

# Mathematical Studies SL – Programme development plan

## Year 1

Week	Topic	
1 <b>Statistics</b>	The Chi – squared test for independence	<ul style="list-style-type: none"> <li>• Variables</li> <li>• Hypothesis,</li> <li>• Contingency Tables</li> </ul>
2		<ul style="list-style-type: none"> <li>• Relevant parameters</li> <li>• Statistical Tables</li> <li>• Drawing conclusions</li> </ul>
3		Performing tests and use of GDC
4	Bivariate Analysis	<ul style="list-style-type: none"> <li>• Scatter diagrams</li> <li>• Locus of means</li> <li>• Type and strength of correlation</li> <li>• Line of best fit by eye</li> </ul>
5		<ul style="list-style-type: none"> <li>• <b>Correlation vs Causation (TOK)</b></li> <li>• The line of regression equation</li> <li>• Meaning of <math>r</math> and of <math>r^2</math></li> </ul>
6	<b>STARTING THE IA</b> : Idea for a project	Practising and use of GDC
7		Practising and Assessment
8	Normal distribution	<ul style="list-style-type: none"> <li>• The bell shaped probability distribution curve</li> <li>• The Mean and the Standard deviation</li> <li>• Probabilities and area under the curve</li> </ul>
9		<ul style="list-style-type: none"> <li>• Practising (direct problem)</li> <li>• Practising (inverse problem)</li> <li>• Use of GDC</li> </ul>
10		Practising and Assessment
11	Descriptive Statistics	<ul style="list-style-type: none"> <li>• Types of data (qualitative and quantitative)</li> <li>• Discrete and continuous data samples</li> <li>• Statistical parameters (mean, median, standard deviation, quartiles: revision)</li> <li>• <b>Statistics and real life (to what extent we can trust Statistics as a descriptor of the world? TOK)</b></li> </ul>
12		<ul style="list-style-type: none"> <li>• Diagrams in Statistics: cum freq curves and box &amp; whiskey plots</li> </ul>
13		<ul style="list-style-type: none"> <li>• Practising</li> </ul>
14		<ul style="list-style-type: none"> <li>• Practising and assessment</li> </ul>
15 <b>Numbers and Algebra</b>	Equations and Sequences	<ul style="list-style-type: none"> <li>• Linear and quadratic equations (revision)</li> <li>• Arithmetic sequences</li> <li>• <math>N</math> – th term formula</li> <li>• Sum of the first <math>n</math> terms</li> </ul>
16		<ul style="list-style-type: none"> <li>• Geometric sequences</li> <li>• <math>N</math> – th term formula</li> <li>• Sum of the first <math>n</math> terms</li> <li>• Practising</li> </ul>

17		<ul style="list-style-type: none"> <li>• Link to Financial mathematics</li> <li>• Simple interest and APs</li> <li>• Compound interest and GPs</li> <li>• Currency conversions</li> <li>• Practising</li> </ul>
18		<ul style="list-style-type: none"> <li>• Assessment</li> </ul>
19 <b>Geometry</b>	2D shapes	<ul style="list-style-type: none"> <li>• Revision of basic properties and areas</li> <li>• <b>Rules of plane geometry are not valid on a sphere: non euclidean geometries (TOK)</b></li> </ul>
20	Trigonometry	<ul style="list-style-type: none"> <li>• Right angled triangles and ratios for their acute angles.</li> <li>• Definitions and problems</li> </ul>
21		<ul style="list-style-type: none"> <li>• Angle of elevation and angle of depression</li> <li>• Sine rule</li> <li>• Practising</li> </ul>
22		<ul style="list-style-type: none"> <li>• Cosine rule</li> <li>• Practising</li> </ul>
23	3D Shapes	<ul style="list-style-type: none"> <li>• Revision and Volumes</li> </ul>
24	Application of trigonometry to solid shapes	<ul style="list-style-type: none"> <li>• Angles between lines</li> <li>• Angles between a line and a plane</li> <li>• Angles between two planes</li> <li>• Practising and Assessment</li> </ul>
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26 <b>Set Theory</b>	The formal language of Sets	<ul style="list-style-type: none"> <li>• Notation and terminology</li> <li>• Definitions (<b>what does “Primitive concept” mean? TOK</b>)</li> <li>• Cardinality of sets</li> <li>• Venn diagrams and the concept of Universe in the language of Sets</li> </ul>
27	Operations between two or more sets	<ul style="list-style-type: none"> <li>• Union</li> <li>• Intersection</li> <li>• Complement</li> <li>• Practising</li> </ul>
28		<ul style="list-style-type: none"> <li>• Use of set theory to solve common problems</li> <li>• Addition rule for cardinalities</li> <li>• Practising and Assessment</li> </ul>
29 <b>Probability</b>	<b>Note:</b> revision of basic concepts is done at the beginning of year 1 (Definition of relative frequency and of classical probability concept)	<ul style="list-style-type: none"> <li>• Axioms (<b>what is an axiom? TOK</b>)</li> <li>• Tree diagrams</li> <li>• Venn diagrams</li> <li>• Practising</li> </ul>
30		<ul style="list-style-type: none"> <li>• Addition rule for probabilities</li> <li>• Conditional probability</li> <li>• Practising and assessment</li> </ul>
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# DP1 Internal Assessment

**SUBJECT:** MATHEMATICAL STUDIES SL

## School internal DEADLINES

*The dates are just an indication and a variation of few days may occur from year to year*

Content	Deadline
Introduction, Statement of the task, Plan	21st November
Data collection and their organization in a chart	16th December
Describing and displaying data (histograms, pie charts...)	13th January
Analysis of data (chi squared test and/or bivariate an.)	30th January
Evaluation and conclusion	17th February
FIRST DRAFT (AMENDED BY STUDENTS)	27 <sup>th</sup> February
FINAL	10 <sup>th</sup> March

Internal deadlines will be published on Managebac by the teacher

Students will have to upload on Managebac their work according to the internal deadlines

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