

Name: \_\_\_\_\_

## Year 9 Chemistry Homework Booklet



<b>Homework 1</b>	Key chemistry terms 1	Due date:	Completed?
<b>Homework 2</b>	Maths in chemistry 1	Due date:	Completed?
<b>Homework 3</b>	Practical Homework: Growing crystals	Due date:	Completed?
<b>Homework 4</b>	Key chemistry terms 2	Due date:	Completed?
<b>Homework 5</b>	Maths in chemistry homework 2	Due date:	Completed?
<b>Homework 6</b>	Practical Homework – Chromatography	Due date:	Completed?
<b>Homework 7</b>	Key chemistry terms 3	Due date:	Completed?
<b>Homework 8</b>	Maths in chemistry 3	Due date:	Completed?
<b>Homework 9</b>	Practical Homework – Making potable water	Due date:	Completed?
<b>Homework 10</b>	Key chemistry terms 4	Due date:	Completed?
<b>Homework 11</b>	Maths in chemistry 4	Due date:	Completed?
<b>Homework 12</b>	Key chemistry terms 5	Due date:	Completed?

## Homework 1 - Key Science Terms 1

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
Atom	the smallest part of an element that can exist.
Element	contain only one type of atom e.g. O
Compound	contain two or more elements chemically combined in fixed proportions e.g. CO <sub>2</sub>
Mixture	consists of two or more elements or compounds not chemically combined together e.g Air (contains O <sub>2</sub> , CO <sub>2</sub> and N <sub>2</sub> )
Chemical symbol	Atoms of each element are represented by a symbol e.g. O for Oxygen

## Homework 2 – Maths in Science 1

Complete the questions on the maths in chemistry homework sheet 1

## Homework 3 – Practical Science Homework – Growing Sugar Crystals - **Warning needs adult supervision with hot sugar solution**

Making Sugar Crystals – Heat 200ml of water with 800g of sugar in a saucepan. Stir with a spatula, but be very careful of hot splashes. It needs to be hot, but not boiling, turn down the heat if bubbles rise to the surface. Once all the sugar has dissolved and you have a syrupy liquid, turn off the heat. Add any colour of food colouring at this point if you want coloured crystals. Leave to cool. Take a wooden skewer, wet one half with cold water and then roll in sugar (the sugar granules will help your crystals grow). After around 10 mins of cooling, the syrup should be cool enough to pour into a glass/glass jar. Place the sugared wooden skewer into the syrup solution, you could secure in place with a peg place, ensuring the skewer doesn't touch the bottom of the glass. You can cover with a kitchen towel/coffee filter paper to prevent entry of anything. Leave in a safe, cool location. Check each day and make a note of the size of your crystals. Once large enough, remove from the solution and place into an empty glass to drip dry. You can eat your crystals if you wish

Report:

- Describe how your crystals changed throughout of the experiment. Include a diagram or photo of the end result.
- Explain the science behind the crystal formation by doing some research into the sugar crystals you have grown. Include the keywords: solvent, solute, solution, concentration, solubility, crystals.
- There are many websites out with the information here is one: [Sweet rocks | STEAM Experiments](#)

*Optional: If you do not have the equipment to grow your own crystals you can just complete the research aspect of this homework*

### Homework 4 - Key Science Terms 2

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
<b>Chemical reaction</b>	Always involve the formation of one or more new substances (and often involve a detectable energy change)
<b>Physical change</b>	No new chemical substance are formed e.g. melting , dissolving
<b>Condensation</b>	When a gas changes into a liquid
<b>Evaporation</b>	When a liquid turn into a gas
<b>Solute</b>	The substance that dissolves in a liquid to form a solution
<b>Solvent</b>	A liquid capable of dissolving another substance

### Homework 5 – Maths in Science 2

Complete the questions on the maths in chemistry homework sheet 2

### Homework 6 – Practical Science Homework - Chromatography Practical

1. Cut a long strip from one sheet of kitchen roll. It should be 2 cm wide
2. Choose one felt tip pen and draw a big dot at the bottom of your kitchen roll strip.  
Do not draw the dot all the way at the bottom, leave about 2 to 3 cm from the bottom to the dot.
3. Pour some water into a bowl or cup.
4. Place the bottom of your kitchen roll strip in the water and watch what happens. IMPORTANT: When you do this, the dot must be above the water.
5. Repeat the method with other felt tip pens.

#### Report

- Stick your chromatograms onto a piece of paper.
- Explain how chromatograph works and what your results show referring the mixture of colours (or not) that make up your chosen felt tips pens and their relative solubility.
- **Optional extension:** research how chromatography in used in everyday life

### Homework 7 - Key Science Terms 3

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

Term	Definition
<b>Filtering</b>	a separation technique that is used to separate an insoluble solid from a liquid.
<b>Crystallisation</b>	a separation technique that is used to separate a soluble solid from a liquid, using evaporation.
<b>Distillation</b>	a separation technique used to separate a solvent from a solution.
<b>Fractional Distillation</b>	a separation technique for separating a liquid from a mixture of two or more liquids.
<b>Paper Chromatography</b>	a technique of separating dissolved substances from one another

### Homework 8 – Maths in Science 3

Complete the questions on the maths in chemistry homework sheet 3

### Homework 9 – Practical Science Homework- Potable Water

Water covers most of the Earth and is vital for creating and sustaining life. Of all the world's water, approximately 97% is found as salt water in the seas and oceans. Although it may look clean, the seas are becoming more polluted with rubbish. There are large and small items being dumped in the sea, from pieces of wood to tiny beads of plastic from products such as face creams. All of this makes sea water a mixture that is unsafe to drink. As well as this, salt is dissolved in sea water making it a solution. Your task is to try and make potable water at home.

Make some dirty water using stuff you can find at home like your soil, sand, leaves, coffee, cooking oil, tiny pieces of plastics, you must include some salt.

Use your knowledge about separating mixtures and potable water to try and clean the water and make it potable. Example of filters that you could use are: sieves, sponges, socks, sand, gravel, activated charcoal

Report (Photos are welcome!)

- Describe how you made the dirty water
- Describe the method you used to clean you water, this could include a labelled diagram of what you did. State the name of the separating method you used e.g. filtering, evaporation, distillation
- Evaluate your method – how successful were you at cleaning the water? Did you remove all the dirt? Did you manage to remove the salt? What difficulties did you have in trying to clean the water? What equipment would you have liked to have?

### Homework 10 - Key Science Terms 4

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

<b>Term</b>	<b>Definition</b>
<b>Proton</b>	Sub-atomic particle with a positive charge (+1)
<b>Neutron</b>	Sub-atomic particle with no charge (0) equal mass to proton
<b>Electron</b>	Sub-atomic particle with a negative charge (-1) which orbits the nucleus
<b>Atomic mass</b>	The sum of the protons and neutrons in an atom
<b>Atomic number</b>	Number of protons in an atom

### Homework 11 – Maths in Science 4

Complete the questions on the maths in chemistry homework sheet 4

### Homework 12 - Key Science Terms 5

Learn the spelling of the key term and their definition. Use each of the terms in a sentence and bring this to your lesson

<b>Term</b>	<b>Definition</b>
<b>Chemical reaction</b>	Always involve the formation of one or more new substances, and often involve a detectable energy change
<b>Physical change</b>	Is one that results in no new chemical substance being formed e.g. melting, dissolving
<b>Rate of reaction</b>	The speed of a chemical reaction
<b>Reactant</b>	Chemical element or compounds that a chemical reaction starts with (left-hand side of an equation)
<b>Product</b>	Chemical elements or compounds that are produced during a chemical reaction (right-hand side of an equation)

