KS3 SCIENCE · CHEMISTRY

Elements, atoms and compounds: exam questions

Name _____
Total: 22 marks

1 State what is meant by an element. **[1 mark]**

2 Give two ideas from Dalton's model of the atom. **[2 marks]**

3 Write the chemical symbols for (a) magnesium, (b) iron and (c) chlorine. **[3 marks]**

4 Give one reason why scientists use chemical symbols. **[1 mark]**

5 State what is meant by a compound. **[2 marks]**

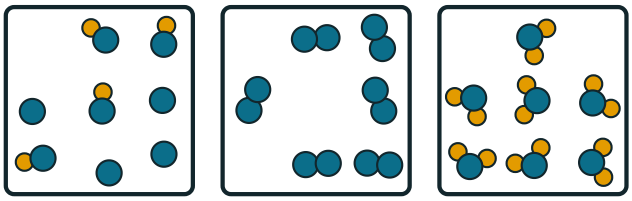
6 Sodium is a soft, shiny metal. Chlorine is a poisonous green gas. They react to make sodium chloride. Describe sodium chloride, and state what this shows about compounds. **[2 marks]**

7 A student stirs iron filings and sulfur powder together. A magnet pulls the iron out. She then heats a fresh mixture until it reacts, and a black solid forms. A magnet does not pull any iron out of the black solid. Explain these two results. **[3 marks]**

8 The formula of carbon dioxide is CO_2. (a) Name the two elements in carbon dioxide. (b) State how many atoms of each element there are in one molecule. **[3 marks]**

9 Name the compound made when (a) magnesium reacts with oxygen, and (b) iron reacts with sulfur. **[2 marks]**

10 The diagrams show the particles in three substances. Each circle is an atom. State which diagram shows (a) an element, (b) a compound and (c) a mixture. **[3 marks]**



A B C

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Elements, atoms and compounds: mark scheme

Total: 22 marks

1 [1 mark]

- A substance made of only one type of atom **(1)**

2 [2 marks]

- All matter is made of atoms **(1)**
- Atoms are like tiny solid balls (accept: spheres) **(1)**
- Atoms cannot be broken down into anything simpler **(1)**
- All the atoms of one element are identical (accept: atoms of different elements are different) **(1)**

Any two of these points, for 1 mark each.

3 [3 marks]

- (a) Mg **(1)**
- (b) Fe **(1)**
- (c) Cl **(1)**

The capital letters and small letters must be right.

4 [1 mark]

- They are quicker to write than names (accept: scientists in every country use the same symbols, whatever language they speak) **(1)**

5 [2 marks]

- A substance made of two or more elements (accept: two or more types of atom) **(1)**
- That are chemically joined together (accept: bonded) **(1)**

6 [2 marks]

- White crystals (accept: a white solid; table salt) **(1)**
- A compound has different properties from the elements it is made of **(1)**

7 [3 marks]

- Before heating it is a mixture: the iron and the sulfur are not joined (accept: each keeps its own properties, so the iron is still magnetic) **(1)**
- Heating makes a compound (accept: iron sulfide; a new substance) **(1)**
- In the compound the iron atoms are joined to sulfur atoms, and the compound is not magnetic (accept: the compound has different properties from iron) **(1)**

8 [3 marks]

- (a) Carbon and oxygen **(1)**
- (b) One carbon atom **(1)**
- (b) Two oxygen atoms **(1)**

9 [2 marks]

- (a) Magnesium oxide **(1)**
- (b) Iron sulfide **(1)**

10 [3 marks]

- (a) B **(1)**
- (b) C **(1)**
- (c) A **(1)**