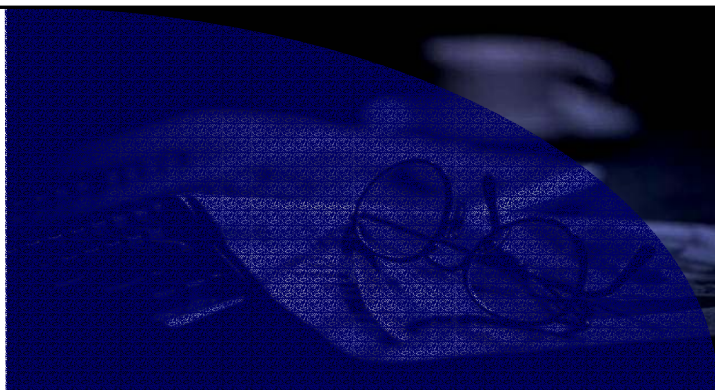


assessment for learning

year 8



Science Interactive LTD. PO BOX 50764 LONDON NW6 9AT

web: [www.science-interactive.co.uk](http://www.science-interactive.co.uk)

## 8F Compounds and mixtures

### Assessment for learning...year 8 (level 3-6)

Answer all questions:

Total marks	28
Time allowed	25 mins.

#### Question 1:

Different elements have a wide variety of properties.  
The list gives some of them.

brittle

good electrical conductor

good thermal conductor

insulator

magnetic

melting point above room temperature

(a) Magnesium is a metal. Give **two** properties of magnesium from the list above.

1. ....

2. ....

2 marks

(b) (i) What is the name of the compound formed when magnesium reacts with sulphur?

.....

1 mark

(ii) Give **two** properties from the list above which this solid compound will **not** have.

1. ....

2. ....

2 marks

Maximum 5 marks

**Question 2:**

Copper can be obtained from its ore, copper sulphide, in two stages.

**First stage** *heating the ore in air*

Copper sulphide reacts with oxygen from the air to form copper oxide and sulphur dioxide gas.

**Second stage** *heating the copper oxide with carbon*

Copper oxide reacts with carbon to form copper and carbon dioxide gas.

(a) Give the names of **three** elements mentioned above.

1. ....

2. ....

3. ....

1 mark

(b) Give the name of **one** compound mentioned above.

.....

1 mark

(c) Give the name of the compound, mentioned above which causes 'acid rain'.

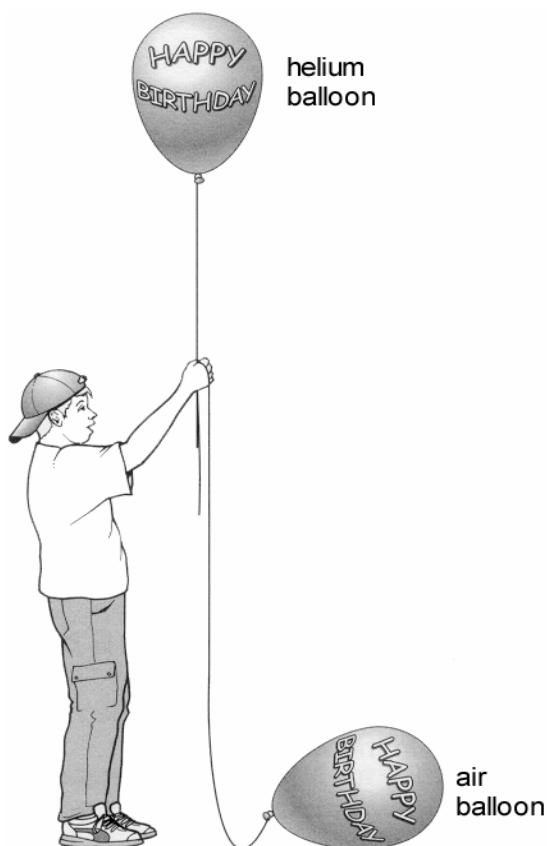
.....

1 mark

Maximum 3 marks

**Question 3:**

Chris has two rubber party balloons. One is filled with air and the other is filled with helium. Both balloons contain the same volume of gas.



(a) (i) Explain why the helium balloon rises.

.....  
.....

1 mark

(ii) Explain why the air balloon drops to the ground.

.....  
.....

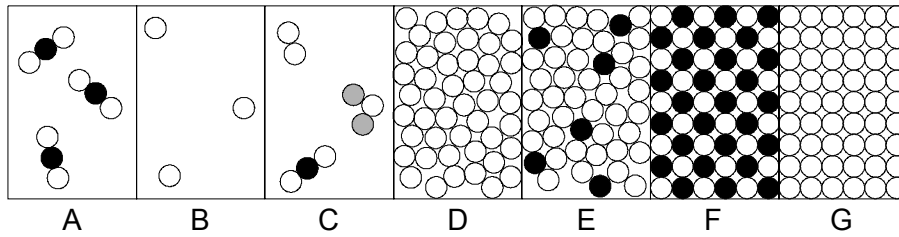
1 mark

(b) The chemical symbol for helium is He.  
Explain why air does **not** have a chemical symbol or formula.

.....  
.....

1 mark

(c) The diagram below shows seven arrangements of particles.



The two party balloons are coated with a thin layer of aluminium. Give the letter of the diagram which best represents the particles in:

- (i) the helium gas; ..... 1 mark
- (ii) the air; ..... 1 mark
- (iii) the thin layer of aluminium. .... 1 mark

(d) Over several days, the balloons shrink because the particles of gas diffuse through the balloon and escape. The helium balloon shrinks more quickly than the air-filled balloon.

Answer the following questions in terms of particles.

- (i) Why does helium escape more quickly than air from a balloon?  
 .....  
 .....

1 mark

- (ii) A rubber balloon coated with aluminium takes longer to shrink than a rubber balloon **without** an aluminium coating. Suggest a reason why gas particles diffuse more slowly through aluminium than through rubber.

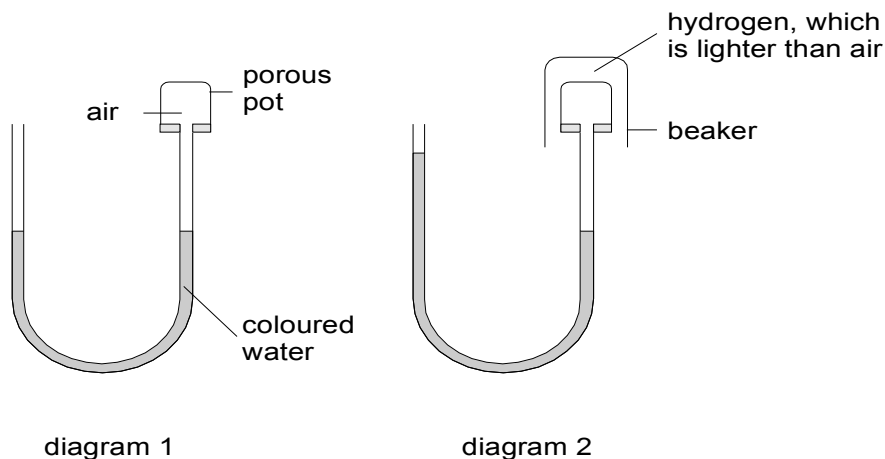
.....  
 .....

1 mark

Maximum 8 marks

**Question 4:**

The porous pot shown in diagrams 1 and 2 lets gas molecules pass through the walls. In diagram 2 a beaker containing hydrogen is placed over the porous pot. The water levels in the U-tube quickly change.



Four statements about the movement of gas molecules are given below.

- A no molecules are moving into or moving out of the porous pot
- B same number of gas molecules are moving into the porous pot as are moving out
- C more gas molecules are moving into the porous pot than are moving out
- D fewer gas molecules are moving into the porous pot than are moving out

(a) Which statement, A, B, C or D, applies to:

(i) Diagram 1? .....

1 mark

(ii) Diagram 2 just after the beaker is put in position?.....

1 mark

(b) What does the experiment suggest about the average speed of hydrogen molecules compared with the average speed of molecules in the air?

Hydrogen molecules .....

1 mark

(c) The beaker is removed from around the porous pot.

(i) How does the water level in the left hand part of the U-tube change?

.....

1 mark

(ii) Explain your answer in terms of the movement of molecules.

.....  
.....

1 mark

(d) Air contains oxygen, nitrogen, argon, some water vapour, and a little carbon dioxide.

Complete each row in the following table by ticking one box and by stating the number of atoms in one molecule of the substance.

The first row has been done for you.

substance	it is an element	it is a compound	it is a mixture	number of atoms in one molecule
nitrogen	✓			2
carbon dioxide				
oxygen				

4 marks

Maximum 9 marks

### Question 5:

Gold, iron and magnesium are elements which conduct electricity.

Sulphur and phosphorus are elements which do **not** conduct electricity.

When iron and sulphur are heated together, they react to form a new substance called iron sulphide.

(a) From the substances named above, give:

(i) the name of a metal;

.....

1 mark

(ii) the name of an element which is a non-metal;

.....

1 mark

(iii) the name of an element which will rust;

.....

1 mark

(iv) the name of a compound.

.....

1 mark

(b) When magnesium and sulphur are heated together, they react. Write the name of the compound which is formed when magnesium reacts with sulphur.

.....

1 mark

Maximum 5 marks

-