Summer Task: Research project

To prepare for the next stage in your learning, you must choose one research project below and create a presentation about it. This presentation could be a PowerPoint, a poster or a written essay, but you must include the success criteria outlined below. You will present this to your class in late September, and your teacher will assess it. This assessment will count towards your practical pass, although you will have plenty of other opportunities to make this pass should you find this task challenging.

1. **The use of catalysts.** What is a catalyst? Name a catalyst used in chemical / agricultural / biochemical industry. What reaction does it catalyse? Why is this important? *Go Further: What is the mechanism of the reaction of the catalysis of your researched reaction*.
2. **Chromatography**. Explain how chromatography works in the one of the following industries:
    a. sport science
    b. food science
    c. forensic science
    d. Go Further: What is gas chromatography / column chromatography and how do they work?
3. **Formulations.** What is a formulation? Give examples in your presentation and explain why they contain other compounds. Why do medicinal drug formulations only contain 5 and 10% of the active drug? *Go Further: Choose a medicinal formulation and research how it is synthesised*.
4. **Fractional Distillation**. Explain the process of fractional distillation and how fractions are separated. Describe the use of each fraction. *Go Further: What is the future of the petrochemical industry and why is this the case?*
5. **Cracking.** Explain the process of cracking and the two different types of cracking. Give examples of where cracking is used in everyday life. *Go Further: Explain the environmental considerations in the raw materials and the products produced in cracking*.

<u>Success criteria:</u>

- Able to present for 3 minutes about your chosen topic (or produced a two page written piece)
- Included relevant and correct chemical information
- Used correct scientific vocabulary
- Included the key dates and notable scientists involved

Citing references for research task

Parenthetical (Harvard) system The parenthetical system looks like this:

> *Titrations using potassium manganate(VII) can be used to determine the concentration of a solution of Fe2+ ions (Bloggs, 2011).*

Websites

General reference format:

> *Authors (year), Title. [online] Last accessed date: URL*

For example:

> *Clark, J. (2002), Some beryllium chemistry untypical of Group 2. [online] Last accessed 3 February 2015: http://www.chemguide.co.uk/inorganic/group2/beryllium.html#top*

Webpages and online resources frequently do not have individual authors. In that case, the name of the organisation is given.

September baseline assessment

In order to get an insight into your chemistry understanding, we will conduct a baseline assessment in September, which will aid us in creating targets for Year 13

- This will cover key GCSE concepts, such as:
- Moles, concentrations, and calculations
- Bonding and properties based on bonding
- Constructing chemical equations
- Equilibria, rates of reaction, and energy changes
- Atomic structure and periodic table
- Practical methods

Recommended revision:

OCR (A) GCSE (9-1) Chemistry Revision - PMT (physicsandmathstutor.com)

https://www.physicsandmathstutor.com/chemistry-revision/gcse-ocr-a/

GCSE Chemistry (Single Science) - OCR Gateway - BBC Bitesize

https://www.bbc.co.uk/bitesize/examspecs/z92x7hv

OCR Past Papers