

Maths- Y13

MAGHULL HIGH SCHOOL – CURRICULUM MAP



HALF TERM 3 Jan-Feb	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
TOPIC (S):-Pure :-Statistics :-Mechanics	Mock Revision	Mock Revision	Mock Week	Integration & Partial fractions Statistical hypothesis testing Statics and dynamics	Integration & Partial fractions Statistical hypothesis testing Statics and dynamics	Numerical Methods Statistical hypothesis testing Statics and dynamics	Numerical Methods Statistical hypothesis testing Statics and dynamics
Knowledge & Skills development	Pure Statistics Mechanics	<p>Integration & Partial fractions: Decompose rational functions into partial fractions (denominators not more complicated than squared linear terms and with no more than three terms, numerators constant or linear). Integrate using partial fractions that are linear in the denominator.</p> <p>Numerical Methods: Locate roots of $f(x) = 0$ by considering changes of sign of $f(x)$ in an interval of x on which $f(x)$ is sufficiently well-behaved. Understand how change of sign methods can fail. Solve equations approximately using simple iterative methods; be able to draw associated cobweb and staircase diagrams. Solve equations using the Newton-Raphson method and other recurrence relations of the form $x_n + 1 = g(x_n)$. Understand how such methods can fail. Understand and use numerical integration of functions, including the use of the trapezium rule and estimating the approximate area under a curve and limits that it must lie between.</p> <p>Statistical hypothesis testing: Understand and apply the language of statistical hypothesis testing, developed through a binomial model: null hypothesis; alternative hypothesis, significance level, test statistic, 1-tail test, 2-tail test, critical value, critical region, acceptance region, p-value; extend to correlation coefficients as measures of how close data points lie to a straight line and be able to interpret a given correlation coefficient using a given p-value or critical value (calculation of correlation coefficients is excluded). Conduct a statistical hypothesis test for the mean of a Normal distribution with known, given or assumed variance and interpret the results in context.</p> <p>Statics and dynamics: Understand and use addition of forces; resultant forces; dynamics for motion in a plane. Understand and use the $F \leq \mu R$ model for friction; coefficient of friction; motion of a body on a rough surface; limiting friction and statics.</p>					
Assessment / Feedback Opportunities		Topic assessments	Self-assessment sheets	Homework	Formative teacher assessment - verbal	Retrieval practice	
Cultural Capital	<ul style="list-style-type: none"> 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)		<p>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.</p> <ul style="list-style-type: none"> •
Reading opportunities		<ul style="list-style-type: none"> • Fermat's Last Theorem • History of computer programming • History of Isaac Newton(Newton's Laws of Motion)
Key Vocabulary		<p>Iterative, Newton-Raphson, Recurrence, Trapezium, Approximate, Hypothesis, Significance, Variance, Resultant, Friction and Statics</p>
Digital Literacy		<p>Autograph, Desmos for graphing. Geogebra.</p>
Careers		<p>Architect, Sports Science, Engineer, Statistician, Data Analyst, Business- manager, Market research. Computer Programmer, Video game development.</p>