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**LANGDON PARK SIXTH FORM**

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| **Subject: Mathematics** | **Year: Y12** | **Topic 3: Sequences and Series** |

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| ***What and Why*:** Sequences and Series are first introduced to you in your GCSES where you explore patterns, find a general rule for any term in a sequence. In this unit of work, you build on this further, and not only explore linear, but also quadratic and some special sequences. |

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| **Key terms**  **Types of Sequences**   * Know the difference between different types of sequences * Find the nth term for linear sequences * Find the nth term for quadratic sequences * Find the nth term for cubics * Use and apply recursive notation | **Arithmetic Series**   * Know the difference between a sequence and a series * Define and identify arithmetic sequences. * Can find the first term (a) and the common difference (d) in a given series * Can find the nth term using the formula * Prove the formulae for the sum of a series using Gauss’s method. * Can find the sum of a finite number of terms in a series using the formulae. * Problem solve with arithmetic series including modelling questions. * Use Sigma notation | **Geometric Series**   * Define and identify geometric sequences. * Can find the first term (a) and the common ratio (r) in a given series * Can find the nth term using the formula * Can derive the formula for the sum of a finite geometric series. * Can find the sum of a finite number of terms in a series using the formulae. * Can derive and use the sum to infinity formula for a convergent series. * Problem solve with geometric series including modelling questions. * Use Sigma notation | **Limits:**   * Know when a geometric series is convergent and its conditions. * Find the limit of a series. |

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| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning** | **Extension – Cultural Capital and Reading** |
| D1  N1  N3 | **Topics you should be confident in prior to unit:**   * Linear and quadratic sequences; Nth term formulae * Substitution * Binomial series expansion   **Websites**  **Binomial Series/Theorem:**   * <https://revisionmaths.com/advanced-level-maths-revision/pure-maths/algebra/binomial-series> * <https://medium.com/i-math/the-binomial-theorem-explained-6464f41e5268>   **Binomial Probability**  <https://www.intmath.com/counting-probability/12-binomial-probability-distributions.php> | * End of unit assessment * 50% seen * 50% unseen * 90% pass needed or resit required. | * Kerboodle Online * My Maths * Exam Solutions * Maths Genie | **Online Mathematical articles and content can be found here:**   * <https://plus.maths.org/content/>   **Recommended Reading:**   * Why Do Buses Come in Threes?: The Hidden Maths of Everyday Life **-** Rob Eastaway * The Millennium Problems – Rob Devlin   **Enrichment**   * <https://undergroundmathematics.org/counting-and-binomials/r5563> |

**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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