - b. ice cubes in liquid water
 - c. mouthwash
 - d. mashed, unpeeled potatoes
3. How are a substance and a solution similar? How are they different?
4. In general, when would you use filtration to separate a mixture? When would you use distillation to separate a mixture?
5. Describe a procedure that could be used to separate a mixture of sand and table salt.

Section 2.3: Elements and Compounds

- An _____ is the smallest part of an _____ that retains its _____ in a chemical reaction.
Ex.
- _____ are a _____ collection of two or more _____ of the same element or of different elements.
Ex.

- _____ are substances that cannot be _____ into simpler substances by chemical or physical means. It consists of _____ with the same atomic number.

Ex.

- _____ are made of _____.
- _____ are different _____ of a given element.

Ex.

- _____ are substances with a _____ that can be broken down into _____ by chemical processes.
- Compounds are made up of _____.

Ex.

- Each _____ is represented by a _____. Only the _____ of the chemical symbol is always _____.
- _____ represent the _____ of atoms of each element.
- Ex.

Section 2.3 Assessment

1. How is a compound different from an element?
2. How can you distinguish a substance from a mixture?

3. Classify each of these samples of matter as an element, a compound, or a mixture.

a. table sugar

c. tap water

b. cough syrup

d. nitrogen

4. Write the chemical symbol for each element.

a. lead

d. oxygen

b. silver

e. sodium

c. hydrogen

f. aluminum

5. Name the elements represented by the following symbols.

a. C

d. Au

b. Ca

e. Fe

c. K

f. Cu

Section 2.4: Chemical Reactions

- A _____ is the ability of a substance to change to a different _____.

Ex.

- A _____ involves a change in the fundamental components of the substance.

Ex.

- A substance present at the _____ of a reaction is a _____.
- A substance _____ in the reaction is a _____.

Ex. $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

- The five signs of a chemical reactions are _____,
_____, _____,
_____, and _____.
- A _____ is a _____ that forms and during a chemical reaction involving a _____.
- The _____ states that in any physical or chemical process, _____ is neither _____ nor _____.
- During any _____, the mass of the _____ is always equal to the mass of the _____.

Section 2.4 Assessment

1. How does a chemical change affect the composition of matter?
2. Name the five signs that a chemical reaction has taken place.
3. In a chemical reaction, how does the mass of the reactants compare with the mass of the products?
4. What is the main difference between physical and chemical changes?
5. Classify the following changes as physical or chemical changes.
 - a. Water boils.
 - b. Milk turns sour.
 - c. Salt dissolves in water.
 - d. A metal rusts.

6. Hydrogen and oxygen react chemically to form water. How much water would form if 4.8g of hydrogen reacted with 38.4g of oxygen?