Farmor's School Mathematics Department

'Pure mathematics is, in its way, the poetry of logical ideas.' Albert Einstein

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Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment.

A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Farmor's School Mathematics Department

Key Stage 3 Maths

At Key Stage 3 we follow a scheme of work based on the White Rose scheme. Not all classes cover all the aims in each block, as some aims are revisited in later years. Students in the nurture group follow an adapted scheme for the individuals in that class.

Websites for resources to help your child at home include:

White Rose Maths: https://whiterosemaths.com/

Dr Frost: https://www.drfrostmaths.com/

Corbett Maths: https://corbettmaths.com/

Homework is usually set weekly, often on the Dr Frost website.
Each block of work is followed by a short in-lesson tracker test on the material covered in the block.

Farmor's School Mathematics Department

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	Sequences Understand and use algebraic notation Constructing, measuring and using geometric notation	Equality and equivalence Place value & ordering integers & decimals Fraction, decimal & percentage equivalence	Solving problems with addition and subtraction Solving problems with multiplication and division Fractions and percentages of amounts	Operations and equations with directed number Addition and subtraction of fractions	Prime numbers and proof Developing geometric reasoning	Sets and probability Developing number sense
Year 8	Ratio & scale Multiplying & dividing fractions Working in the Cartesian Plane	Multiplicative Change Representing Data Indices Developing Number Sense	Expressions & brackets Tables & Probability Sequences Symmetry	Equations & inequalities Fractions, decimals & percentages	Angles in parallel lines and polygons Standard Index Form Measures of location	Area of trapezia and circles The data handling cycle
Year 9	Straight Line Graphs Three Dimensional Shapes Numbers	Constructions & Congruency Forming & Solving Equations Using percentages	Angle reasoning Algebraic fluency Transformations	Maths and money Solving ratio & proportion problems Pythagoras' theorem	Rates Enlargement & Similarity Probability	Index laws and standard form Scale drawings Trigonometry

Farmor's School Mathematics Department

Key Stage 4 Maths

At GCSE we follow a scheme of work based on the Edexcel exam syllabus. Not all classes cover all the aims in each topic, as some aims are revisited in later units.

Websites for resources to help your child at home include:

Dr Frost: https://www.drfrostmaths.com/

Corbett Maths: https://corbettmaths.com/contents/

Maths Genie: https://www.mathsgenie.co.uk/gcse.html

Homework is usually set weekly, often on the Dr Frost website.
Each unit of work is followed by a short in-lesson tracker test on the material covered in the unit.

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Integers, roots and powers Factors, multiples and primes Surds Sequences	Circle theorems Pythagoras' theorem Ratio and proportion Quadratics Probability	Graphs Area and volume Place value, calculations and checking Averages and range Representing and interpreting data Transformations and co-ordinates Algebra		Representing data (2) Algebra Fractions, decimals and percentages Trigonometry Compound measures Accuracy and bounds Constructions, loci and bearings	
Year 11	Circle geometry Quadratic, cubic and other graphs Direct and Inverse Proportion Trig graphs	Quadratics, more sketching graphs Similarity and congruence More trig, sine and cosine rule Collecting data Probability	Vectors More complex algebra and proof Reciprocal and exponential graphs: gradients and area under graphs		Revision	

Syllabus for **Higher Tier** (broadly sets 1-4)
GCSE exam board: Edexcel

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Powers, roots, primes, HCF & LCM Sequences Properties of shapes, parallel lines and angle facts Written and mental calculations and checking	Probability Ratio and Proportion Index Rules, factorising, substitution and using formulae Area and volume of cubes, cuboids and right prisms	Real life and algebraic linear graphs Fractions , decimals and percentages Construction, loci including measuring and accuracy Processing and representing data Transformations Equations and inequalities		Percentages Decimal calculations Fractions, decimals and percentages Circumference, area and volume of circles and cylinders Quadratic equations expanding, factorising and solving Plans and Elevations Quadratic graphs Statistics and averages	
Year 11	Right angled triangles; Pythagoras and trigonometry Construction, loci and bearings Probability Ratio and proportion Standard Form	Rearranging equations Graphs of cubic and reciprocal functions Place value, calculations and checking Similarity and congruence in 2D	Processing and representing data; Interpreting and discussing results Simultaneous equations Fractions, decimals and percentages Vectors		Revision	

Syllabus for **Foundation Tier** (broadly sets 5-7)
GCSE exam board: Edexcel

Farmor's School Mathematics Department

Key Stage 4 Statistics and Further Maths GCSE

For Statistics GCSE we follow a scheme of work based on the Edexcel exam syllabus. Initially all students will be taught the higher content, however any students who need to can change to the foundation tier later in the course.

Websites for resources to help your child at home include:
Stats Academy: http://statsacademy.co.uk
Maths Genie: https://www.mathsgenie.co.uk/statistics.php
For Further Maths we follow a scheme of work based on the AQA exam syllabus. If a student finds this part of the course too challenging, we may withdraw them from this exam, but they can use the lesson time to focus on GCSE Maths & Statistics.
A website for resources to help your child at home include:
Corbett Maths: https://corbettmaths.com/more/further-maths/

Homework is usually set weekly.
Each unit of work is followed by a short in-lesson tracker test on the material covered in the unit.

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Types of data Sampling Peterson capture recapture Collecting data Hypotheses Designing an investigation		Representing data using diagrams & charts including Comparative pie charts Choropleth maps Population pyramids	Measures of location and spread Averages inc geometric mean, weighted mean & standard deviation Skewness Comparisons		Correlation: Scatter graphs Interpolation & extrapolation Spearman's Rank PMCC
Year 11	Time series Moving averages Variability	Probability Risk Diagrams Dependent/independent events Conditional probability	Probability distributions Binomial distributions Standardised scores Normal distributions Quality assurance and control charts	Index numbers RPI, CPI and GDP Chain base indices Rates of change	Revision	

Syllabus for **GCSE Statistics - Higher tier**
GCSE exam board: Edexcel

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Algebra the basics Binomial Expansion More complicated index rules Sequences (Quadratic and linear, limiting sequences) More complicated surds Introduction of calculus Recap geometry- including more complicated circle theorems		Product rule for counting Simultaneous equations Matrices- multiplication and transformations Factor theorem Pythagoras in 3D		Recap linear graphs Using calculus to find the tangent and normal, understanding max and min points Trigonometry in 3D Simultaneous equations with 3 unknowns Solving quadratics- factorising, graphs and completing the square	
Year 11	Factoring expression Algebraic calculations with complex fractions Equation of a circle, centre (a,b) Calculus- sketching and drawing curves Functions- interpretation of graphs		Complete algebraic proof Sine and Cosine rule (including in 3D) Trigonometric identities Geometrical proof Solve quadratic inequalities		Revision	

Syllabus for **GCSE Further Maths**
GCSE exam board: AQA

Key Stage 5 Core Maths

For Core Maths we follow a scheme of work based on the OCR exam syllabus. We offer the Statistical Problem Solving unit.

A website for resources to help at home is:
Integral Maths: https://integralmaths.org/

Students are given a log in to this site by their teacher. It covers the whole syllabus with teaching notes and example questions.

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 12	Introduction to Statistics Spearman's Rank Correlation Coefficient Diagrams and summary measures Measures of location and spread	Using spreadsheet Percentages Financial problem-solving including tax and National Insurance	Estimation & modelling Bounds and error intervals Standard form Risk Percentages revisited Probability Introduction to normal distribution		Graphs, including motion graphs and proportional graphs Linear transformations and datum levels Exponential growth and decay Other graphs such as ternary plots Logs and log graphs Foreign exchange Sampling	
Year 13	Chi squared testing, including hypothesis testing Review sampling Graphs and gradients of graphs Probability PMCC and correlation Hypothesis testing with Spearman's Rank CC Normal distribution with calculations Knowledge of the large data set		Revision including GCSE topics such as some algebra, volume, scale drawing, compound units		Revision using part papers and using the pre-release and large data set.	

Core Maths

Exam board: OCR (B)

Farmor's School Mathematics Department

Key Stage 5 A Level Maths and A Level Further Maths

At A level we follow a scheme of work based on the Edexcel exam syllabus and use the Pearson Edexcel textbooks. For Further Maths we generally offer the Decision and Mechanics options.

Websites for resources to help at home include:

Dr Frost: https://www.drfrostmaths.com/

Physics and Maths tutor: https://www.physicsandmathstutor.com/

Integral Maths (further Mathematicians) : https://integralmaths.org/

Homework is usually set following every lesson – it may be to finish an exercise from the lesson, or to do some questions to be handed in for marking, or on the Dr Frost website.
Each section of work is followed by a short in-lesson tracker test on the material covered in the section.
Students are expected to buy a textbook and provide their own paper.

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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 12	1: Algebraic expressions 2: Quadratics 3: Equations and inequalities 4: Graphs and transformations 5: Straight line graphs 6: Circles 7: Algebraic methods 8: Binomial expansion 9: Trig ratios 10: Trig identities and ratios. 14: Exponentials and logs M8: Modelling S1: Data collection S2: Measures of location and spread		11: Vectors 12: Differentiation 14: Exponentials and logs cont. M9: Constant acceleration. M10: Forces and motion S3: Representations of data S4: Correlation S5: Probability S6: Statistical distributions		13: Integration M11: Variable acceleration S7: Hypothesis testing Year 13 content: 1. Algebraic methods 3. Sequences and series 4. Binomial expansion 5. Radians	
Year 13	2. Functions and graphs 6. Trigonometric functions 7. Trigonometry and modelling 8. Parametric equations 9. Differentiation 10. Numerical methods M4. Moments M5. Forces and friction		11. Integration M6. Projectiles M7. Applications of forces M8. Further kinematics S2. Probability S3. Normal distribution		Revision	

A level **Maths** exam board: Edexcel

Farmor's School Mathematics Department

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 12	Complex numbers Argand diagrams Series Roots of polynomials **Decision:** 1. Algorithms and Sorts, order of algorithms 2. Graphs and networks **Mechanics:** 3. Momentum & impulse 4. Power, work and energy		**Decision:** 3. Algorithms on graphs 4. Route inspection problems 6. Linear programming 8. Critical path analysis **Mechanics:** 4. Elastic collisions **Pure:** 9. Vectors		**Pure:** 5. Volumes of revolution 6. Matrices 7. Linear transformations 8. Proof Year 13 content: Differentiation and integration	
Year 13	**Decision** 2.5 Planarity algorithm 3.5 Floyd's algorithm 4.3 Networks with more than 4 odd nodes 5. Travelling salesman problem 7. Simplex algorithm 8.7. Resource histograms 8.8 Scheduling diagrams **Mechanics:** 3. Elastic strings and springs 5. Elastic collisions in two dimensions **Pure:** 2. Series		**Pure:** 1. Complex numbers 3. Methods in calculus 4. Volumes of revolution 5. Polar coordinates 6. Hyperbolic functions 7. Methods in differential equations 8. Modelling with differential equations		Revision	

A level **Further Maths** exam board: Edexcel