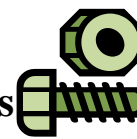




The Nuts and Bolts of Elements, Compounds and Mixtures



Element:

Elements are pure substances that contain only one kind of atom. Two or more of these atoms may bond together to form **molecules**. Elements are the simplest substance known. Only about one hundred of them have been found in nature on earth. **Elements cannot be chemically changed into other substances.** Elements are **homogenous** – all parts of an element look and act like all other parts of the same element. Some common elements are oxygen, hydrogen, copper, iron, gold, aluminum, and carbon.

Compound:

Compounds are pure substances whose molecules are always identical. Atoms of two or more different elements bond together to make **molecules** of compounds. Water molecules, for example, always contain two hydrogen atoms bonded to one oxygen atom. Silica molecules always contain one silicon atom bonded to two oxygen atoms. In a molecule of table salt, one sodium atom is bonded to one chlorine atom to produce sodium chloride. Compounds can be chemically broken apart into the elements that formed them. Compounds are **homogeneous** – all parts of a compound look and act like all other parts of the same compound. Millions of compounds are known. Some common compounds are salt, sugar, water, carbon dioxide, baking soda, and sulfuric acid.

Mixture:

Mixtures contain two or more elements or compounds that are not chemically combined. The composition of a mixture may vary – there are lots of different ways to make salt water, for example. The percents (or amounts) of the two substances in the mixture will not always be the same. Mixtures may be separated physically or chemically. To separate a salt water mixture, you could just let the water evaporate out of the mixture. Mixtures are not always this easy to separate. It may be very tricky to separate a mixture of salt and sugar. Mixtures may be **homogeneous** – all parts of the mixture may look and act the same. Milk and mayonnaise are homogeneous mixtures. Mixtures may also be **heterogeneous** – different parts of the mixture may look and act differently. Asphalt and trail mix are heterogeneous mixtures. Millions of mixtures are known. There are more natural mixtures than elements or compounds. Some common mixtures are milk, concrete, brick, dirt, dishwater, and a pail of garbage.

Write in the term for each definition below.

1. **Homogeneous** - all parts of an element, compound, or a mixture look and act the same
2. **Heterogeneous** - different parts of a mixture look and act differently
3. **Molecule** - a particle of two or more atoms bonded together; smallest particle of a compound that retains the properties of the compound

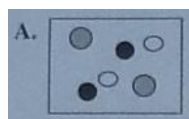
- Element
- Compound
- Mixture of elements
- Mixture of compounds
- Mixture of compounds and elements

Write an "E" in front of an element.
Write a "C" in front of a compound.

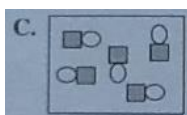
Station	Classification
1	Mixture of Compounds
2	Compounds (H ₂ O)
3	Elements
4	Mixture of Elements and Compounds
5	Mixture of Compounds (NaCl and C ₁₂ H ₂₂ O ₁₁)
6	Compounds
7	Elements (Al)
8	Elements
9	Compounds
10	Mixture of Elements
11	Compounds (NaHCO ₃)
12	Mixture of Elements
13	Mixture of Compounds (NaCl and H ₂ O)
14	Elements

- E H
- C CaCO₃
- C CO₂
- E O
- E Co
- C CO
- E Ca
- C SiO₂

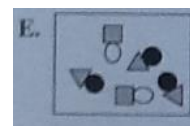
By yourself – identify the following diagrams with the same terms as above.



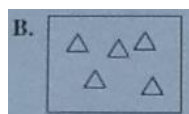
Mixture of Elements



Compounds



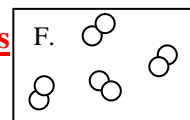
Mixture of Compounds



Elements



Mixture of Compounds and Elements



Elements