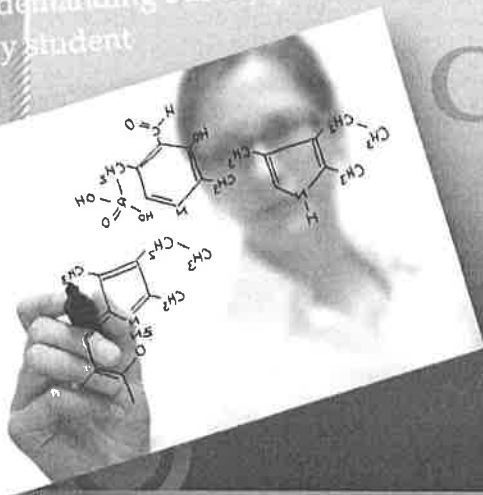


"A very demanding but enjoyable subject" 2013
chemistry student



CHEMISTRY 2018

Are you ready for A-level Chemistry?
You must bring this completed booklet with you to your first Chemistry lesson in September. This booklet will demonstrate your commitment to studying Chemistry at A-level. If you have any queries please email Mrs. Parsons.

Course Expectations

AS & A-level Chemistry is a very demanding and intense course and as such in order to succeed the minimum expectations are:

- 66 grades in GCSE Science and Maths.
- 6 in English is desirable as these subjects form a substantial part of the course
- An ability to study and work independently
- Good practical skills
- Hard work and determination
- You will have 5 hours of teaching per week and be expected to undertake a minimum of 5 hours of personal study (completing homework, reading, revision outside the lessons)

Teachers:

Mrs. E. Parsons (Head of Chemistry)
eparsons@plymstockschool.org.uk

Mrs. K. Boyle
kboyle@plymstockschool.org.uk

Chemistry is a fundamental subject and bridges the gap between the physical, biological sciences, it leads to career such as forensic science, pharmacology, medicine, veterinary science, biochemistry and dentistry.

Chemistry is involved everywhere from space research to exploration to the bottom of the oceans.

AS/A-Level CHEMISTRY

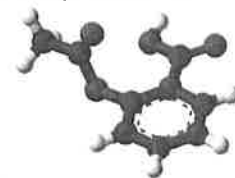


CHEMISTRY

@ Plymstock School

Post-16 Chemistry combines theoretical and experimental approaches to understand the natural world. Chemistry is the study of substances, what they are made of, how they interact and what role they play within living and non-living systems.

You will learn about chemistry in a range of different context and the impact it has on industry and many aspects of everyday life. You will learn to investigate and solve problems in a range of context.



During **AS Level Chemistry** you will study the following.

Module 1:

- Skills of planning implementing, analysis and evaluating practical's.

Module 2:

- Atoms, compounds, molecules and equations
- Amount of substance
- Acid-base redox reactions
- Electrons, bonding and structure

Module 3:

- The Periodic Table and periodicity
- Group 2 and the halogens
- Qualitative analysis
- Enthalpy changes
- Reaction rates and equilibrium

Module 4:

- Basic concepts
- Hydrocarbons
- Alcohols and haloalkanes
- Organic synthesis
- Analytical techniques (IR & MS)

During **A Level Chemistry** you will study the above plus:

Module 5:

- Physical chemistry and transition elements

Module 6:

- Organic Chemistry and Analysis

Assessment.

Chemistry is split into six modules: Modules 1 to 4 constitute the stand alone AS Level Qualification; Modules 1-6 combined with the Practical skills Endorsement, constitute the full A-Level.

AS Chemistry A (H032)					
ASSESSMENT OVERVIEW					
Paper		Marks	Duration	Weighting	
Paper 1	Breadth in chemistry		1 hr 30 mins	50%	
	Section A	Multiple choice			20
	Section B	Structured questions covering theory and practical skills			50
Paper 2	Depth in chemistry		1 hr 30 mins	50%	
	Structured questions and extended response questions, covering theory and practical skills				70

A Level Chemistry A (H432)					
ASSESSMENT OVERVIEW					
Paper		Marks	Duration	Weighting	
Paper 1	Periodic table, elements and physical chemistry		2 hr 15 mins	37%	
	Section A	Multiple choice			15
	Section B	Structured questions covering theory and practical skills			85
Paper 2	Synthesis and analytical techniques		2 hr 15 mins	37%	
	Section A	Multiple choice			15
	Section B	Structured questions covering theory and practical skills			85
Paper 3	Unified chemistry		1 hr 30 mins	26%	
	Structured questions and extended response questions covering theory and practical skills				70

A-level Chemistry also includes a non-examined Practical Skills Endorsement aspect which involves completing a minimum of 12 practical activities over the two years.

These practical are teacher assessed and range from acid-base titrations, enthalpy determination to research skills and qualitative analysis of organic functional groups.

Decimals Places & Significant figures

Decimal Places

Complete the table by rounding the original number to:

a) 2 decimal places b) 1 decimal place c) a whole number

(Remember to start from the **original** number each time.)

Original number	2 decimal places	1 decimal place	whole number
12.947			
84.3524			
0.765			
104.997			
8.442			

Significant Figures

Complete the table by rounding the original number to:

a) 3 significant figures b) 2 significant figures c) 1 significant figure

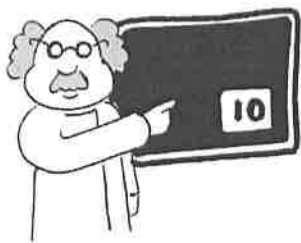
(Remember to start from the **original** number each time.)

Original number	3 significant figures	2 significant figures	1 significant figure
2.856			
44.53			
18.29			
532.41			
99.98			

Exercise 1

1. Prepare yourself by making x the subject in each of the following cases:

a) $y = x + a$	e) $y = \frac{x}{5}$
b) $y = 2x - a$	f) $2w = 3x$
c) $y = 2x + 7$	g) $ax - y = 2y$
d) $y = 7 - 2x$	h) $ax - y + z = b$



STARTER FOR 10!!!

1.1.1. Moles and mass

Work out the answers to the following simple calculations (1 t = 1 tonne = 1,000 kg);

1. No. of moles in 10.0 g of O_2 + the mass in g of 2.41 moles of H_2O =

(2 marks)

2. Mass in g of 0.2 moles of K_2CO_3 + mass in g of 0.5 moles of $MgCO_3$ =

(2 marks)

3. No. of moles in 12.4 t of $NaNO_3$ ÷ no. of moles in 12.4 t of $NaCl$ =

(2 marks)

4. No. of moles in 25.9 g of sodium – no. of moles in 25.9 g of sodium chloride =

(2 marks)

5. ? × molar mass of in $g\ mol^{-1}$ of calcium carbonate = no. of moles in 4.2 kg of $SiCl_4$

(2 marks)

Chapter 4

Mole calculations

Print out and complete this worksheet to generate a summary for Chapter 4.

- 1 What is the mass in grams of 0.15 mol of calcium hydroxide?

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- 2 What is the amount in moles of 15.2g of calcium carbonate?

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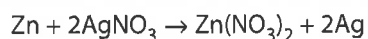
- 3 What is the molar mass of a substance if 0.2mol has a mass of 21.2g?

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- 4 Calculate the mass of silver obtained by reacting excess silver nitrate solution with 5g of zinc.



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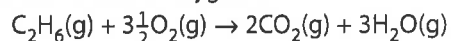
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- 5 State Avogadro's law.

.....

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- 6 Ethane burns in oxygen to form carbon dioxide and steam:

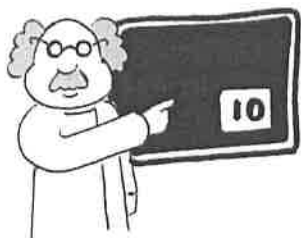


Assuming that all volumes are measured at the same temperature and pressure, what volume of oxygen reacts with 25cm³ of ethane and what volumes of carbon dioxide and steam are produced?

.....

.....

.....



STARTER FOR 10!!!

3.1.1. Covalent dot and cross

Draw dot and cross diagrams to illustrate the bonding in the following covalent compounds. If you wish you need only draw the outer shell electrons;

(2 marks for each correct diagram)

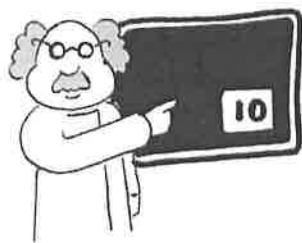
1. Water, H_2O

2. Carbon dioxide, CO_2

3. Ethyne, C_2H_2

4. Phosphoryl chloride, POCl_3

5. Sulfuric acid, H_2SO_4



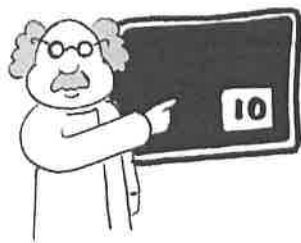
STARTER FOR 10!!!

3.1.2. Ionic dot and cross

Draw dot and cross diagrams to illustrate the bonding in the following ionic compounds.

(2 marks for each correct diagram)

1. Lithium fluoride, LiF
2. Magnesium chloride, MgCl_2
3. Magnesium oxide, MgO
4. Lithium hydroxide, LiOH
5. Sodium cyanide, NaCN



STARTER FOR 10!!!

3.1.3. Which type of chemical bond

There are three types of strong chemical bonds; **ionic**, **covalent** and **metallic**.

1. Sort the compounds below into groups within the circles below according to their chemical bonding;

sodium chloride, NaCl

magnesium, Mg

magnesium oxide, MgO

methane, CH₄

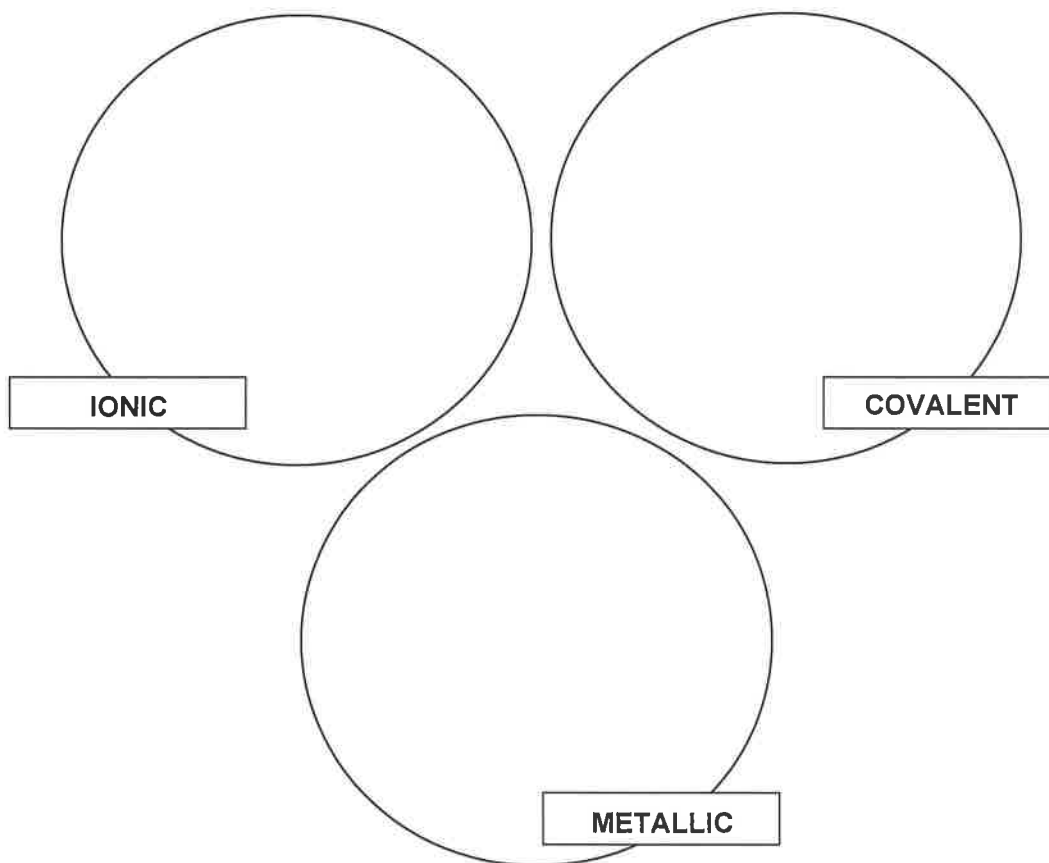
oxygen, O₂

barium iodide, BaI₂

aluminium, Al

ammonia, NH₃

caesium, Cs



2. For each of the types of compound, indicate if you would expect them to;
- have a high or a low melting point
 - conduct electricity