THE NATIONAL MATHEMATICS AND SCIENCE COLLEGE

Chemistry Department

Pre A Transition work

PreA Summer Tasks – Chemistry

We are delighted to welcome you to the Chemistry department at The National Mathematics and Science College this September.

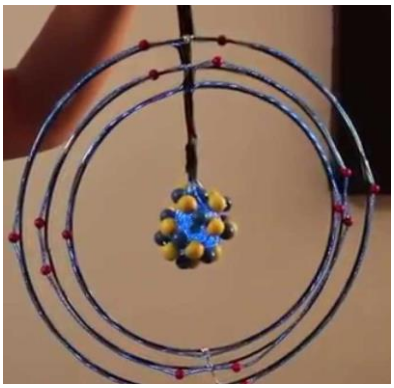
Attached are a selection of pre-course tasks for you - you should bring your completed work to the 1st lesson in the new term.

If you would like any guidance or support please contact me p.robotham@natmatsci.ac.uk

Kind regards The Chemistry Department

Task 1: Produce a history of the atom time-line.

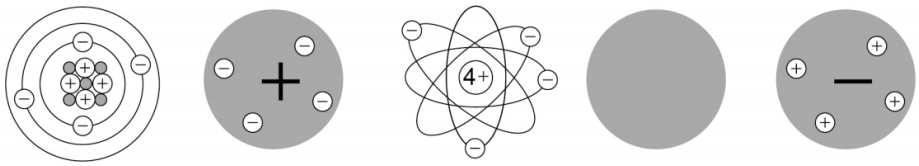
- You should research how our model of the atom has changed over time and produce a time line for the changes.
- Select a minimum of three of the key scientists in the development of the model and produce a fact file for each.
- Your fact file should include a) a picture of the named scientist (where possible) b) background information about them – where they were born, when they were born, where they lived and what they did in their lives c) how their ideas changed / added to the model of the atom at the time.
- **Each fact file should be 1 side of A4 (or the equivalent)**
- Make an actual model of one of the atoms you have researched about and bring it to class for display. It should be no larger than a piece of A4 and 3D where possible. Examples are shown below.



- Produce a presentation (using a format you are comfortable with / learn a new skill such as Prezi) to summarise the developments in the model of the atom. The presentation should include a minimum of 6 pictures / diagrams and a maximum of 65 words.
- After completing this task you should be able to answer a question like the one on the following page.

0 4 **Figure 3** represents different models of the atom.

Figure 3



A B C D E

0 4 . 1 Which diagram shows the plum pudding model of the atom?

[1 mark]

Tick **one** box.

A		B		C		D		E	

0 4 . 2 Which diagram shows the model of the atom developed from the alpha particle scattering experiment?

[1 mark]

Tick **one** box.

A		B		C		D		E	

Task 2: Learn the English spelling and chemical symbol for the 1st 20 elements in the Periodic Table (H-Ca)

Task 3: Learn the names, spellings and formula for common acids and ions

Hydrochloric acid	HCl
Nitric acid	HNO_3
Sulphuric acid	H_2SO_4
Phosphoric acid	H_3PO_4
Hydroxide	OH^-
Sulphate	SO_4^{2-}
Carbonate	CO_3^{2-}
Phosphate	PO_4^{3-}

Task 4: Learn the vocabulary for our 1st topic

Vocabulary List

air hole	**electron**	**mass number**
alpha particle	**electron shells**	**metal**
atom	**element**	**method**
atomic number	**empty**	**model**
base	**errors**	**neutron**
bonding	**evidence**	**nucleus**
Bunsen	**experiment**	**proton**
burning	**flame**	**results**
chimney	**foil**	**roaring**
collide	**heat-proof mat**	**safety**
combine	**history**	**scattering**
combustion	**increased**	**subatomic**
concentrated	**interpret**	**symbol equation**
deflect	**join**	**timeline**
discovery	**mass**	**word equation**

Extension Task: Find out about the contributions of chemists such as Arrhenius, Bronsted and Lowry to ideas about acids.