


Sept 9, 2019

Pass in Case Studies

Intro to Chemistry

Warm-Up

The element  is often called the most expensive substance in the world (as much as \$68 million for one gram.)



Chemistry Review

Chemistry: is the study of matter, its properties, and its changes or transformations

Matter: anything that has mass and takes up space

Matter can be described in various ways.

States of Matter

Viscosity

Ductility

Hardness

Physical Properties

a characteristic of matter that is often observed or measured (color, odour, texture, lustre, clarity etc). We are describing the substance in some way using our senses.

malleability

Melting and Boiling Points

Density

Solubility

Crystal form

Chemical Properties

Describes the behavior of the substance when it reacts with another substance to become a new substance.

For example, dynamite explodes because it combines with oxygen. The reaction produces new substances.



Physical Change

the substance involved remains the same substance (no new substance is formed), even though it may change forms or states.

The six physical changes are:

Melting, boiling, freezing, condensation, sublimation, dissolving

Most physical changes are easy to reverse.

Chemical Change

the change of a substance into one or more different substances with different properties

Most chemical changes are hard to reverse because something new was made. Chemical changes ALWAYS involve the creation of a new substance.

Examples of chemical changes:

Burning, cooking and rusting, reacting
react
reaction

There are various ways to determine if a chemical change has occurred
i.e.

a new color



heat or light given off



bubbles are formed

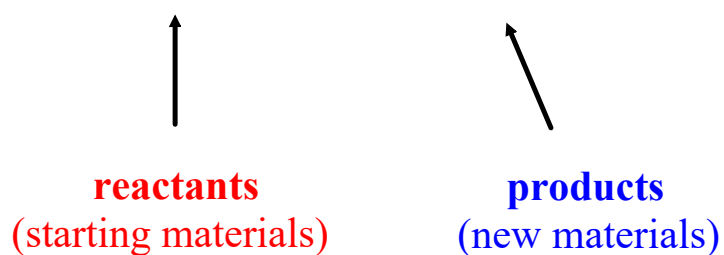


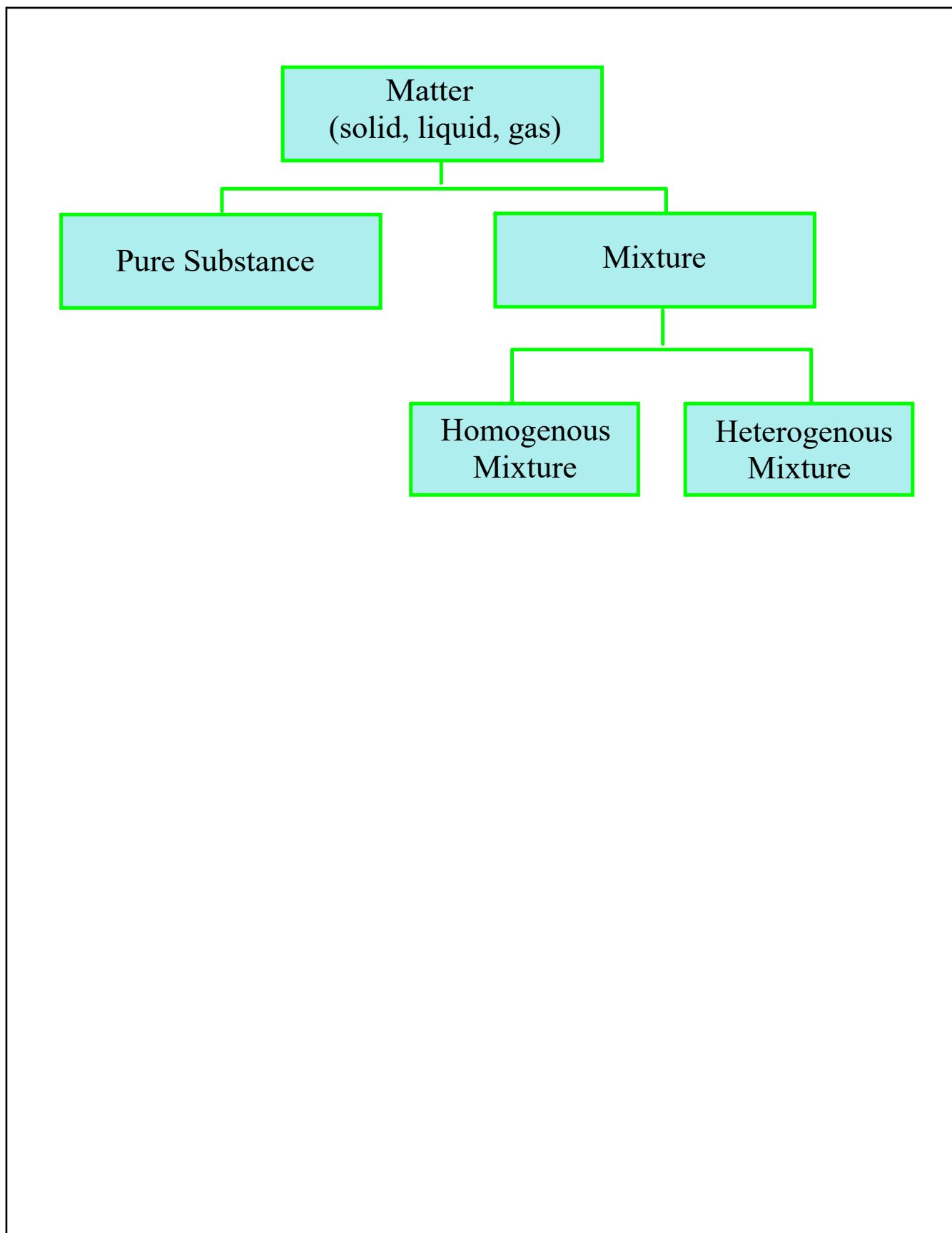
change is difficult to reverse

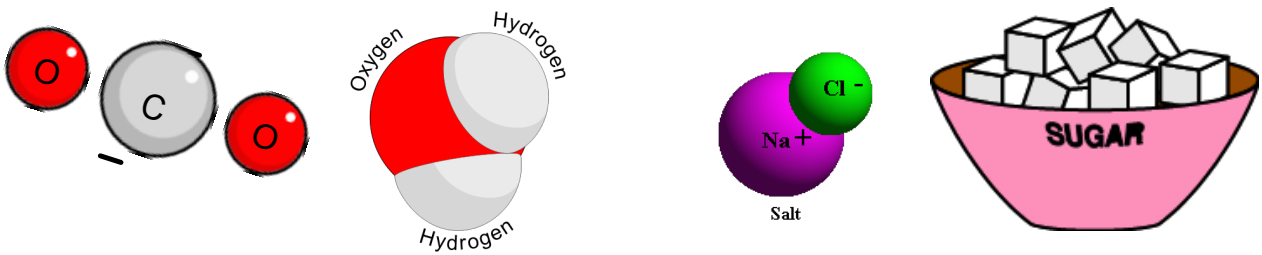


Chemical changes can be shown in a chemical equation.

Ex. Iron + oxygen \Rightarrow Iron (III) oxide

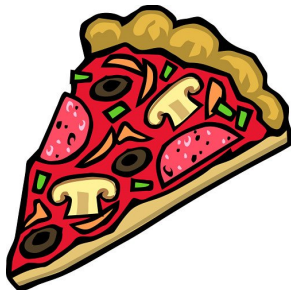
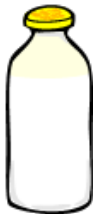


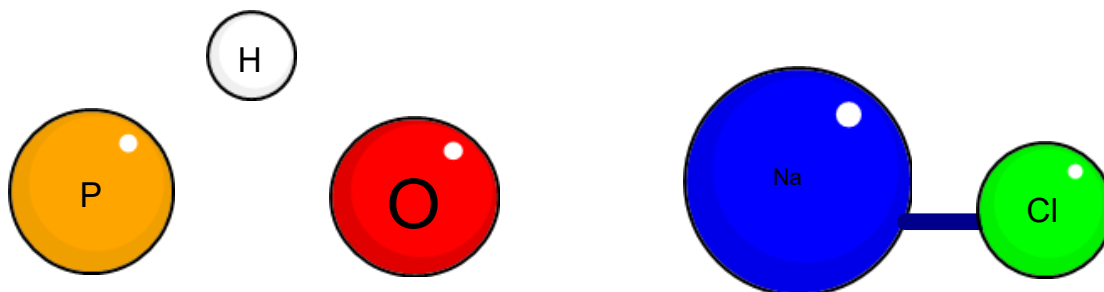




Pure substance: a substance that contains only one kind of particle. Example: sugar, water, carbon dioxide and salt.

Mixtures: a substance that contains two different types of particles. Example: a glass of milk, a hamburger with toppings, a cookie or pizza





Atom: a particle in an element. Particles in the particle theory are called atoms. Example: In water there are two hydrogen atoms and one oxygen atom.

Molecule: a combination of **two or more atoms**. Molecules can be made up of all the same kind of atom like O_2 or different atoms like H_2O .

Elements: pure substances that cannot be broken down into simpler substances. example: hydrogen, oxygen, carbon, phosphorus

Compounds: pure substances that contain **two or more different elements**. example: water (H_2O) and salt ($NaCl$).

