Elements, Compounds and Mixtures

1. The periodic table shows us the elements.

a. Approximately how many elements have been discovered? Circle the correct answer.

10	100	1000

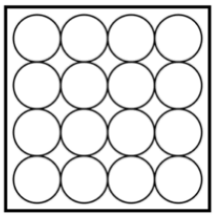
b. Which of the following is true about the atoms in an element?

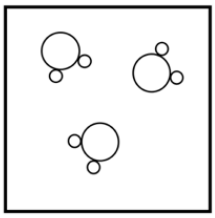
All of the atoms in an element are different	All of the atoms in an element are the same	In some elements the atoms are all the same but in others they are all different

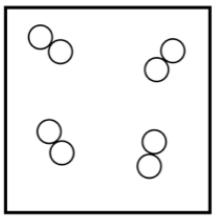
c. The diagrams below show the atoms in three different substances.

Which of the diagrams could show an element and which could not?

In each case explain your answer in the space next to the diagram.







d. Methane is a compound with the formula CH_4.

Explain why we cannot find methane on the periodic table.

e. A student wrote the symbol for cobalt as CO.

Explain why this is incorrect and what this actually shows.

2. The definition of a compound is shown below.

A compound contains two or more different elements chemically combined in a fixed proportion

a. Ethane is a compound with the formula C_2H_6.

Use the example of ethane to explain what is meant by the words “fixed proportion”.

b. Magnesium sulfide is a compound with one atom of magnesium chemically combined with one atom of sulfur.

Explain why the formula of magnesium sulfide is MgS and not MgS_2.

c. What can we say about the properties of a compound compared to the properties of the elements that the compound is made from?

Quite similar | The same | Totally different

d. How do we separate the elements in a compound?

e. All of the following are molecules but only some are compounds.

In each case, state whether the molecule is a compound and explain your answer.

O_2

$AlCl_3$

Br_2

C_2H_6

f. If we want to separate a mixture, then we can use a physical technique rather than a chemical reaction.

State three examples of physical separation techniques.