

Classifying Matter

Lesson 1-2



What is matter made of?



What are the two types of mixtures?

Sep 5-3:49 PM

What is matter made of

Empedocles

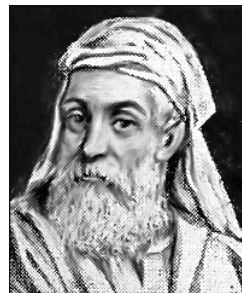
Around 450 BC

Greek philosopher

Answered the question of the make up of matter

Said 4 elements made matter- fire, air, water, earth

This idea lasted for about 2,000 years



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Elements

1600's experiments by early chemists showed that matter was made up of more than 4 elements

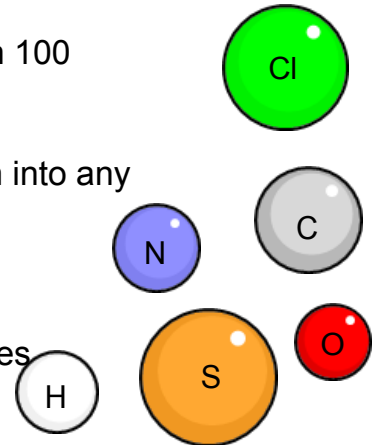
★ Scientists know that matter is made up of more than 100 different substances called elements

★ Element is a substance that cannot be broken down into any other substance by physical or chemical means

★ Elements are simplest substance

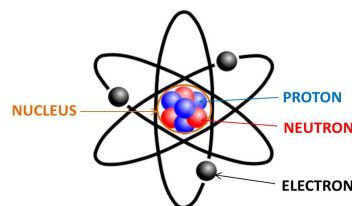
★ Identified by specific chemical and physical properties

Represented by one or two letters- C,O, Ca, Au



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Atoms are basic particles from which all elements are made of
particle theory of matter explains all matter is made of atoms
atoms have a positive charged center/nucleus containing smaller particles, and a negative charged cloud surrounding the nucleus



Sep 5-4:01 PM

Molecules

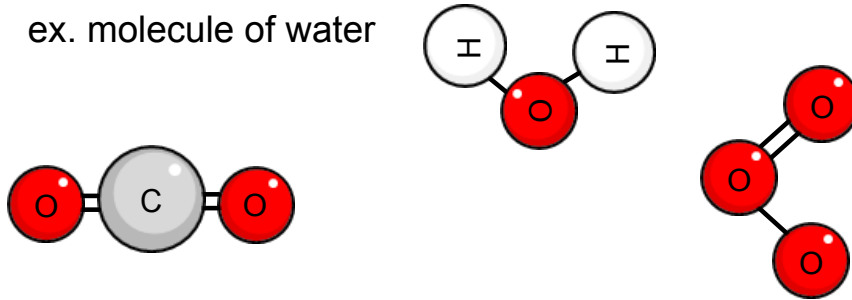
Atoms of most elements are able to bond with other atoms

When atoms combine, they form chemical bonds (force of attraction)

Atoms combine to form molecules

Molecules- two or more atoms held together by chemical bonds

ex. molecule of water



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Compounds

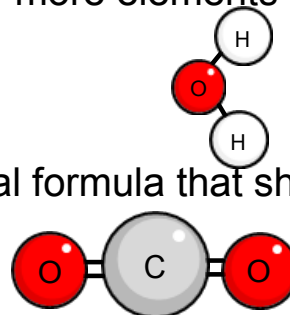
A compound is a substance made of 2 or more elements that are chemically combined in a specific ratio

examples- water, ammonia, vinegar

A compound is represented by a chemical formula that shows the elements and the ratio

CO₂ - 1 Carbon & 2 Oxygen

ratio is 1 carbon to 2 oxygen

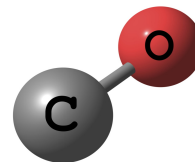


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Different numbers of atoms in a formula means a different compound

CO= carbon monoxide

1 carbon and 1 oxygen



When elements chemically combine they form compounds with properties different from the original elements

copper = shiny metal

sulfur = yellow, dull

copper sulfide = black, flaky metallic



Sep 5-4:25 PM

What are the two types of mixtures

A mixture is made of two or more substances that are together in the same place, but not held together by a chemical bond

Most materials are mixtures

Mixtures differ from compounds- each element keeps its own identity

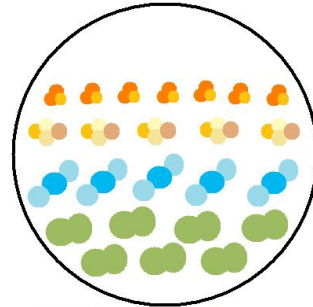
Not in set ratios

Two types of mixtures; heterogeneous and homogenous

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Heterogeneous mixtures

usually see different parts
ex. sand, salad, trail mix



Heterogeneous Mixture

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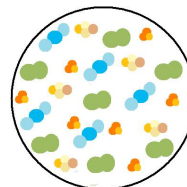
Homogeneous Mixtures

Evenly Mixed
Can't see different parts
ex. air



When we put sugar in water and stir, we make a homogeneous mixture. We can't see the sugar and water separately anymore.

Solutions are examples of homogenous mixtures
Solutions can be liquids, gases, or solids



Homogeneous Mixture

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Separating Mixtures

Since substances in a mixture keep their properties, you can use that to separate mixtures

Methods used to separate mixtures

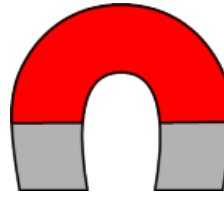
filtration - using coffee filter or sieve

magnetic attraction

Evaporation

Density

Distillation- heating up to temperatures where one substance boils off leaving the other behind; steam is collected and cooled



Sep 5-4:45 PM

Lesson 2 - Classifying Matter

Scientists know that all matter in the universe is made of more than substances called

A mixture can be or

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Edit	Check	Reset	Solve	?
Homogeneous		Heterogeneous		
stainless ...	plaster	glass	air	
maple syrup	wood	sand	salsa	

Sep 5-4:56 PM