

# Reactivity

## Lesson 19 - Review 1

Science - Key Stage 3

Miss Fenner






Make flash cards for the key definitions I am about to bring up on the screen.



# Key Definitions

- **Electron configuration** - the number of and arrangement of electrons in an atom.
- **Ion** - charged particle formed by an atom losing or gaining electrons.
- **Chemical reaction** - the formation of a new substance. Reactants are converted into products.
- **Base** - a substance which dissolves in water to form an alkali.
- **Salt** - a compound made of oppositely charged ions.
- **Neutralisation** - the addition of an acid to an alkali to form neutral products (a salt and water).
- **Hazard** - what is dangerous.
- **Risk** - why something is dangerous.



# Match each chemical formulae to its description



2 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms



1 sodium atom and 1 chlorine atom



1 sodium atom, 1 hydrogen atom, 1 carbon atom and 3 oxygen atoms



2 sodium atoms and 1 oxygen atom



2 hydrogen atoms, 1 sulfur atom and 4 oxygen atoms



Match each chemical formulae to its description



2 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms



1 sodium atom and 1 chlorine atom



1 sodium atom, 1 hydrogen atom, 1 carbon atom and 3 oxygen atoms



2 sodium atoms and 1 oxygen atom



2 hydrogen atoms, 1 sulfur atom and 4 oxygen atoms



**Word bank:**

Positive

Brackets

Ion

Negative

Charge

Atom

When an \_\_\_\_\_ gains or loses electrons it forms an \_\_\_\_\_ with a charge.

If an atom gains electrons it will form an ion with a \_\_\_\_\_ charge.

If an atom loses electrons it will form an ion with a \_\_\_\_\_ charge.

Ions are always drawn with \_\_\_\_\_ around them and their \_\_\_\_\_ in the top right corner.



**Word bank:**

Positive

Brackets

Ion

Negative

Charge

Atom

When an **atom** gains or loses electrons it forms an **ion** with a charge.

If an atom gains electrons it will form an ion with a **negative** charge.

If an atom loses electrons it will form an ion with a **positive** charge.

Ions are always drawn with **brackets** around them and their **charge** in the top right corner.





Sodium is found in group 1 of the periodic table.  
Draw the ion for sodium.



# General Equations

Complete the general equations and write an example reaction for each one.

Metal + Acid →

Metal oxide + Acid →

Metal carbonate + Acid →

Alkali + Acid →



# General Equations

Metal + acid → salt + hydrogen

Sodium + hydrochloric acid → sodium chloride + hydrogen

Metal oxide + acid → salt + water

Sodium oxide + hydrochloric acid → sodium chloride + water

Metal carbonate + acid → salt + water + carbon dioxide

Sodium carbonate + hydrochloric acid → sodium chloride + water + carbon dioxide

Alkali + acid → salt + water

Sodium hydroxide + hydrochloric acid → sodium chloride + water



Protons are positively charged

TRUE

FALSE



Neutrons have a mass of 1

TRUE

FALSE



Calcium is in group 2 so will form  
an ion of 3+

TRUE

FALSE



To test for hydrogen gas we insert  
a glowing splint

TRUE

FALSE



To test for carbon dioxide gas we  
bubble the gas into limewater

TRUE

FALSE





Carbon dioxide gas turns  
limewater from milky to colourless

TRUE

FALSE



# Quick Quiz - Check your knowledge

1. What does filtration separate?
2. Explain why chlorine atoms form ions with a charge of -1.
3. Write the electron configuration for carbon (which contains 6 electrons).
4. What change of state occurs to the water during crystallisation?
5. Iron + sulfuric acid →
6. Iron oxide + sulfuric acid →
7. Iron carbonate + sulfuric acid →



# Self-assess

1. Filtration separates an insoluble solid from a liquid.
2. Chlorine is in group 7 of the periodic table so has 7 electrons in its outer shell. The atoms gains 1 electron to have a full outer shell and be stable. Gaining 1 electron forms an ion with a charge of -1.
3. 2.4
4. During crystallisation the water evaporates (liquid to gas).
5. Iron + sulfuric acid → iron sulfate + hydrogen
6. Iron oxide + sulfuric acid → iron sulfate + water
7. Iron carbonate + sulfuric acid → iron sulfate + water + carbon dioxide



Test tube	Squeaky pop test	Test with limewater
Test tube A	Negative	Lime water turned milky
Test tube B	Positive	Lime water remained colourless
Test tube C	Negative	Lime water remained colourless

Magnesium + nitric acid

Magnesium oxide + nitric acid

Magnesium carbonate + nitric acid

1. Complete the equations for each of the 3 reactions.
2. Which test tube contained which reaction? Explain your answer.



# Self-assess

Magnesium + nitric acid → **magnesium nitrate + hydrogen**

- **Test tube B** because hydrogen produces a squeaky pop

Magnesium oxide + nitric acid → **magnesium nitrate + water**

- **Test tube C** because no hydrogen or carbon dioxide present

Magnesium carbonate + nitric acid → **magnesium nitrate + water + carbon dioxide**

- **Test tube A** because the carbon dioxide turns the limewater milky.

