

## Revision

Write word equations and chemical equations for the reactions below:

a) Hydrochloric acid reacts with magnesium hydroxide

Word eqn:  $\text{Hydrochloric acid} + \text{Magnesium hydroxide} \rightarrow \text{Magnesium chloride} + \text{water}$

Chem eqn:  $2\text{HCl} + \text{Mg}(\text{OH})_2 \rightarrow \text{MgCl}_2 + 2\text{H}_2\text{O}$

b) reaction of sulfuric acid on the metal calcium

Word eqn:  $\text{Calcium} + \text{sulfuric acid} \rightarrow \text{Calcium sulfate} + \text{Hydrogen}$

Chem eqn:  $\text{Ca} + \text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + \text{H}_2$

c) iron (II) carbonate and hydrochloric acid

Word eqn:  $\text{Iron(II) carbonate} + \text{Hydrochloric acid} \rightarrow \text{Iron(II) chloride} + \text{Carbon dioxide} + \text{water}$

Chem eqn:  $\text{FeCO}_3 + 2\text{HCl} \rightarrow \text{FeCl}_2 + \text{CO}_2 + \text{H}_2\text{O}$

d) sulfuric acid and potassium hydroxide

Word eqn:  $\text{sulfuric acid} + \text{Potassium hydroxide} \rightarrow \text{Potassium sulfate} + \text{water}$

Chem eqn:  $\text{H}_2\text{SO}_4 + 2\text{KOH} \rightarrow \text{K}_2\text{SO}_4 + 2\text{H}_2\text{O}$

e) nitric acid and calcium carbonate

Word eqn:  $\text{Calcium carbonate} + \text{Nitric acid} \rightarrow \text{Calcium nitrate} + \text{Carbon dioxide} + \text{water}$

Chem eqn:  $\text{CaCO}_3 + 2\text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{CO}_2 + \text{H}_2\text{O}$

f) Magnesium and nitric acid

Word eqn:  $\text{Magnesium} + \text{Nitric acid} \rightarrow \text{Magnesium nitrate} + \text{Hydrogen}$

Chem eqn:  $\text{Mg} + 2\text{HNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 + \text{H}_2$

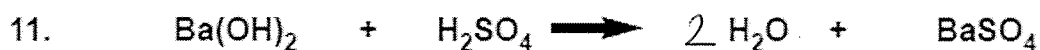
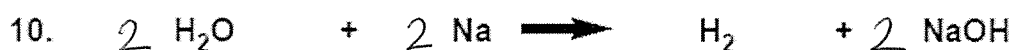
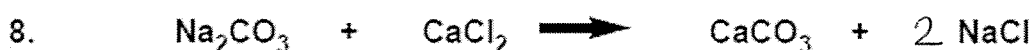
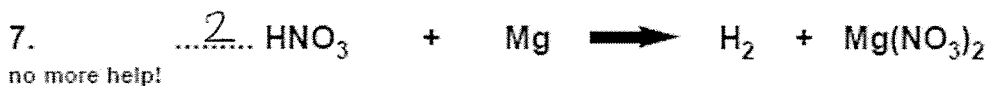
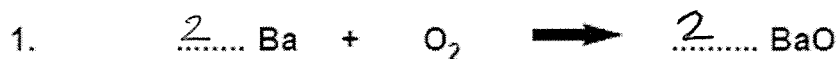
## Balancing Equations

Student Name... ANSWERS

Balance each of the following chemical equations.

Remember you must NOT change any formulas.

Balance an equation by writing numbers in front of a formula ONLY.



## Atoms and Elements

ANSWERS

Q1 Complete the following sentences.

- Atoms always have a charge of zero.
- An atom which has lost or gained electrons is called an ion.
- A neutral atom has the same number of protons and electrons.
- If an electron is added to a neutral atom, the atom becomes negatively charged.

Q2 Complete this table.

Particle	Charge
Proton	+1
Neutron	0
Electron	-1



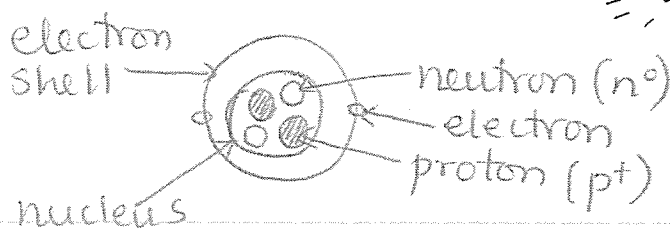
Q3 What am I?

Choose from: nucleus proton electron neutron

- I am in the centre of the atom. I contain protons and neutrons. nucleus
- I move around the nucleus in a shell. electrons
- I am positively charged. proton
- I have no charge. neutron
- In a neutral atom there are as many of me as there are electrons. protons

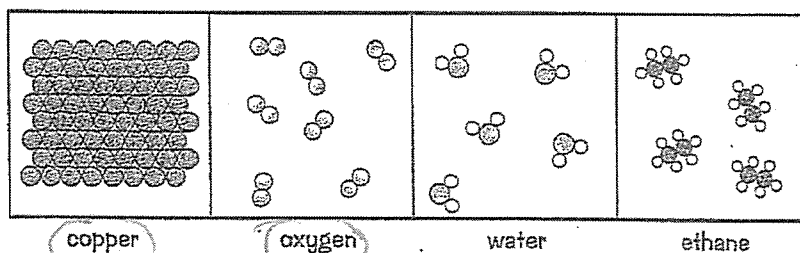
Q4 Draw a diagram of a helium atom.

Label each type of particle on your diagram.



Helium has 2 of each type of particle.

Q5 Look at these diagrams of substances. Circle the ones that contain only one element.



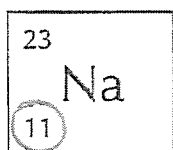
# The Periodic Table

**Q1** Choose from these words to fill in the blanks.

left-hand    C    right-hand    horizontal    similar    elements    K  
Cl    different    vertical    metals    P    non-metals    compounds

- a) A group in the periodic table is a vertical line of elements.  
 b) Most of the elements in the periodic table are metals.  
 c) There are about 100 different elements in the periodic table.  
 d) Non-metals are on the right-hand side of the periodic table.  
 e) Elements in the same group have similar properties.  
 f) The symbol for chlorine is Cl and the symbol for potassium is K.

**Q2** Sodium appears in the periodic table as shown below.



- a) Circle the atomic number on the diagram to the left.  
 b) How many protons does Na have? 11  
 c) How many electrons does Na have? 11  
 d) How many neutrons does Na have? 12

**Q3** Elements in the same group undergo similar reactions.

- a) Tick the pairs of elements that would undergo similar reactions.

A potassium and rubidium ☒

C calcium and oxygen ☐

B helium and fluorine ☐

D calcium and magnesium ☒

- b) Explain why sodium and potassium undergo similar reactions with water.

They both lie in the same group (group 1)  
and therefore show similar chemical properties.

**Q4** True or false?

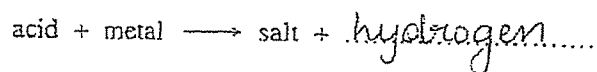
- a) Group 7 elements are known as the noble gases.  
 b) All of the noble gases have the same number of electrons in their outer shell.  
 c) Helium is a noble gas.  
 d) Noble gases have the maximum number of electrons in their outer energy level.  
 e) All noble gases are unreactive.

True False

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Answers to Year 10 Chemistry revision

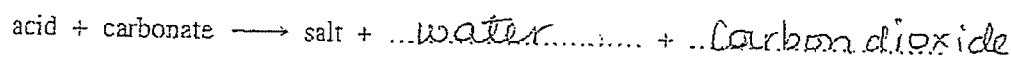
23. Complete this word equation for the chemical reaction shown:



24. What test can you do to determine the gas produced when an acid acts on a metal?

The 'POP' test: Hold a lighted match  
at the mouth of a test tube containing  
H<sub>2</sub>. It goes off with a POP sound

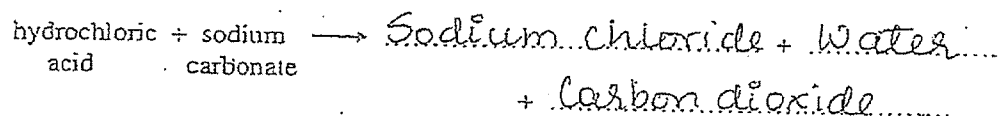
25. Complete this word equation for the chemical reaction shown:



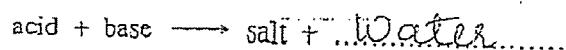
26. What test can you do to determine the gas produced when an acid acts on a carbonate?

The lime water test: Carbon dioxide gas  
turns lime water milky

27. Complete this word equation for the chemical reaction between the following chemicals:



28. Complete this word equation for the chemical reaction shown:

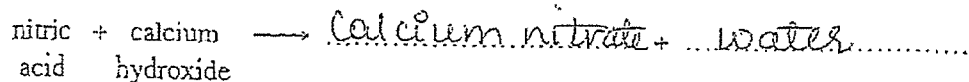


29. What name is given to the reaction between an acid and a base? Why is it called this?

Neutralisation.

The base neutralises the effect of the acid  
& vice versa

30. Complete this word equation for the chemical reaction between these chemicals:



31. Complete this sentence:

Chemical reactions in which a substance breaks down to form two or more new

substances is called a Decomposition reaction.

Chemical substances can undergo a range of chemical reactions, e.g. acids on metals, acids on carbonates, combustion, corrosion, precipitation, neutralisation, decomposition.

Complete the table to indicate which type of chemical reaction is occurring:

Chemical reaction	Type of reaction
hydrochloric acid + sodium hydroxide $\longrightarrow$ sodium chloride + water	Neutralisation
sulfuric acid + zinc $\longrightarrow$ zinc sulfate + hydrogen	Acid on metal
nitric acid + sodium carbonate $\longrightarrow$ sodium nitrate + carbon dioxide + water	Acid on metal carbonate
iron + oxygen $\longrightarrow$ iron oxide	Corrosion (Rusting)
calcium carbonate $\longrightarrow$ calcium oxide + carbon dioxide	Decomposition
magnesium burnt in air $\longrightarrow$ magnesium oxide	Combustion
soluble salt A + soluble salt B $\longrightarrow$ insoluble salt C + soluble salt D	Precipitation

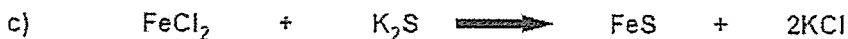
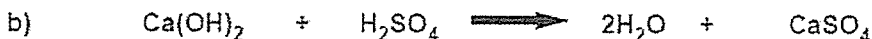
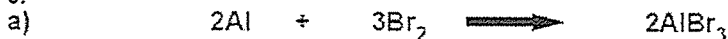
1.

- a) barium sulfate
- b) methane
- c) iron (II) hydroxide
- d) ammonium nitrate
- e) aluminium carbonate

2.

- a)  $\text{Ca}(\text{NO}_3)_2$
- b)  $\text{FeBr}_3$
- c)  $\text{Cu}(\text{OH})_2$
- d)  $(\text{NH}_4)_2\text{SO}_4$
- e)  $\text{NH}_3$

3.



4.

