

Reactivity

Lesson 19 - Review 1

Science - Key Stage 3

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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.

