

## MAGHULL HIGH SCHOOL – CURRICULUM MAP

Unit: <b>Amount of Substance</b>	1. RAM 2. The Mole and Avogadro's constant	3. The ideal gas equation 4. Empirical and molecular formula	5. Balanced equations
LESSONS			
<b>Knowledge &amp; Skills Development</b>	<ul style="list-style-type: none"> <li>Define relative atomic mass (Ar) and relative molecular mass (Mr) in terms of 12C</li> <li>Know that the term relative formula mass will be used for ionic compounds.</li> <li>Describe the Avogadro constant as the number of particles in a mole.</li> <li>Be aware that the mole can be applied to electrons, atoms, molecules, ions, formulas and equations.</li> <li>Know the concentration of a substance in solution is measured in mol dm<sup>-3</sup>.</li> <li>Carry out calculations: using the Avogadro constant, using mass of substance, Mr, and amount in moles, using concentration, volume and amount of substance in a solution.</li> <li>Know the ideal gas equation <math>pV = nRT</math> with the variables in SI units, and use it in calculations</li> <li>Define the empirical formula as the simplest whole number ratio of atoms of each element in a compound.</li> <li>Define molecular formula as the actual number of atoms of each element in a compound.</li> </ul>	<ul style="list-style-type: none"> <li>Calculate empirical formula from data giving composition by mass or percentage by mass</li> <li>Calculate molecular formula from the empirical formula and relative molecular mass.</li> <li>Write equations (full and ionic).</li> <li>Know the formula for percentage atom economy: (molecular mass of desired product /sum of molecular masses of all reactants) ×100</li> <li>Describe economic, ethical and environmental advantages for society and for industry of developing chemical processes with a high atom economy.</li> <li>Write balanced equations for reactions studied</li> <li>Balance equations for unfamiliar reactions when reactants and products are specified.</li> <li>Use balanced equations to calculate: masses, volumes of gases, percentage yields, percentage atom economies, concentrations and volumes for reactions in solutions</li> <li><b>Required practical 1</b> Make up a volumetric solution and carry out a simple acid–base titration</li> </ul>	
<b>Assessment / Feedback Opportunities</b>	<b>Formative Assessment</b> Teacher questioning Quizzes Exam style questions	<b>Summative assessment</b> End of topic assessment Exam questions in future end of topic assessments to assess recall	
<b>Key Vocabulary</b>	Relative atomic mass, Relative molecular mass, Avogadro's constant, Mole, Concentration, Empirical formula, Molecular formula, Atom economy, Yield, Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error		
<b>Literacy/Reading</b>	Subject specific vocabulary introduced before reading of related texts		

<b>Opportunities</b>	Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations
<b>Cross Curricular Themes</b>	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators, significant figures
<b>Personal Development (Including British Values, RSE, Citizenship)</b>	None
<b>Career Opportunities</b>	Analytical Chemist, Chemical Engineer, Analytical Chemist, Chemical Engineer, Water chemist, Pharmacist