

Our Vision:

We aim to ensure all pupils

- become fluent in the fundamentals of mathematics, by developing pupils conceptual understanding as well as being able to recall and apply knowledge rapidly and accurately.
- develop a broad range of skills in using and applying mathematics.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing difficulty, including breaking down problems into a series of simpler steps and persevering in seeking solutions.
- Understand how Mathematics is an interconnected subject and are able to move fluently between representations of mathematical ideas. Cross-curricular links are integrated within the scheme of learning.
- Embrace the value of learning and feel confident to be able to take risks and comfortable making mistakes and learning from them
- Are independent and think for themselves and are prepared to persevere when faced with challenges, showing a confidence that they will succeed.
- Use Mathematical language and symbols accurately in their work and in discussions.
- Have a broad curriculum which also looks at the history and development of mathematics throughout the years as well as the use of maths in real-life.
- develop a sense of curiosity, passion and commitment to the subject

Exam boards: GCSE - AQA. Additional maths qualification – OCR. A-level - Edexcel.

Springwood High School Maths Curriculum Plan

Brief overview of topics, themes, skills or key questions for each term:

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Consolidation of KS2 Place value Addition and subtraction Multiplication and Division	Factors & Multiples, Primes and Indices, Order of operations	Geometry: properties of shapes and angles Fractions	Algebraic expressions Fractions and percentages of amounts	Rounding and estimation Algebraic expressions 2	Statistics (used for Smoothie Super learning day)
8	Consolidation of Yr 7 Linear equations Angles	Area and perimeter Percentages 2 Ratio and proportion - ratio	Fractions 3 2-D geometry	3-D geometry Statistics	Probability Percentages 3	Algebraic expressions 3
9	Consolidation of Yr 8 Linear equations 2 Ratio and proportion 2 - proportion	Standard Form Sequences Straight Line Graphs	Real Life Graphs Transformations	Inequalities Quadratic expressions	Quadratic graphs Probability	Right angled triangles Trigonometry

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10	<u>Foundation</u> Sampling. Averages. Charts and Graphs Pie charts. Scatter graphs <u>Higher</u> Indices and roots Surds Recurring decimals to fractions Changing the subject Linear graphs and coordinate geometry	<u>Foundation</u> Properties of shapes, parallel lines and angle facts. Interior and exterior angles of polygons Quadratic equations: expanding and factorising and graphs <u>Higher</u> Quadratic equations and expressions. Simultaneous equations Direct and inverse proportion Sampling. Averages.	<u>Foundation</u> Pythagoras' Theorem. Perimeter and area <u>Higher</u> Charts and Graphs Pie charts Scatter graphs. Properties of shapes, parallel lines and angle facts. Interior and exterior angles of polygons Pythagoras and Trigonometr	<u>Foundation</u> Surface area and volume. Probability Compound measures. <u>Higher</u> Perimeter and area Similarity and congruence Surface area and volume.	<u>Foundation</u> Constructions and loci and bearings Perimeter, area and volume. <u>Higher</u> Accuracy and bounds Constructions, loci and bearings. Probability	<u>Foundation</u> Similarity and congruency <u>Higher</u> Compound measures. Trigonometry Vectors
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			y in right-angled triangles			
11	<u>Foundation</u> Trigonometry <u>Higher</u> Vectors Quadratic inequalities Sequences - quadratic Circle Theorems.	<u>Foundation</u> Vectors Graphs Simultaneous equations. Proof <u>Higher</u> Circle theorems Geometry – circles Functions Transformations of graphs. Inequalities - graphing Algebraic fractions.	<u>Foundation</u> Accuracy and bounds <u>Higher</u> Proof Iterations Gradient and area under a curve Growth and decay	Revision	Revision	

	Pure lessons	Pure and Mechanics lessons	Pure and Statistics lessons
12	Quadratic functions – factorising, solving, graphs and the discriminants Equations – quadratic/linear simultaneous The intersection of a line and a curve Inequalities – linear and quadratic (including graphical solutions) Graphs – cubic, quartic, factorised polynomials and reciprocal Transformations – transforming graphs – $f(x)$ notation Circles – equation of a circle, geometric problems Algebraic division, factor theorem and proof Examples including proof by deduction and proof by contradiction The binomial expansion Trigonometric ratios and graphs Trigonometric identities and equations Radians (exact values), arcs and sectors Use of trigonometry in triangles	Algebraic expressions – basic algebraic manipulation, indices and surds Introduction to mathematical modelling and standard S.I. units of length, time and mass Definitions of force, velocity, speed, acceleration and weight and displacement; Vector and scalar quantities Graphical representation of velocity, acceleration and displacement Motion in a straight line under constant acceleration; suvat formulae for constant acceleration; Vertical motion under gravity Newton's first law, force diagrams, equilibrium, introduction to i, j system Newton's second law, '$F = ma$', connected particles; Newton's third law:	Straight-line graphs, parallel/perpendicular, length and area problems Introduction to sampling terminology; Advantages and disadvantages of sampling Understand and use sampling techniques; Compare sampling techniques in context Calculation and interpretation of measures of location; Calculation and interpretation of measures of variation; Understand and use coding Interpret diagrams for single-variable data; Interpret scatter diagrams and regression lines; Recognise and interpret outliers; Draw simple conclusions from statistical problems Interpret diagrams for single-variable data; Interpret scatter diagrams and regression lines; Recognise and interpret outliers;

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	Definition, differentiating polynomials, second derivatives Gradients, tangents, normals, maxima and minima Definition as opposite of differentiation, indefinite integrals of x^n Definite integrals and areas under curves Exponential functions and natural logarithms Secant, cosecant and cotangent (definitions, identities and graphs); and inverse trig functions Compound (including proof) and double (and half) angle formulae *geometric proofs expected Proving trigonometric identities The form $R\cos(x+a)$, $R\sin(x+a)$ etc Proof by contradiction Simplifying algebraic fractions Partial fractions Modulus function Composite and inverse functions Transformations Modelling with functions - may be Trigonometric, exponential, reciprocal etc.	equilibrium, problems involving smooth pulleys Resolving forces Friction forces (including coefficient of friction μ) Variable force; Calculus to determine rates of change for kinematics Use of integration for kinematics problems	Draw simple conclusions from statistical problems Probability: Mutually exclusive events; Independent events Using set notation for probability Questioning assumptions in probability Statistical distributions: Use discrete distributions to model real-world situations; Identify the discrete uniform distribution; Calculate probabilities using the binomial distribution (calculator use expected) Language of hypothesis testing; Significance levels Carry out hypothesis tests involving the binomial distribution
13	Expanding $(a + bx)^n$ for rational n; knowledge of range of validity Expansion of functions by first using partial fractions Arithmetic and geometric progressions (proofs of 'sum formulae') Sigma notation Recurrence and iterations Differentiating $\sin x$ and $\cos x$ from first principles Chain Rule	Forces' turning effect Applications of kinematics: Projectiles Applications of kinematics: Projectiles Equilibrium and statics of a particle (including ladder problems) Dynamics of a particle Constant acceleration (equations of motion in 2D; the i, j system)	Change of variable Understand and use the Normal distribution Use the Normal distribution as an approximation to the binomial distribution Statistical hypothesis testing for the mean of the Normal distribution

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Differentiating exponentials and logarithms Differentiating products, quotients, implicit differentiation Second derivatives (rates of change of gradient, inflections) Rates of change problems (including growth and kinematics) Integrating x^n (including when $n = -1$), exponentials and trigonometric functions Using the reverse of differentiation, and using trigonometric identities to manipulate integrals Integration by substitution Integration by parts Use of partial fractions Areas under graphs or between two curves, including understanding the area is the limit of a sum (using sigma notation) The trapezium rule Differential equations (including knowledge of the family of solution curves) Definition and converting between parametric and Cartesian forms and Curve sketching and modelling Differentiating parametric functions Integrating parametric functions Location of roots Solving by iterative methods (knowledge of 'staircase and cobweb' diagrams) Newton-Raphson method Numerical methods: Problem solving	Variable acceleration (use of calculus and finding vectors r and r' at a given time) Definitions, magnitude/direction, addition and scalar multiplication Position vectors, distance between two points, geometric problems Use of vectors in three dimensions; knowledge of column vectors and i, j and k unit vectors	
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Enrichment Activities:

Additional Learning: Year 7 - Smoothie making. Axiom Maths. Level 3 OCR Additional maths qualification
Competitions: UKMT Senior Maths challenge, UKMT Intermediate maths challenge, UKMT Junior Maths challenge. UKMT Olympiads.
Team Maths challenges. Trust maths competitions. Year 6 maths competition (July). Stats wars
Events: The Michaelmas Symposium (Year 12 in November). The Maths inspiration show. Cambridge Maths School events
Clubs & Support: After school revision on Tuesdays, Wednesdays and Thursdays in B8. Stem club, Sparx maths, Corbett Maths, Maths pad, Dr Frost

Padlets: [KS4 revision padlet for students](#) [KS5 revision padlet for students](#)