



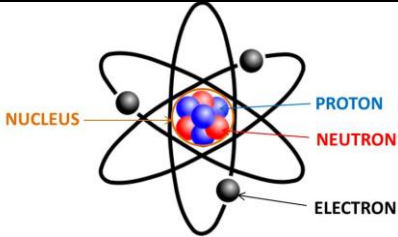

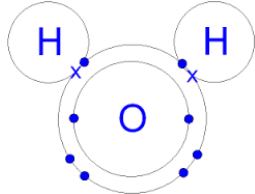

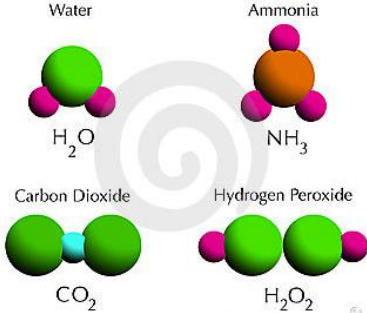

Unit 6: Chemistry

Name: _____

Date: _____

Aim 36: What is the difference between atoms, elements, molecules, compounds and mixtures?

I. **Elements, Atoms, Molecules and Compounds:** Use pg. 9-11 in your workbook to complete the **definition** section of the table below. When you have finished, **answer the questions at the bottom of pg. 10 and 11 in your workbook**

Type of Matter	Definition	Sample Drawing	Symbol/Formula
ELEMENT			 <p>Color/pattern represents element identity (He, Au, C, etc.)</p>
ATOM			<p>Circle represents one atom</p> 
MOLECULE		<p>Molecule of water made of one oxygen atom chemically bonded to two hydrogen atoms</p> 	<p>Grouped circles represent a Molecule (O₂, H₂, etc.)</p> 
COMPOUND			<p>Grouped circles of different colors (elements) represent a compound</p>  <p style="text-align: right;">H₂O</p>

II. Mixtures: Use pg. 12 to answer questions **a and b**. When you have finished, answer the **diagram** questions on the bottom of **pg. 12**

a) Define **Mixture**: _____

b) There are two types of mixtures: Heterogeneous Mixtures vs. Homogeneous Mixtures

	Definition	Are the contents easy to separate? (yes or no)	Examples (give at least 2)
Heterogeneous Mixture			
Homogeneous Mixture			

c) There are various ways to separate mixtures. Read pg. 13 and answer the diagram questions on the page. In the table below, briefly summarize the 4 different ways that a mixture can be separated

Methods of Separating Mixtures	
1. Distillation	
2. Evaporation	
3. Filtration	
4. Magnetic Attraction	

Why would you want to separate mixtures? _____

Part 1: Read the following on elements compounds and mixtures. Fill in the blanks were necessary.

Word Bank:

Atom	Elements	Periodic Table	Chemically
Atoms	Cannot	Cannot	Compounds

Elements:

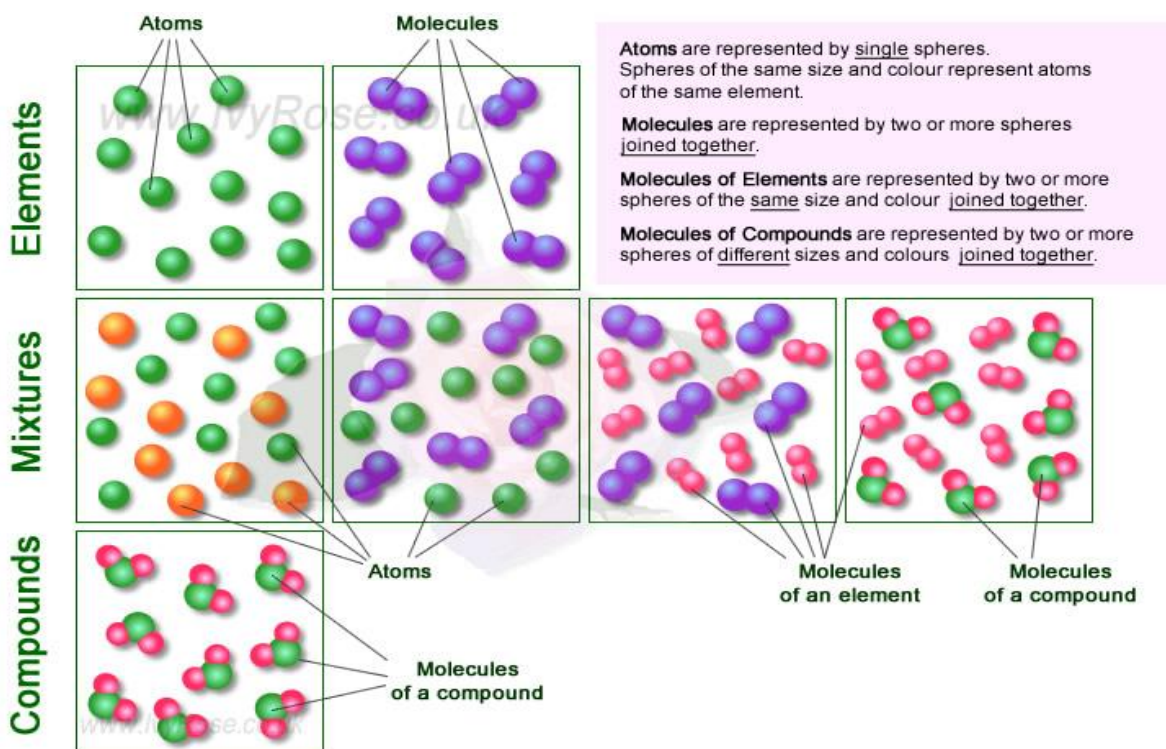
- A pure substance containing only one kind of _____.
- An element is always uniform all the way through (homogenous).
- An element _____ be separated into simpler materials (except during nuclear reactions).
- Over 100 existing elements are listed and classified on the _____.

Compounds:

- A pure substance containing two or more kinds of _____.
- The atoms are _____ combined in some way. Often times (but not always) they come together to form groups of atoms called molecules.
- A compound is always homogenous (uniform).
- Compounds _____ be separated by physical means. Separating a compound requires a chemical reaction.
- The properties of a compound are usually different than the properties of the elements it contains. (ex. $\text{Na} + \text{Cl} = \text{NaCl}$ (salt)).

Mixtures:

- Two or more _____ or _____ NOT chemically combined.
- No reaction between substances.
- Mixtures can be uniform (homogenous) and are known as solutions.
- Mixtures can also be non-uniform (called heterogeneous).
- Mixtures can be separated into their components by chemical or physical means.
- The properties of a mixture are similar to the properties of its components.

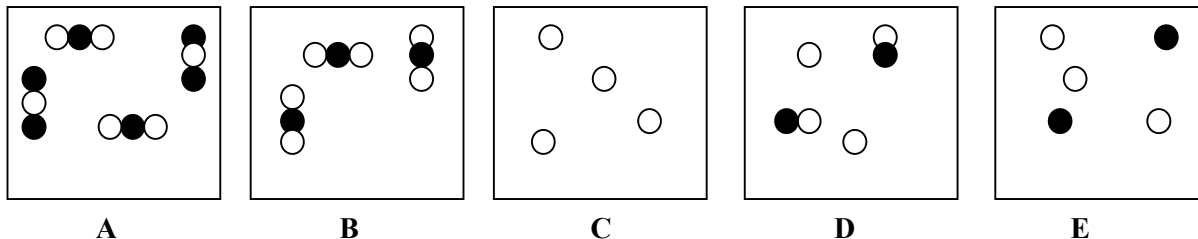


Part 2: Classify these

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- | | | | |
|--|----------------------------------|--------------------------------|-------------------|
| _____ Air | _____ Krypton | _____ Water (H ₂ O) | _____ Wood |
| _____ Sugar (C ₆ H ₁₂ O ₆) | _____ Ink | _____ Diamond (C) | _____ Salt (NaCl) |
| _____ Milk | _____ Electricity | _____ Popcorn | _____ Gold (Au) |
| _____ Pizza | _____ Ammonia (NH ₃) | _____ Iron (Fe) | _____ Uranium (U) |

Part 3: Match each diagram with its correct description. Diagrams will be used once.



- ___ 1. Pure Element – only one type of atom present.
- ___ 2. Mixture of two elements – two types of uncombined atoms present.
- ___ 3. Pure compound – only one type of compound present.
- ___ 4. Mixture of two compounds – two types of compounds present.
- ___ 5. Mixture of a compound and an element.

Part 4: Classify each of the materials below. In the **center column**, state whether the material is a **pure substance** or a **mixture**. If the material is a pure substance, further classify it as either an **element** or **compound** in the right column. Similarly, if the material is a mixture, further classify it as **homogeneous** or **heterogeneous** in the right column. Write one entire word in each space.

Material	Pure Substance Mixture	Element or Compound Homogenous or Heterogeneous
Iron (Fe)		
Sugar + Pure Water (C ₁₂ H ₂₂ O ₁₁ + H ₂ O)		
Limestone (CaCO ₃)		
Orange Juice (with pulp)		
Pacific Ocean		
Air inside a balloon		
Aluminum (Al)		
Pure Water (H ₂ O)		