

S1 Science

CHEMICAL REACTIONS

Name: _____

Form Class: _____

Science Teacher: _____

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Success Criteria

Level	Success Criteria - Elements & Atoms	
2	Participate in practical activities to separate simple mixtures of substances and relate my findings to everyday experience	
3	Explain the components of elements being atoms and then introduce how elements can join together to form compounds	
3	Developed my knowledge of the Periodic Table by considering the properties and uses of a variety of elements relative to their positions.	
3	Make and break down compounds, describe examples of how the properties of compounds are different from their constituent elements.	
3	Investigate solubility using different solvents and apply what I have learned to solve every day practical problems.	

Level	Success Criteria - Chemical Reactions	
2	Collaborate in activities which safely demonstrate simple chemical reactions using everyday chemicals.	
2	Show a chemical reaction as being a change in which different materials are made.	
2	Contribute to investigations into changes in substances to produce other substances and describe how their characteristics have changed	
3	Identify indicators of chemical reactions having occurred	
3	Describe ways of controlling the rate of reactions and relate findings to the world around me.	
3	help to design and carry out practical activities to develop understanding of chemical reactions involving the Earth's materials.	

Summary Notes

Elements

- ☐ Materials are all made from different combinations of only around a hundred, simple substances called **elements**.
- ☐ Each element contains only one specific kind of particle, the **atom** and an element cannot be split into anything simpler.
- ☐ An element is a substance containing only one type of atom ☆
- ☐ Each element has a **name** and also a quick way of identifying the element known as its **symbol**.
- ☐ All of the known elements are listed in the **Periodic Table of Elements**. It includes the names and symbols of all the elements.



The Periodic Table

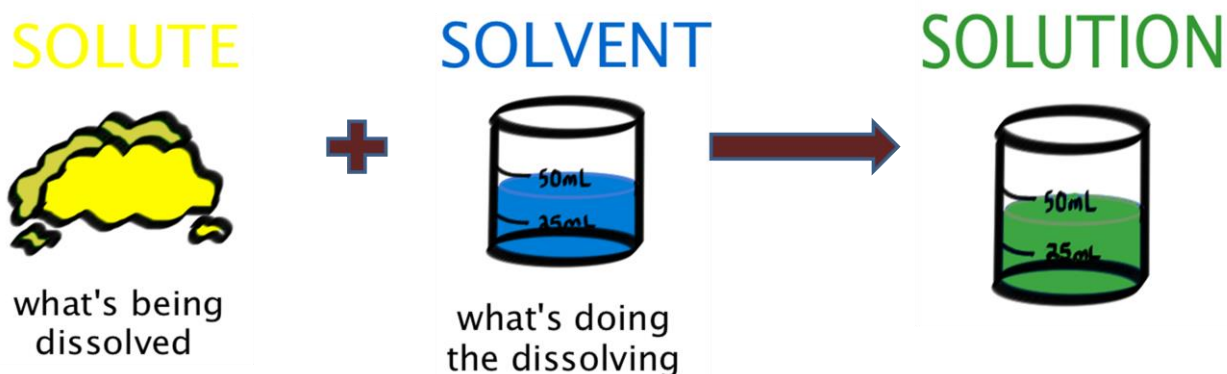
- ☐ An element symbol is made of **one or two letters**.
- ☐ The **first letter** in the symbol is **always a capital letter**. If there is a **second letter** it is **always 'lower case'**.
- ☐ **Group 1** is called the **Alkali metals** and are **very reactive**.
- ☐ **Group 7** is called the **Halogens** and are **also very reactive**.
- ☐ **Group 8** is known as the **Noble Gases**. They **do not react at all**!
- ☐ **Physical properties** of a substance are related to what it looks like. For example we might say "it's a brown gas" or "it's a shiny grey solid".

- ☐ **Chemical properties** of a substance are related to the reactions of the substance. We could describe it by saying "it bursts into flames near water" or "it burns very easily"
- ☐ Elements are sorted in the periodic table in three main ways.
- ☐ 1. Naturally occurring or man made: The elements after Uranium (no 92) are man made. Any before this are natural elements.
- ☐ 2. Metal or Non metal
- ☐ 3. Solids, liquids and gases: There are 2 liquids and there are 11 gases

Compounds & Mixtures

- ☐ **Elements** are made up of tiny particles called **atoms** and contain only one type of atom.
- ☐ Copper is an element made up of only copper atoms, Carbon is an element made up of only carbon atoms.
- ☐ When different elements are mixed but do not join together a mixture is formed.
- ☐ Mixtures (not compounds) can be easily separated as they are *not chemically joined*.
- ☐ The most common technique to separate a mixture of solids is ***filtration*** or a mixture of solid and liquid is ***evaporation***.
- ☐ Elements are then able to join up and form compounds.
- ☐ Compounds can look and behave very differently to elements.

- When a substance is put into a liquid and disappears it dissolves. These are called soluble and the resulting product is called a solution.



Chemical reactions

- A **chemical reaction** is a change in which new substances are made.
- A **physical reaction** is a change in which NO new substances are made. You can get back the original reactants.
- There are 4 signs of a chemical reaction:
 1. A **colour change**
 2. A **gas is given off** (fizzing /bubbling/effervescence)
 3. A **solid (precipitate) appears** (looks cloudy) or disappears
 4. An **energy change**: light or sound/ heat is given out or taken in.
- There are 3 ways to change the speed of a chemical reaction:
 1. **Change the particle size**: making particles smaller allows a bigger surface area free to react
 2. **Turn up the temperature**: the higher the temperature the faster the particles move and collide to react
 3. **Increase the concentration**: the higher the concentration the more particles available to react and make new products.

Homework



Homework 1 - Elements

1. *State* the 3 states of matter we find materials made of

2. What are all of these materials made up of?

3. What are all elements made up of?

4. Using your periodic table, try to spell your name or a country name.

Homework 2 - The Periodic Table

1. *Name* the following elements.

(a) **Ca**

(b) **Mg**

(c) **K**

(d) **S**

(e) **Ne**

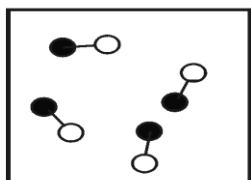
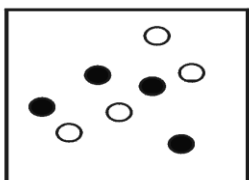
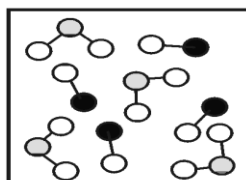
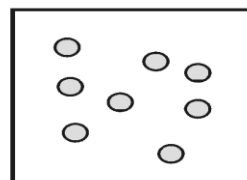
2. What is the name of group 1, 7 & 8?

3. Name an element you have seen in an experiment and describe its properties.

4. What group is it in?

Homework 3 - Mixtures & Compounds

1. Copy the diagrams and complete the sentences below.

**A****B****C****D**

Picture ____ shows a pure element.

Picture ____ shows a mixture of elements.

Picture ____ shows a pure compound.

Picture ____ shows a mixture of compounds.

2. What are the two main techniques for separating mixtures?

3. In the space below, draw out the apparatus used to separate a solid from a liquid. Remember to label it.



Homework 4 - Chemical Reactions

1. List the 4 signs of a chemical reaction

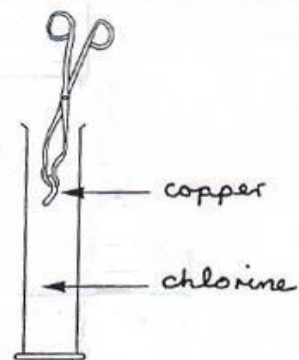
On Darren's first day in chemistry, his teacher demonstrated an experiment to the class.

Here is the report that Darren wrote in his jotter.

2.

Mr Murray took this really thin kind of copper and put it in a jar of gas. The gas was chlorine. We had to keep clear of the chlorine he said. When the copper went in the gas it shrivelled up. Then it went on fire. When it stopped there was green stuff in the jar.

This is a **CHEMICAL REACTION**



From Darren's report give two pieces of evidence which suggest that a **chemical** change had taken place.

3. List the 3 ways to alter the rate of a chemical reaction
