# Science Revision Strategies

- FOLLOW A PLAN!
- START NOW!

# What to expect

## AQA COMBINED SCIENCE

6 X 70 mark papers = 420 Marks

2 Biology

2 Chemistry

2 Physics

2 GCSE's

Combined Double Grade 9.9 to 1.1

## AQA SEPARATE SCIENCES

6 X 100 Mark papers

2 Biology

2 Chemistry

2 Physics

3 GCSE's

3 Separate grades 9 to 1

# Higher or Foundation

Higher

Grades 9 to 4

Foundation

Grades 5 to 1

A grade 4 is classed by the government as a pass and a grade 5 as a good pass.

To study at A-level you would need a grade 6/7.

All students WILL receive an equation sheet for GCSE Physics in 2025.

# Skills breakdown of each paper

- 40% Knowledge
- 40% Application of knowledge
- 20% Data analysis

# Lunchtimes at 12.35

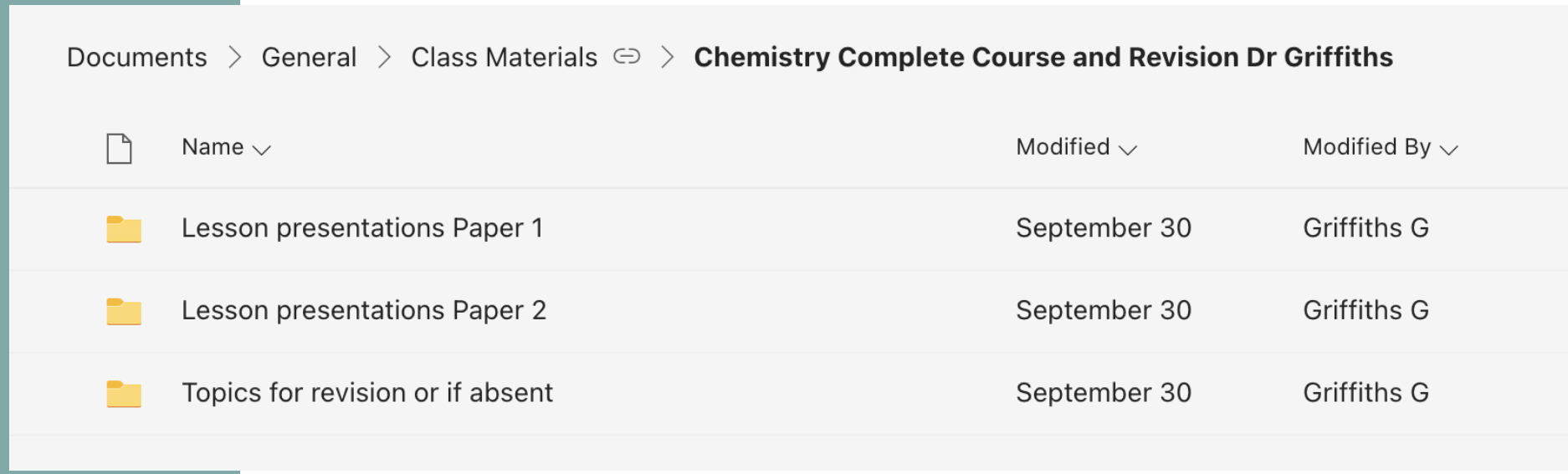
| Day | Revision Session | Location |
|---|---|---|
| Monday | Y11 Triple Physics | E4 |
| Tuesday | Y11 Triple Chemistry | C2 |
| Wednesday | Y11 Biology | C4 |
| Thursday | Y11 Combined Physics | E6 |
| Friday | Y11 Combined Chemistry | C1 |

# You need to learn the facts and definitions

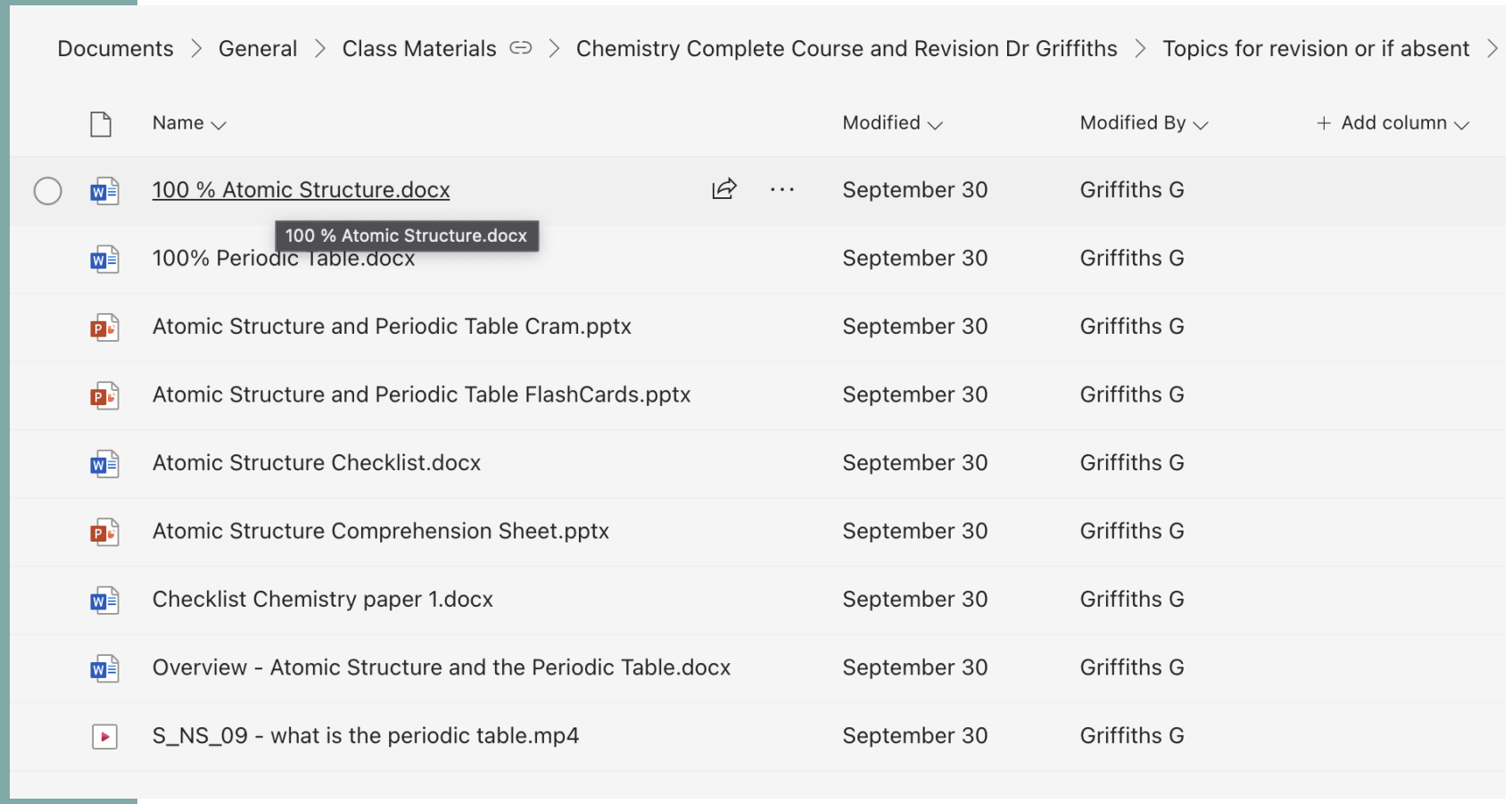
We will practice the skills of applying your knowledge and analysing data.

You cannot apply anything you do not know!

# Teams Resources



# Topic-by-topic revision resources that focus on knowledge and application of knowledge

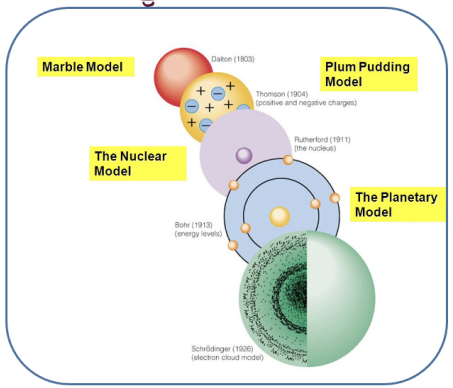


# 100% Sheets

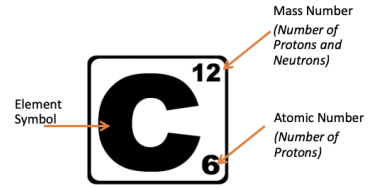
You need to know the content of this sheet. 100%

## 100% Sheet
## Atomic Structure


**Matter**
**All material in the Universe is made of very small particles.**



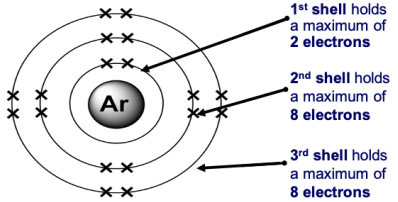

| Sub-atomic Particle | Mass | Charge |
|---|---|---|
| Proton | 1 | +1 |
| Neutron | 1 | 0 |
| Electron | Almost 0 | -1 |




**Number of Protons = Number of Electrons (shown by the bottom number)**
**Number of Neutrons = Mass Number – Atomic Number**
**Top number – Bottom number**

### How many electrons per shell?

Each shell has a maximum number of electrons that it can hold. Electrons will fill the shells nearest the nucleus first.

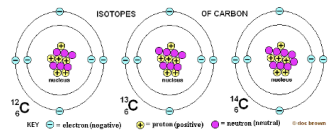



**1st shell** holds a maximum of **2 electrons**

**2nd shell** holds a maximum of **8 electrons**

**3rd shell** holds a maximum of **8 electrons**

This **electron arrangement** is written as **2,8,8.**




Isotopes are different forms of the same element.
They have the same number of protons and electrons but DIFFERENT number of NEUTRONS

Learn the content then apply your knowledge

## 100% Sheet
## Atomic Structure

WORK FOR PROGRESS

**Matter**
**All material in the Universe is made of very small particles.**

Working Towards

$^{35}_{17}Cl$ $^{37}_{17}Cl$
Describe, in terms of sub-atomic particles, **one** similarity and **one** difference between atoms of the two isotopes of chlorine

How did Mendeleev know that there must be undiscovered elements and how did he take this into account when he designed his periodic table?

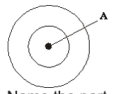
By the early 20th century protons and electrons had been discovered.

Describe how this discovery allowed chemists to place elements in their correct order and correct group

Expected

Oxygen atoms have 8 electrons.

Complete the diagram to represent the arrangement of electrons in an oxygen atom.
Use crosses (×) to represent the electrons.




Name the part of the oxygen atom that is labelled **A** on the diagram

Compare the position of the subatomic particles in the plum pudding model with the nuclear model.

Greater Depth

How many protons, neutrons & electrons? Draw the electronic structure and explain why Sodium is in Group 1 and period 3.

23
**Na**
11

# Essential Learning Lists

All the essential facts for a topic on 1 piece of paper.

Ideal for self testing or for others to test

**Essential Learning List – Using Resources**

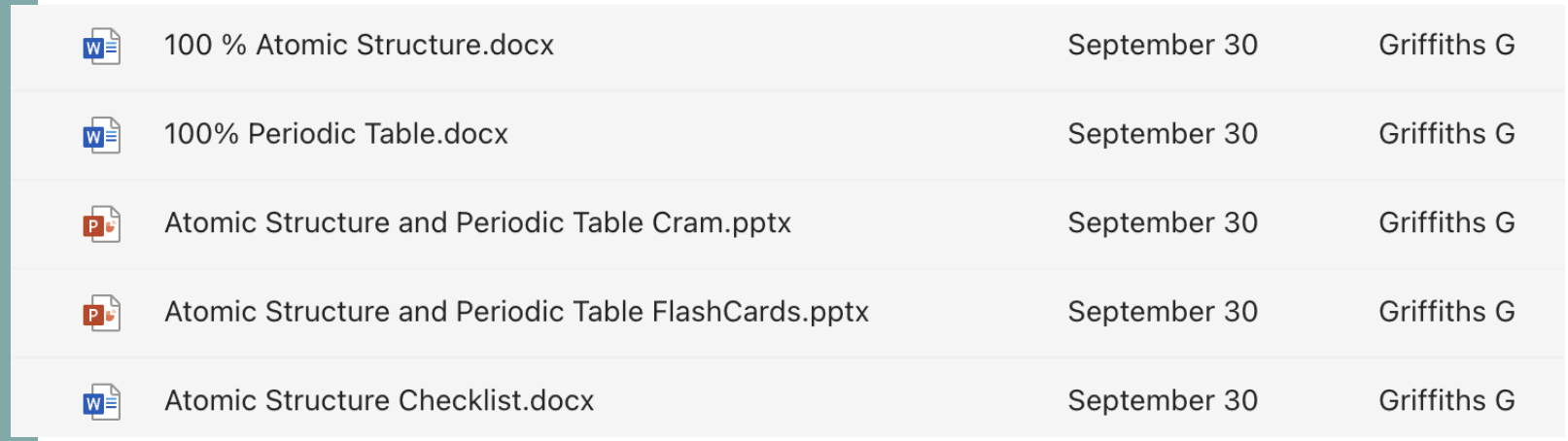
| | |
|---|---|
| Finite resource | A resource used for fuel or manufacturing that will run out |
| Sustainable development | Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs |
| Potable water | Water that is not pure but is safe to drink |
| Distillation | Process of boiling water to separate the salt from sea water |
| Sterilisation | Use of chlorine or ozone to kill microbes in water |
| Filtration / sedimentation | Used to remove solids from water |
| Expected test results from pure water | pH=7 (Green with UI) No residue after evaporation. Will boil at exactly 100C |
| Expected test results from bottled or spring water | pH=6 (yellow with UI). Solid white salts after evaporation |
| Expected test results from sea water | pH=8 (purple with UI). Solid white salts after evaporation |
| Expected test results from rain water | pH=5 (Orange with UI). No solids after evaporation |
| Name the 5 steps in treating waste (sewage) water | Screening & grit removal. Sedimentation. Anaerobic digestion of sludge. Aerobic biological treatment of water. Sterilisation. |

# Topic Checklists

| Paper 1 Atomic Structure & periodic table Learning Objective | Red | Amber | Green |
|---|---|---|---|
| Define the key terms “Element”, “Compound” and Mixture | | | |
| Write chemical formulae for compounds and identify how many elements/atoms they contain. | | | |
| Write word and symbol equations for chemical reactions | | | |
| Balance symbol equations for chemical reactions | | | |
| Explain the methods of separating mixtures including filtration, crystallization, simple distillation, and chromatography. | | | |
| Describe how the model of the atom was developed from experimental evidence including:<br>- How the scattering experiment led to a change in the atomic model.<br>- The difference between the plum pudding and nuclear model of the atom. | | | |
| Describe the model of the atom in terms of subatomic particles (protons, neutrons and electrons). | | | |
| Give the relative mass and relative charge for each subatomic particle. | | | |
| Calculate the number of protons, neutrons and electrons in an atom of an element from its mass number and atomic number. | | | |
| Explain why atoms have no overall electrical charge. | | | |
| Describe the similarities and differences between isotopes of an element in terms of subatomic particles. | | | |
| Explain what the “relative atomic mass” is in terms of isotopes of an element | | | |

# Topic Flashcards

- Use on your phone.
- Write or recite answers until you know it all.
- Tick off the section on your checklist



| | | |
|---|---|---|
| 100 % Atomic Structure.docx | September 30 | Griffiths G |
| 100% Periodic Table.docx | September 30 | Griffiths G |
| Atomic Structure and Periodic Table Cram.pptx | September 30 | Griffiths G |
| Atomic Structure and Periodic Table FlashCards.pptx | September 30 | Griffiths G |
| Atomic Structure Checklist.docx | September 30 | Griffiths G |

# Online resources:

- AQA website for past papers and mark schemes
- Seneca Learning
- BBC Bitesize (select the correct course!)
- Kuizical
- Isaac Physics

CGP Online:

Username: ThirskScience
Password: Science2016

# Detailed revision plans with hyperlinks to resources

| Higher and Separate students must know everything in the preceding columns | | | |
|---|---|---|---|
| **Date** | **Focus** | | **Content** |
| 10th Jan | **C6 Reversible Reactions** | Essential | Learn the definition of a dynamic equilibrium and recognise the symbol for it.<br>Know that to alter the direction of a reversible reaction you use conditions that are the direct opposite of the original direction |
| | | Go deeper | Higher - Know how to apply Le Chatelier's principle to alter the equilibrium of a reaction by altering temperature, concentration or pressure. Be able to explain your answers. |
| | | Resources | Teams / Revision / Chemistry / Paper 2 / C6 Rate and Extent of Reactions / Reversible reactions<br>https://www.bbc.co.uk/bitesize/guides/z32bpbk/revision/1 |
| | | Check your understanding | https://forms.gle/Wz8EV1cqZrKpwJ6q8 \| https://forms.gle/FbaTZ9q1eaYa7NwUA |
| 17th Jan | **C6 Rates of Reaction** | Essential | Be able to explain why all reactions start fast, slow down and then stop.<br>Be able to describe and explain how increasing the temperature, pressure, surface area, concentration of reactants or using a catalyst increases the rate of a reaction.<br>**Required Practical.** Be able to describe how to measure the rate of a reaction after altering temperature or concentration in a **valid** way by explaining the use of controls in the experiment |
| | | Resources | Teams / Revision / Chemistry / Paper 2 / C6 Rate and Extent of Reactions / Rates of Reaction<br>https://www.bbc.co.uk/bitesize/guides/zpkp7p3/revision/1 |
| | | Check your understanding | https://forms.gle/yXhiC2wyyTqdex7K6 |
| 24th Jan | **C6 Rates of Reaction** | Essential | Be able to calculate rates of reaction using the equation Change in amount of products / time or by calculating the gradient of a graph |
| | | Go deeper | Higher - Be able to calculate exact rate by drawing a tangent to a curve and calculating its gradient. |
| | | Resources | Teams / Revision / Chemistry / Paper 2 / C6 Rate and Extent of Reactions / Rates of Reaction<br>https://www.bbc.co.uk/bitesize/guides/zpkp7p3/revision/1 |


Over to you
- Get Learning and Memorising!
LITTLE AND OFTEN
IS MUCH BETTER
THAN A PANICKED
LAST-MINUTE CRAM