

2.1 Elements, compounds and mixtures

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS compound 化合物 • element 元素 • mixture 混合物 • ion 离子 • atom 原子

Objective

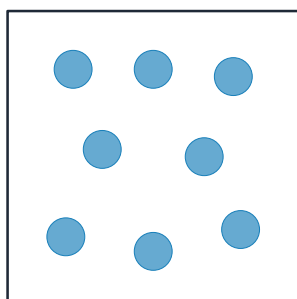
Build the skills to answer exam questions on **elements, compounds and mixtures** 元素、化合物与混合物 — telling them apart and explaining the key difference.

You must be able to:

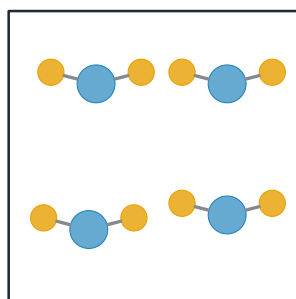
- define element, compound and mixture
- recognise each from a particle diagram
- explain that a compound is bonded (chemical separation) but a mixture is not

1 Worked examples

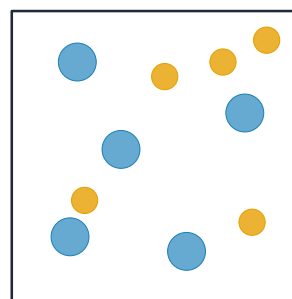
■ Three types of substance



element
only one type of atom

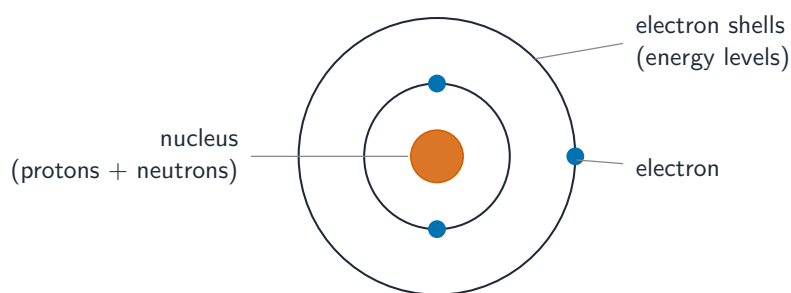


compound
different atoms bonded
in a fixed ratio



mixture
not bonded,
easy to separate

*Element = one type of atom; compound = different atoms bonded in a fixed ratio;
mixture = not bonded*



lithium, Li: 3 protons, 4 neutrons
electron configuration 2,1

Atoms are the building blocks of elements and compounds

- **element:** one type of atom (e.g. copper).
- **compound:** elements chemically bonded in a fixed ratio (e.g. water); different properties from its elements.
- **mixture:** not bonded; separated by physical methods (e.g. air).

2 Practice

2.1 Define a compound. [1]

2.2 State how a mixture can be separated. [1]

3 Exam-style questions

3.1 Which is a compound? [1]

- A oxygen, O_2
- B water, H_2O
- C air
- D copper

3.2 A particle diagram shows two different atoms always joined together in pairs.

(a) State whether this represents an element, a compound or a mixture. [1]

(b) Explain your answer.

[2]

3.3 State the main difference between a compound and a mixture of the same elements.[2]

Solutions

2.1 two or more elements chemically joined (bonded) together in a fixed ratio.

2.2 by physical methods (e.g. filtering, distillation).

3.1 B. Water is two elements chemically bonded — a compound.

3.2 (a) a compound.

(b) two different atoms are present, chemically bonded together in a fixed ratio.

3.3 in a compound the elements are chemically bonded and need a chemical reaction to separate; in a mixture they are not bonded and are easily separated by physical means.