Maths- Y12

MAGHULL HIGH SCHOOL – CURRICULUM MAP

HALF TERM 4 Feb-Apr	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
TOPIC (S):-Pure **:-Statistics** **:-Mechanics**	**Proof** **Hypothesis Testing 1**	**Proof** **Hypothesis Testing 1**	**Straight Lines and Circles** **Hypothesis Testing 1**	**Straight Lines and Circles** **Analysis of data using statistical packages**	**Exponentials an Logs** **Analysis of data using statistical packages**	**Exponentials an Logs** **Analysis of data using statistical packages**	**Revision and Test for all modules.**
Knowledge & Skills development	Pure Statistics	**Proof:** Students should be able to: Set out a clear proof with the correct use of symbols, such as $=$, $\Rightarrow$, $\Leftarrow$, $\Leftrightarrow$, $\equiv$, $\therefore$, and to understand that many examples can be useful in looking for structure, but they do not constitute a proof. Note: at A-level 25% (20% at AS) of the assessment material must come from Assessment Objective 2 (reason, interpret and communicate mathematically). A focus on clear reasoning, mathematical argument and proof using precise mathematical language and notation should underpin the teaching of this specification. Students should become familiar with the mathematical notation found in Appendix A of the specification. **Straight Lines and Circles** Students should: Be able to solve problems using gradients, midpoints and the distance between two points, including the form $y = mx + c$ and the forms $y = a$ and $x = a$ for horizontal and vertical lines, and know that the product of the gradients of two perpendicular lines is -1. To find the equation of a tangent or normal at a point, and find relevant gradients using the coordinates of appropriate points. Note: implicit differentiation will not be required at AS. **Exponentials And Logs** Students should be able to: Sketch and use simple transformations of the function a^x, and sketch and use simple transformations of the function e^x. At AS, students should know that the gradient is proportional to the value of the function and are **not** expected to differentiate functions involving e^{kx}. **Hypothesis Testing 1:**Recognise whether a given context requires the use of a 1-tail or 2-tail test and understand the difference between them, be able to state appropriate null and alternative hypotheses to test a population proportion in a given context and know that the null hypothesis always contains the equality sign. Understand that the significance level of a test is the probability of rejecting a correct null hypothesis in error Be able to find the test statistic as being the observed number of outcomes of the event and be able to find the critical region for a 1-tail test, or the critical regions for a 2-tail test, supporting the choice of values in such regions with appropriate binomial probabilities. Know that the critical region consists of the critical values for the test and that if the test statistic lies in the critical region that this will lead to the rejection of the null hypothesis					

	Mechanics	Know that the acceptance region is the range of possible values, that the discrete random variable can take, that do not lie in the critical region and that if the test statistic lies in the acceptance region that this will lead to the acceptance of the null hypothesis, appreciate that if the test statistic corresponds to a critical value in the critical region that the null hypothesis is rejected, or that if the test statistic is in the acceptance region then the null hypothesis is accepted. **Analysis of data using statistical packages.** At AS students are required to become familiar with one or more specific large data set(s) in advance of the final assessment (these data must be real and sufficiently rich to enable the concepts and skills of data presentation and interpretation in the specification to be explored). Use technology such as spreadsheets or specialist statistical packages to explore the data set(s). Interpret real data presented in summary or graphical form and use data to investigate questions arising in real contexts. Pupils are encouraged to use statistical data sets and statistical packages throughout the course of study of statistics					
Assessment / Feedback Opportunities		Topic assessments	Self-assessment sheets	Homework	Formative teacher assessment - verbal	Retrieval practice	
Cultural Capital		• Tolerance and respect for peers and mathematicians • Democracy: allowing all to speak and voice views					
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)		Willingness to participate in, and respond to mathematical opportunities. Use of social skills in different contexts, including working and socialising with pupils from different religious, ethnic and socio-economic backgrounds.					
Reading opportunities		• Fermat's Last Theorem, History of computer programming, Newton's Laws of Motion.					
Key Vocabulary		Trigonometry, Hypothesis, Equilibrium, Resultant Forces.					
Digital Literacy		Autograph, Desmos for graphing. Geogebra.					
Careers		Architect, Sports science, Engineer, Statistician, Business- manager, Market research. Computer Programmer, Video game development.					