# Science Faculty | Directed Improvement Sheet

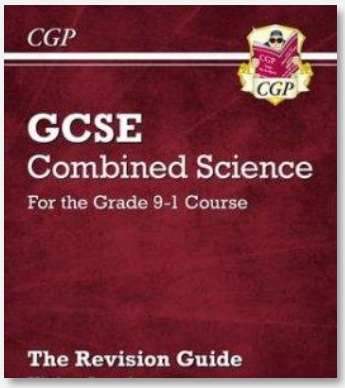
## Year 9

**Ensure you understand the structure of the atom and how electrons are arranged in energy levels.**

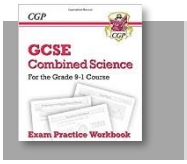
## Step 1 What do I need to know?

- State the masses and charges of electrons, neutrons and protons.
- To be able to draw electronic structure of elements from the periodic table.
- Use the periodic table to calculate the numbers of protons, electrons and neutrons for the first 20 elements in the periodic table.
- Explain how an atom developed from the plum pudding to the nuclear model.

## Step 2 How do I find out about it?

| Revision Guide Page | | Web Links |
|---|---|---|
|  | | Bitesize<br>Atomic structure<br>YouTube<br>Subatomic structure and electron configuration |
| **Higher** | **Pg. 104** | |
| **Foundation** | **Pg. 96-97, 104-105** | |

## Step 3 What can I do to help me learn it?




**Complete the relevant questions in your CGP Science Workbook**

| | |
|---|---|
| **Higher** | **Pages 91, 98-100** |
| **Foundation** | **Pages 89-90** |

**TASK 1-** Draw a diagram of a carbon atom and label the following parts:

**Protons, neutrons, electrons, energy levels/shells, nucleus.**

**TASK 2-** Complete the table below to identify the charge of protons neutrons and electrons. Use the charges of electrons and protons to explain why all atoms are neutral.

| Property | Proton | Neutron | Electron |
|---|---|---|---|
| Location | | | |
| Mass | | | |
| Charge | | | |

**TASK 3-** Draw the atomic structure and write the electron configuration of the following elements:
**Calcium, Lithium, Fluorine and Sulphur.**

**TASK 4**- Calculate the number of protons, neutrons and electrons in Boron and Coper.

**TASK 5-** Explain/draw the difference between the plum pudding and the nuclear model. How did the atomic structure develop?

# Science Faculty | Directed Improvement Sheet

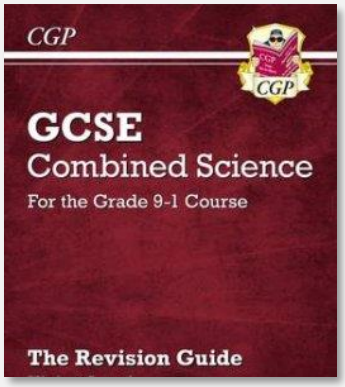
## Year 9

**Ensure you fully understand how the periodic table was developed.**

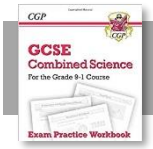
## Step 1 What do I need to know?

- Know who developed the period table and why he left gaps.
- Know how elements in the periodic table are arranged.
- Know the difference between atomic mass and atomic number.
- Explain why isotopes make it difficult to place the elements in order of atomic weight.

## Step 2 How do I find out about it?

| Revision Guide Page | | Web Links |
|---|---|---|
|  | | Bitesize<br>Development of the Periodic Table<br>Periodic Table<br>YouTube<br>Development of the Periodic Table |
| Higher | Pg. 105-106 | |
| Foundation | Pg. 106-107 | |

## Step 3 What can I do to help me learn it?



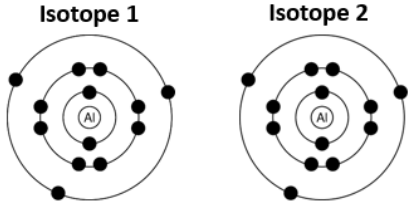

| Complete the relevant questions in your CGP Science Workbook | | |
|---|---|---|
| | Higher | Pages 101-102 |
| | Foundation | Pages 91-92 |

**TASK 1-** Watch the video above and describe who created the periodic table and how he arranged the elements.

Why did he leave gaps?

**TASK 2-** Write a definition of atomic mass and atomic number. What is the difference between the two terms?

**TASK 3-** What is an isotope? How do the isotopes below differ? Refer to protons, neutrons and electrons.




**TASK 4**- Explain why isotopes make it difficult to place them in order of atomic weight on the periodic table.

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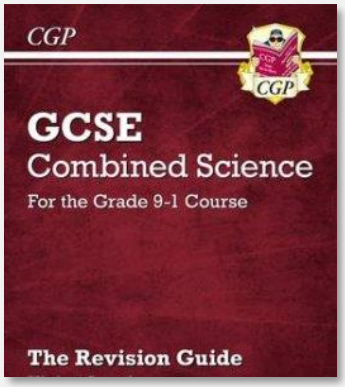
## Year 9

**Develop your understanding of the reactivity of group 1, 7 and 0 elements.**

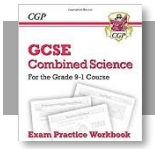
## Step 1 What do I need to know?

- Know how the electronic structure affects the reactivity of group 1, 7 and 0 elements.
- Describe the similar properties of elements in the same group.
- Know the most and least reactive alkali metals and halogens.
- Know what displacement means and be able to write a word equation for reactions.

## Step 2 How do I find out about it?

| Revision Guide Page | | Web Links |
|---|---|---|
|  | | Bitesize<br>Group 1 - Alkali Metals<br>Group 7 - Halogens<br>Group 0 - Noble Gases<br>YouTube<br>Noble gases<br>Halogens and displacement reactions<br>Alkali Metals |
| Higher | Pg. 108-110 | |
| Foundation | Pg. 109-11 | |

## Step 3 What can I do to help me learn it?



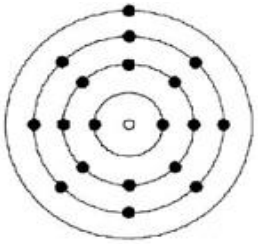

| Complete the relevant questions in your CGP Science Workbook | | |
|---|---|---|
| | Higher | Pages 104-107 |
| | Foundation | Pages 94-96 |

**TASK 1-**Identify all elements in the following groups and make a list of their properties:

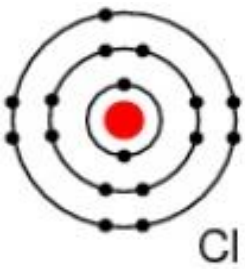
**Alkali Metals, Halogens and Noble Gases.**

**TASK 2-** What is the most reactive alkali metal? What is the reactive Halogen

**TASK 3-** Explain why halogens and alkali metals are reactive but noble gases are unreactive.



Potassium



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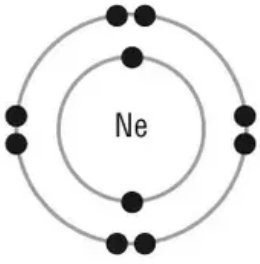


**TASK 4**- Would a reaction take place for the following: **Lithium Chloride + Potassium**
If so write what the reaction in a word equation.