******

**LANGDON PARK SIXTH FORM**

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

|  |
| --- |
| ***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. |

|  |  |  |  |
| --- | --- | --- | --- |
| **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.
 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Specification point** | **Pre-reading** | **Application and Assessment (date)** | **Independent learning** | **Extension – Cultural Capital and Reading** |
| D1N1N3 | **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**

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

**Pre-assessment skills review**

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

**Post-assessment review**

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

**Revision planning**

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