Classifying Matter

- the smallest unit of an element that maintains the properties of the element
- The can be physically ____________ or chemically ____________ to make up other forms of matter
- A sample of matter, either a single ____________ or a single ____________, that has definite ____________ and ____________ properties

Properties
- Characteristic of a substance that does not involve a ____________ change
- Examples: ______________________________________________________________
- Does this test change the chemical make-up of the material? ____________

Properties
- Characteristic of matter that describes a substance’s ability to participate in ____________ reactions
- Example: ______________________________________________________________
- Does this test change the chemical make-up of the material? ____________

- A ____________ substance that contains only ____________ kind of atom
- It cannot be ____________ or ____________ down into simpler substances by ____________ means.
- All atoms of the same ____________ have the same ____________ number
- Elements may bond in different ratios with itself. These are called ____________.

- A ____________ substance that is made up of two or more ____________ elements joined by chemical bonds.
- They are represented by ____________

- The ____________ unit of a substance that keeps all of the ____________ and ____________ properties of that substance.
- It can consist of one atom or two or more atoms bonded together
- In other words, molecules can be of the same ____________ or of the same ____________ only

Practice: All of the following are molecules, but are they compounds or elements?

Br₂
H₂O
O₂
O₃
C₁₂H₂₂O₁₂
A _____________ of two or more substances that are _____________ chemically combined.

Examples are _______________________________________________________________________________________

The _____________ of the substances can vary

Mixtures can be _________________ or _________________

_______________ mixtures have a _________________ structure or composition throughout

• Because of the even distribution, any two samples taken from the same _________________ mixture will have the _________________ proportions of ingredients

• Examples: _______________________________________________________________________________________

_______________ mixtures are _________________ evenly mixed.

• Different regions of the same _________________ mixture will have _________________ proportions

• Examples: _______________________________________________________________________________________

Mixtures verses Compounds, How can you tell which is which?

• _________________ are two or more elements that are _________________ bonded together.

• Mixtures are two or more substances _________________ mixed together, but not chemically joined

• Therefore, properties of a _________________ reflect the properties of the _________________ mixed in it; _________________ have _________________ properties of their own.

• Compounds have _________________ composition; mixtures composition can _________________ from mixture to mixture of the same substances

Example: You can have a mixture of hydrogen gas and oxygen gas in various concentrations, but the compound water, H₂O, will always have 2 hydrogen atoms bonded to one oxygen atom.

Classify each of the following as an element, compound, homogeneous mixture, or a heterogeneous mixture

Iron (III) Oxide (Fe₂O₃)  Ozone
24 Karat gold  Fizzy Soda
Sugar Water  Flat Soda

Separating Mixtures

Since mixtures are just physically combined, they can be _________________.

Some Methods include:

_______________ – separation of a mixture’s components through differences in particle size
_______________ – a fancy term for separating two components pouring
_______________ – used to separate two liquids based on their differences in boiling points
_______________ – used to separate magnetic substances
_______________ – removing a liquid to leave a solid behind
_______________ – separates substances of different densities using a fast rotational motion
_______________ – separates two substances by using a mobile phase and a stationary phase