

# Scheme of Learning: Quantitative Chemistry

## Topic Sequence:

1	2	3	4	5	6	7	8	9	10	11
Organisation	Electric Circuits	Chemical Changes	Mains Electricity	Quantitative Chemistry	Using Resources	Electro-Magnetism	Homeostasis & Response	Energy Changes	Ecology	Waves

## Topic Overview:

Chemists use quantitative analysis to determine the formulae of compounds and the equations for reactions. Given this information, analysts can then use quantitative methods to determine the purity of chemical samples and to monitor the yield from chemical reactions. Chemical reactions can be classified in various ways. Identifying different types of chemical reaction allows chemists to make sense of how different chemicals react together, to establish patterns and to make predictions about the behaviour of other chemicals. Chemical equations provide a means of representing chemical reactions and are a key way for chemists to communicate chemical ideas.

## Lesson Sequence:

We begin with balancing simple equations to apply the law of conservation of mass in chemical reactions. We then calculate the relative masses of elements and compounds, and the percentage by mass of particular elements within a compound.

Higher tier pupils need to be able to use the idea of the mole in calculations. We use moles to calculate the mass of particular reactants or products in a reaction when given the mass of another chemical, the limiting reactant in a given reaction and use the mass of chemicals to form balanced symbol equations.

All pupils; higher and foundation tier, need to be able to calculate the mass of a solute in a given volume of solution.

Separate Chemistry pupils also need to be able to calculate the yield and atom economy in reactions and build on their knowledge of titrations from the chemical changes topic to calculate the concentration of an unknown solution. Separate students finish with calculations of volumes of gases.

## Sequence of Lessons:

1	Conservation of Mass & Balancing Equations
2	Ar & Mr
3	Percentage by Mass – <i>mid topic assessment</i>
4	Moles
5	Equations & Calculations
6	Limiting Reactants
7	From Masses to Balanced Equations
8	Expressing Concentrations
9	Percentage Yield & Atom Economy – <i>Separate Chemistry Only</i>
10	Titration Calculations - <i>Separate Chemistry Only</i>
11	Volume of Gases - <i>Separate Chemistry Only</i>
12	Revision
13	Test

## Resources:

1	Worksheets in shared folder
2	Worksheets in shared folder
3	Worksheets in shared folder
4	Worksheets in shared folder
5	Worksheets in shared folder
6	Worksheets in shared folder
7	Worksheets in shared folder
8	Worksheets in shared folder
9	Worksheets in shared folder
10	Worksheets in shared folder
11	Worksheets in shared folder
12	Worksheets in shared folder
13	Test in shared folder

## Supportive Reading:

Literacy tasks	TBC
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## Assessment:

Knowledge:	Multiple choice and short answer questions.
Application of Knowledge:	Exam questions based on the skill of 'calculate'.