

Vocabulary: Elements, Compounds, & Mixtures, Part 1

element: A pure substance that cannot be broken down into any other substances by chemical or physical means.

- Elements are the simplest substances.
- Different elements have different properties because their atoms are different.

atom: The basic particle from which all elements are made.

chemical bond: A force of attraction between two atoms that is formed when they combine. It is the force that holds two atoms together.

molecule: A group of two or more atoms held together by chemical bonds

compound: A pure substance made of two or more elements chemically combined in a set ratio.

- A compound may be represented by a **chemical formula**, which shows the elements in the compound and the ratio of atoms.
- When elements are chemically combined, they form compounds having properties that are different from those of the uncombined elements.

mixture: Two or more substances that are mixed together but not chemically combined.

- A mixture can be heterogeneous or homogeneous:
 - In a heterogeneous mixture, you can see the different parts.
 - The substances in a homogeneous mixture are so evenly mixed that you cannot see the different parts. A solution is an example of a homogeneous mixture.

Classification of Matter:

We can successively separate matter into categories by asking a sequence of "YES/NO" questions.

Question 1: All matter can be separated into two categories by first asking the question, "Is only one chemical substance present in the sample being considered?"

YES - Pure Substance

NO - Mixture

Question 2: All pure substances can be separated into two categories by asking the question, "Can the sample be further decomposed by chemical means?"

YES - Compound

NO - Element

Question 3: All mixtures can be separated into two categories based on the question, "Is the sample of constant composition?"

YES - Homogeneous mixture

NO - Heterogeneous mixture

