Chemistry I Cycle I Lesson 5

Distinguish between pure substances, heterogenous mixtures, and homogenous mixtures.

Warmup: What are the names of the elements symbolized by Pb, Na, O, Cl, C, N, Au, Ag?

Chemistry I Cycle I Lesson 5

Distinguish between pure substances, heterogenous mixtures, and homogenous mixtures.

LAB TOMORROW: BE READY

Vocab:

"mixture", "homogenous", "heterogenous"

Problems – p. 28 #6-8, 11, 14

Mixtures

- A **mixture** is a combination of two or more substances that are not chemically combined.
- Air is a mixture of mostly nitrogen and oxygen.
  - All the different gases in air are physically mixed.
  - The proportions of the gases can vary.
- Water is not a mixture.
  - The H and O atoms are chemically bonded
  - The ratio of H to O atoms is always 2 to 1.

End Of Slide
Chapter menu
Resources

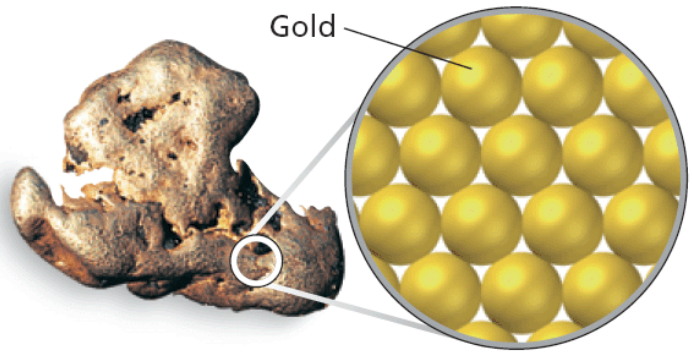
Mixtures, *continued*

Mixtures Can Vary in Composition and Properties

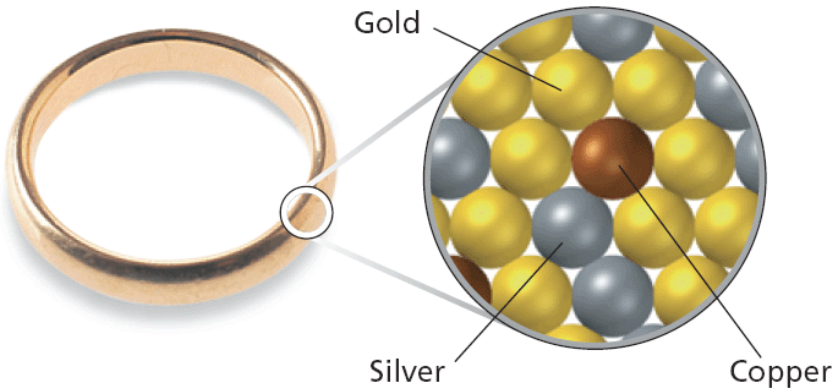
- The proportion of the materials in a mixture can change.
- The properties of the mixture may vary.
- An *alloy* is a solid mixture.
  - example: An alloy of gold and other metal atoms is stronger than pure gold.
    - 18-karat gold contains 18 grams of gold per 24 grams of alloy.
    - 14-karat gold contains 14 grams of gold per 24 grams of alloy.

End Of Slide

Particle Models for Gold and Gold Alloy



24-karat gold is pure gold.



14-karat gold is an alloy of gold with silver and copper. 14-karat gold is 14/24, or 58.3%, gold.

Mixtures, *continued*

Homogenous Mixtures

- A **homogenous mixture** describes something that has uniform structure or composition throughout.
  - examples: gasoline, syrup, and air
- Because any two samples of a homogenous mixture will have the same proportions of ingredients, homogenous mixtures have the same properties throughout.

Mixtures, *continued*

Heterogeneous Mixtures

- A **heterogeneous mixture** describes something that is composed of dissimilar components.
  - example: A mixture of sand and water is a heterogenous mixture.
- Any two samples of a heterogeneous mixture will have the different proportions of ingredients.
  - Heterogeneous mixtures have different properties throughout.

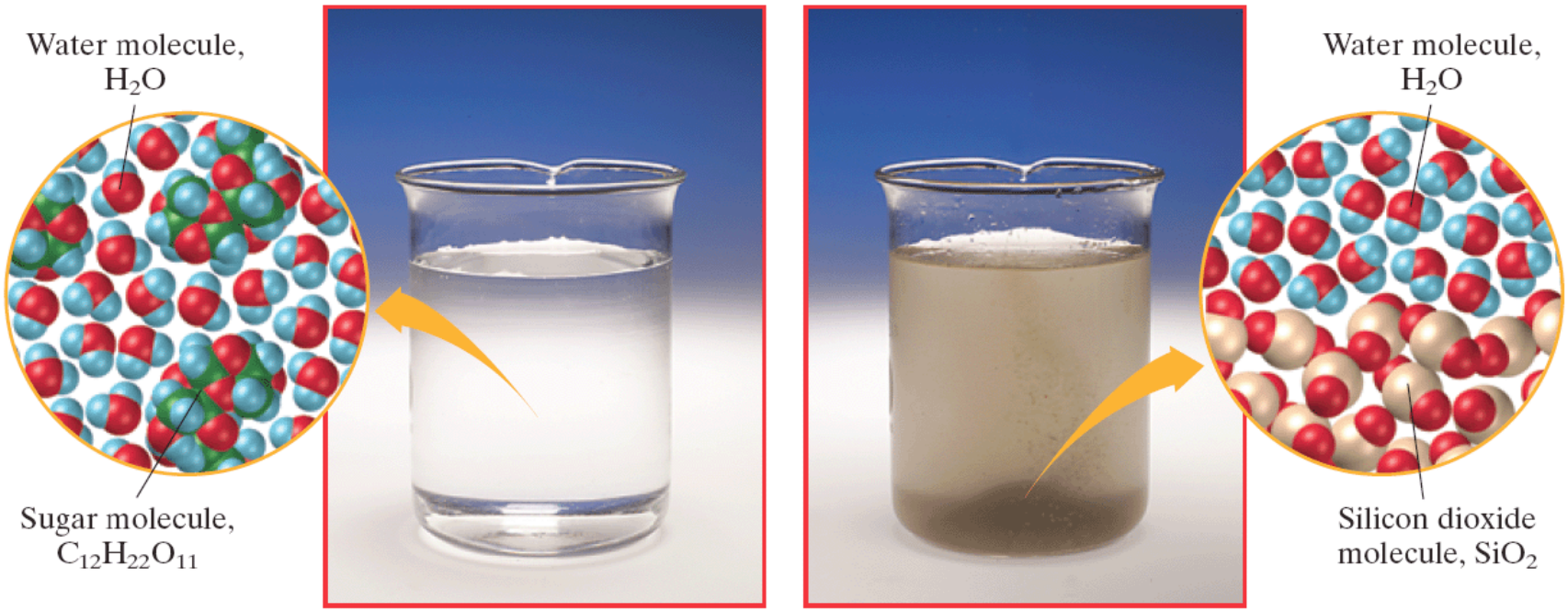
End Of Slide

Examples of Mixtures

- Mixtures are either homogenous or heterogeneous.

Homogeneous	Iced tea—uniform distribution of components; components cannot be filtered out and will not settle out upon standing
	Stainless steel—uniform distribution of components
	Maple syrup—uniform distribution of components; components cannot be filtered out and will not settle out upon standing
Heterogeneous	Orange juice or tomato juice—uneven distribution of components; settles out upon standing
	Chocolate chip pecan cookie—uneven distribution of components
	Granite—uneven distribution of components
	Salad—uneven distribution of components; can be easily separated by physical means

Types of Mixtures



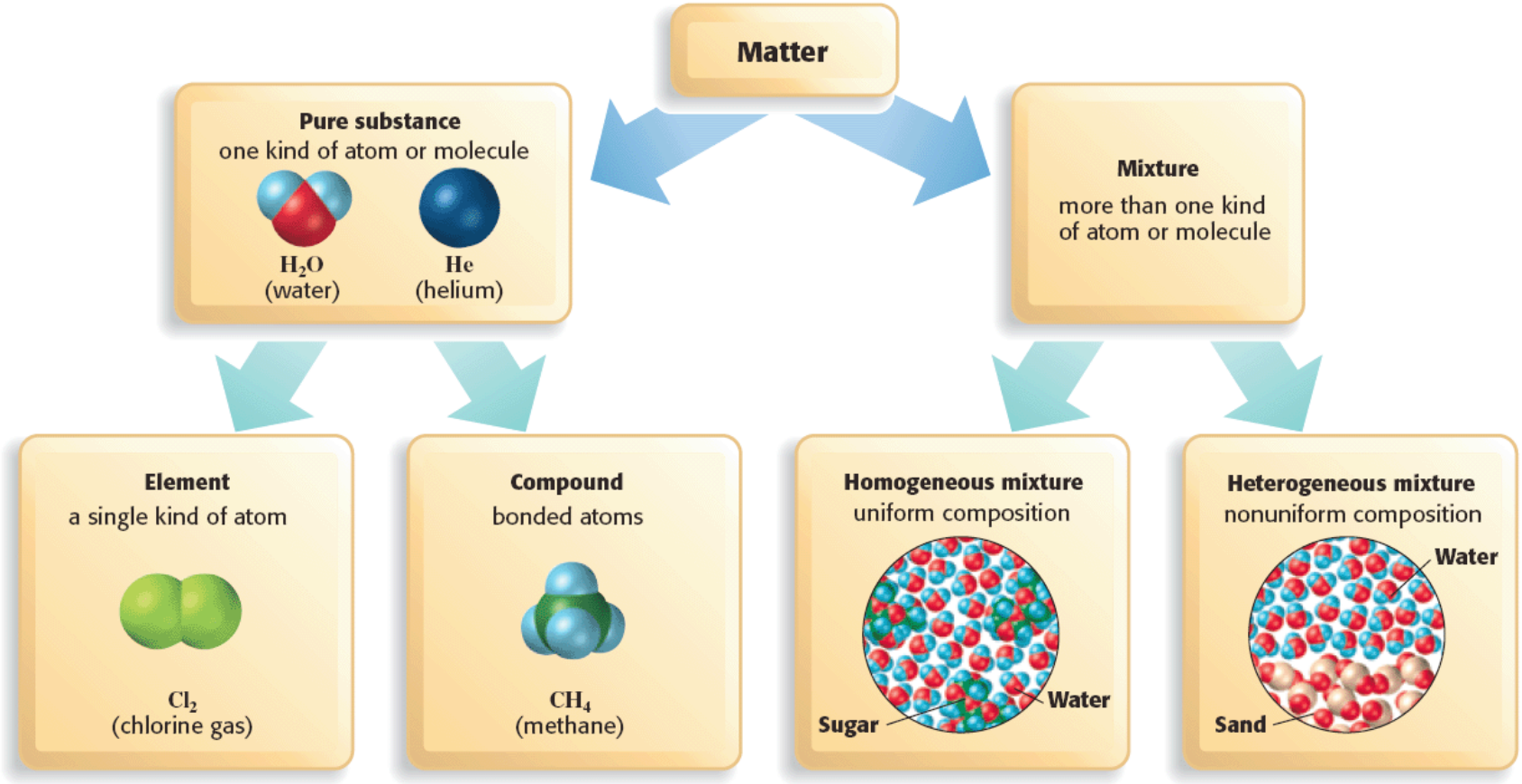
Mixtures, *continued*

Distinguishing Mixtures from Compounds

- The properties of a mixture reflect the properties of the substances it contains.
- The properties of a compound often are very different from the properties of the elements that make it up.
- A mixture's components can be present in varying proportions.
- A compound has a definite composition in terms of the masses of its elements.

End Of Slide

Classifying Matter



Understanding Concepts

1. Which of the following is **best** classified as a homogeneous mixture?

   A. blood

   B. copper wire

   C. pizza

   D. hot tea

Understanding Concepts

1. Which of the following is **best** classified as a homogeneous mixture?

   A. blood

   B. copper wire

   C. pizza

   D. hot tea

Understanding Concepts

2. Which of the following statements about compounds is true?

F. A compound contains only one element.

G. A compound can be classified as either heterogeneous or homogeneous.

H. A compound has a defined ratio by mass of the elements that it contains.

I. A compound varies in chemical composition depending on the sample size.

Understanding Concepts

2. Which of the following statements about compounds is true?

F. A compound contains only one element.

G. A compound can be classified as either heterogeneous or homogeneous.

H. A compound has a defined ratio by mass of the elements that it contains.

I. A compound varies in chemical composition depending on the sample size.

Understanding Concepts

3. Which of the following is an element?

A. $BaCl_2$

B. CO

C. He

D. NaOH

Understanding Concepts

3. Which of the following is an element?

A. $BaCl_2$

B. CO

C. He

D. NaOH