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**LANGDON PARK SIXTH FORM**

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| **Subject: Chemistry** | **Year: Y12** | **Topic: Amount of a substance** |

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| ***What and Why*** “When chemists measure out an amount of a substance, they use an amount in moles. The mole is a useful quantity because one mole of a substance always contains the same number of entities of the substance. An amount in moles can be measured out by mass in grams, by volume in dm3 of a solution of known concentration and by volume in dm3 of a gas.” |

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| **Key terms**  Relative atomic mass (Ar)  Relative molecular mass (Mr)  Avogadro constant  Moles  Mass | Volume  Concentration  Empirical formula  Molecular formula  Percentage yields  Percentage atom economies | Titration  Concordant  Titrant  Titre  Equivalence point  End point | Phenolpthalein  Methyl orange  Indicator |

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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Home learning** | **Extension – Cultural Capital and Reading** |
| **3.1.2.1**  I can define the **relative atomic mass** (**Ar**) and **relative molecular mass (Mr)**  **3.1.2.2** I can carry out calculations using numbers in standard and ordinary form eg using the **Avogadro constant**. I can also report calculations to an appropriate number of significant figures, given raw data quoted to varying numbers of significant figures.  **3.1.2.3** I can carry out calculations with the **ideal gas equation**, including rearranging the ideal gas equation to find unknown quantities.  **3.1.2.4** I can calculate **empirical formula** from data giving composition by mass or percentage by mass and calculate molecular formula from the empirical formula and relative molecular mass.  **3.1.2.4** I can state economic, ethical and environmental advantages for society and for industry of developing chemical processes with a high **atom economy**.  I can also use balanced equations to calculate:  **•masses**  **•volumes of gases**  **•percentage yields**  **•percentage atom economies**  **•concentrations and volumes for reactions in solutions.** | Consult your issued textbooks in the first instance, then look at other textbooks in the library for alternative diagrams, other examples or further explanations. For more specialised books, ask for advice or use the keyword system in the library.  **Videos**  Amount of a substance calculations – Eliot Rintoul  **Websites**  [www.rsc.org](http://www.rsc.org)  [www.chemguide.com](http://www.chemguide.com) | Required Practical 1:  Make up a volumetric solution and carry out a simple acid–base titration.  Mini test 1 on 3/10/19 | Write up practicals  Make notes on each topic  Research task  Class extensions  [www.seneca.co.uk](http://www.seneca.co.uk)  [www.rsc.org](http://www.rsc.org)  Periodic Table of Videos by Martyn Poliakoff www.youtube.com | ***Books***  The Pleasure of Finding Things Out -Richard Feynman  Periodic Tales -Hugh Aldersey-Williams  The Disappearing Spoon -Sam Kean  Uncle Tungsten -Oliver Sachs  The Shocking History of Phosphorus: A Biography of the Devil’s Element -John Emsley  ***Places of interest***  Royal Society of Chemistry -Burlington Arcade, Regents Street London  Science Museum, London  Museum of the History of Science, Oxford  Curie Museum, Paris |

**Pre-assessment content review**

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| I feel secure in | I need to focus on | My action plan |

**Pre-assessment skills review**

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| I feel secure in | I need to focus on | My action plan |

**Post-assessment review**

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| Weaknesses in content knowledge | Skills I need to focus on | My action plan |
| Retest / review – teacher and student comment | | |

**Revision planning**

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| Spec point | Notes complete | Revision materials | Past paper Qs | Timed conditions |
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