A Great Combination

How can matter be classified?

- **Matter** is made up of basic "ingredients" known as atoms.
- An **atom** is the smallest unit of an element that maintains the properties of that element.
- Substances are classified as *elements, compounds*, and *mixtures*.

Basic ingredients of all "stuff"

Matter

Substances are classified as:

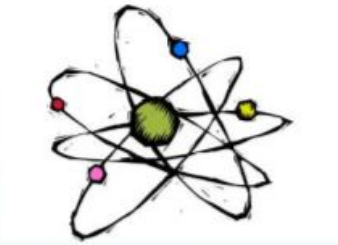
Elements | Compounds | Mixtures

#5) Compare

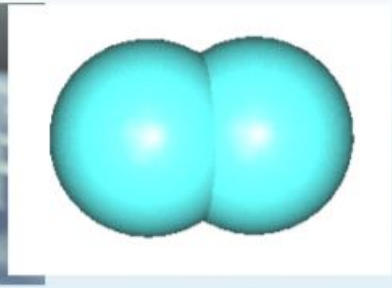
Elements, compounds and mixtures are all made up of atoms

How can matter be classified?

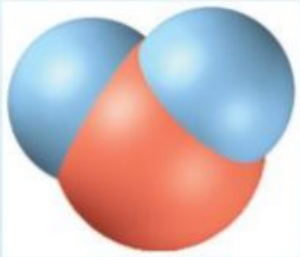
- **An atom is a building block of matter**



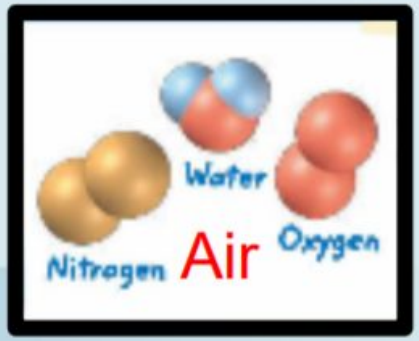
- An **element** is made of **only one kind of atom.**



- A **compound** is made up of different kinds of atoms that are **chemically combined.**

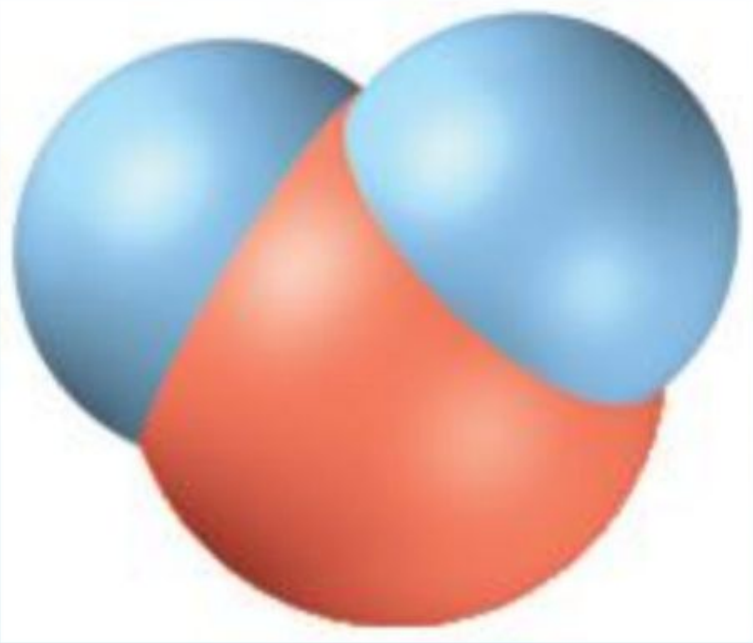


- A **mixture** contains a variety of elements and compounds that are **not** chemically combined.



How can matter be classified?

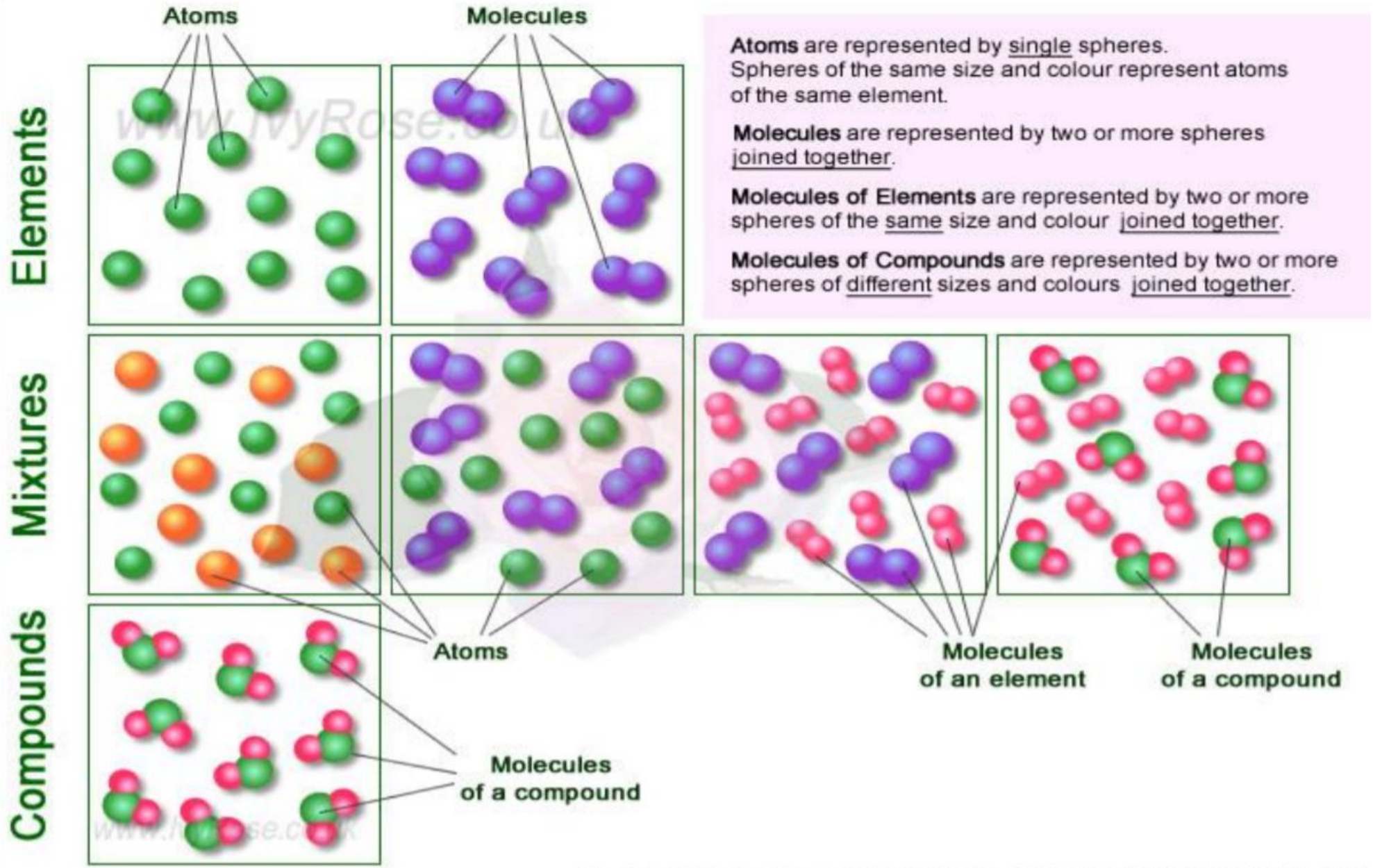
- Is water an element, a compound, or a mixture?



compound

Visualize it #7

2 different colors represent 2 different types of atoms



Atoms are represented by single spheres. Spheres of the same size and colour represent atoms of the same element.

Molecules are represented by two or more spheres joined together.

Molecules of Elements are represented by two or more spheres of the same size and colour joined together.

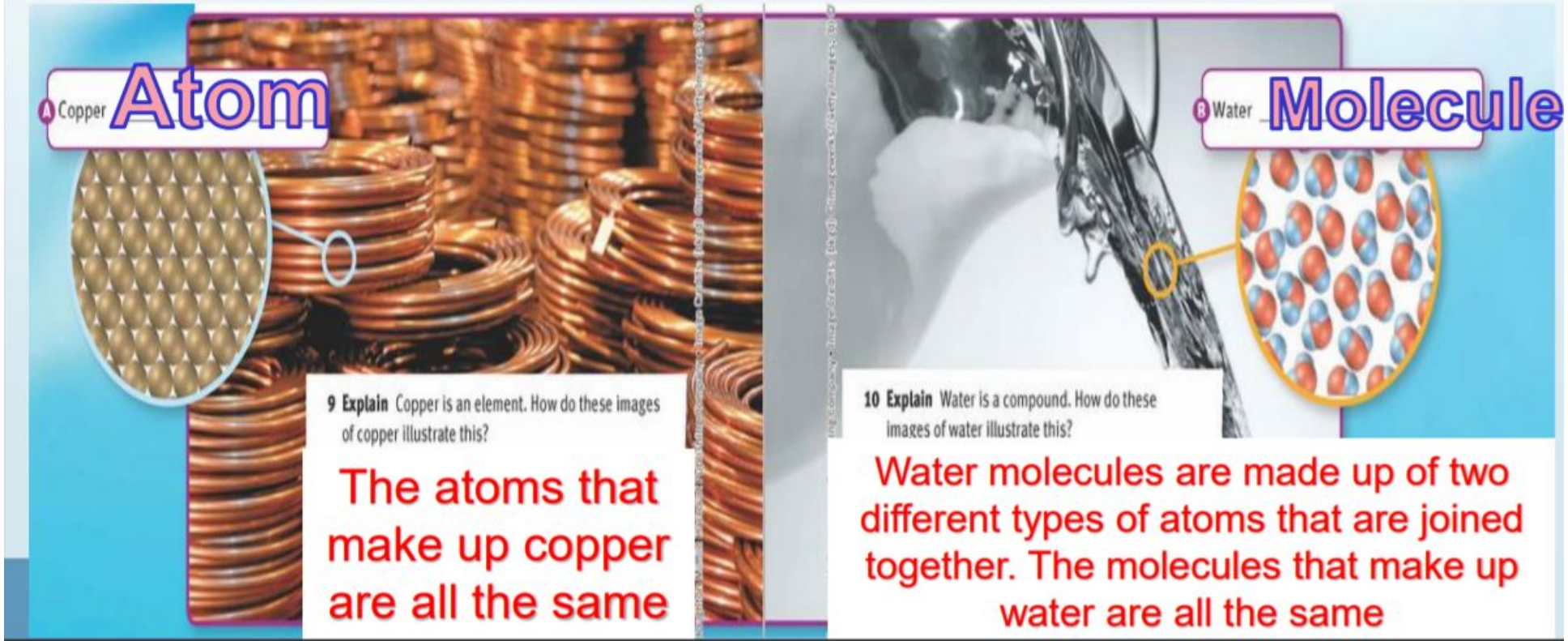
Molecules of Compounds are represented by two or more spheres of different sizes and colours joined together.

Elements, Mixtures, Compounds and Atoms, Molecules - Illustration (c) IvyRose Ltd

Pure Genius

What are pure substances?

- A **pure substance** is a substance with definite physical and chemical properties.
- Pure substances are made up of ~~just one type of particle.~~
  - Element and Compounds are Pure substances



Thinking map: comparing and contrast

Elements

*consists of only one kind of atom.

*can not be broken down into simpler substance

*can exist as either atoms (e.g. argon) or molecules (e.g., nitrogen).

*there are about 118 elements in the world now.

Made of atoms

Compounds are made up of elements.

Pure Substance

Compounds

*consists of two or more combined elements

*can be broken down into simpler types of matter (elements)

*has different properties that are different from its partner, elements.

Mix and Match

What are mixtures?

- A mixture is a combination of two or more substances that are **combined physically but not chemically**.
- Mixtures are **not pure substances** and **do not have definite properties.**
- **Substances** within a mixture **keep their identities** and **individual properties**.
- Mixtures **can be separated by physical changes**, although some mixtures are difficult to separate.
- Magnets, centrifuges, filters, and other materials can be used to separate mixtures.

IN A MIXTURE OF SALT AND IRON, THE IRON CAN BE REMOVED WITH A MAGNET.