Faculty Website Curriculum information

Mathematics

Subject vision

We equip students with transferable skills that highlight the importance of mathematics across subjects and in everyday life. By fostering a genuine love for mathematics, we encourage learners to carry their knowledge beyond the classroom.

Fluency in fundamental processes and the ability to tackle complex problems grow hand-in-hand, supported by a culture that values making mistakes as a vital part of learning. We recognise that maths anxiety can be a barrier, so we cultivate a positive, supportive environment where every student can thrive.

At WRHS, we proudly nurture young women to embrace mathematics and STEM with confidence. By offering limitless opportunities for growth, we are committed to closing the gender gap and inspiring the next generation of mathematicians and innovators.

Topics/ units being studied

Key Stage 3

Year 7	Year 8	Year 9
1. Number: Place Value, Rounding, Directed Numbers, Addition & Subtraction, Multiplication & Division 2. Multiples, Powers & Roots, Factors Primes, Standard Form, BIDMAS 3. Fractions – simplifying, equivalence, proper and improper fractions, four operations with fractions. 4. Algebraic Conventions & Vocabulary, Simplifying Expressions, Brackets, Formulae 5. Geometry- notation, vocabulary, finding area of and perimeter of 2D shapes, surface area and volume of 3D shapes. 6. Direct Proportion, Language and Ratio	1. Fraction decimals and percentages, converting between and equivalents, finding percentage change, profit and loss, Reverse percentages and simple interest. Percentages 2. Substitution into expressions, solving Linear Equations. Substituting and re-arranging Formulae 3. Sequences- recognising different types of sequences, continuing sequences using the term to term rule, finding the nth term of a sequence 4. Calculating Probability, Reading and drawing Venn Diagrams, understanding theoretical	1. Further Rounding, Bounds, Measures, Time & Money, Scale Drawings 2. SDT, Distance Time Graphs, Compound Measures, Direct Proportion, Inverse Proportion 3. Pythagoras Theorem, Trigonometric Ratios, Congruency, Similar Shapes 4. Linear Graphs, Quadratic Graphs, Further Graphs 5. Constructions, Transformations 6. Data Collection, Averages, Representing Data

Notation, Ratio Tables, Using Ratios	and experimental probability 5. Finding missing angles around a point, on a straight line, in a circle and in polygons, finding area and circumference of a circle .	

Key Stage 4

Year 10	Year 11
1. Number: Powers & Roots, BIDMAS, HCF & LCM 2. Algebra: Expanding & Simplifying, Factorising, Solving equations 3. Reading and plotting co-ordinates, straight line graphs, parallel and perpendicular, Quadratic curves, recognising cubic, circle and reciprocal graphs 4. Data: Averages, Statistical diagrams 5. Fractions, Percentages and Decimals: Four rules of fractions, converting between fractions, decimals and percentages, Percentage increase, Interest 6. Ratio & Proportion: Direct/Inverse Proportion and Ratio 7. Angles, Pythagoras' Theorem & Trigonometry: Angles in polygons & parallel lines, Pythagoras' Theorem in 2D and 3D, Trigonometry in right-angles triangles and any triangle	1. Mensuration: Perimeter, Area & Volume, Compound Measures: Speed, density, pressure 2. Algebra: Sequences, Inequalities, Simultaneous Equations and Proof. 3. Algebra: Inequalities, quadratic equations, sequences, proof. 4. Probability: Language, one & two events, probability space, probability trees, conditional probability & mutually exclusive events. 5. Transformations & Congruency: Translations, Rotations, Reflections, Enlargements. Loci & constructions, Plans & Elevations, bearings and congruent triangles 6. Further Algebra: Surds, Functions, Graph Transformations, Simplifying rational expressions. 7. Circles: Circle Theorem 8. Vectors: Geometric Vectors and Geometric Proof.

Key Stage 5

Year 12: Pure AS level	**Year 13: Pure A level**

1. Algebra: Proof, Indices & Surds, Equations 2. Calculus: Differentiation, Integration, Tangents & Normals 3. Algebra: Expanding & Factorising, Binomial Expansion, Curve Sketching. 4. Trigonometry: Trigonometric Ratios, Sine Rule & Cosine Rule, Solving Trigonometric Equations 5. Logarithms: Laws of logarithms, Changing bases, curve fitting 6. Argument & Proof: Proof by exhaustion, counter example & direct proof.	1. Algebra: Proof, Functions, Partial Fractions, Parametric Equations, 2. Binomial Expansion & Sequences: Expansions, Arithmetic series, Geometric series 3. Radians: Area of sectors and arc lengths, trigonometric equations, reciprocal trigonometric functions, compound & double angle identities. 4. Differentiation: Shape of functions, trigonometric functions, product & quotient rules, chain rule, implicit functions. 5. Integration: By substitution, by parts, differential equations. 6. Solving Equations: Location of Roots, Newton-Raphson method.
Year 12: Mechanics AS Level	**Year 13: Mechanics A level**
1. Vectors: parallel vectors, component vectors, magnitude 2. Kinematics: Velocity/Time graphs, Constant Acceleration Equations, Variable acceleration, 3. Forces & Dynamics: Newtons' Laws of Motion:	1. 2D Motion: Constant and Variable Acceleration, Projectiles 2. Vectors: In 3D 3. Dynamics: Newtons Laws, Coefficient of friction, 4. Moments
Year 12 Statistics AS Level	**Year 13: Statistics A level**
1. Sampling: Central tendency & spread, Single variable data, Bivariate data. 2. Probability: Binomial distribution 3. Hypothesis testing: Critical regions 4. The large Data set: Exploring the large data set.	1. Probability: Conditional Probability, modelling with probability, Normal Distribution 2. Correlation: Testing correlation, testing normal distribution

Contact information

If you have questions on the curriculum that your daughter will be studying, please contact one of the following.

- Head of Faculty: Mrs S Saleem (smsaleem@wrhs1118.co.uk)
- KS4 Coordinator: Mr McCarthy (smccarthy@wrhs1118.co.uk)
- KS3 Coordinator: Mrs Akerele (bakerele@wrhs1118.co.uk)
- KS5 Coordinator: Miss Jones (rjones@wrhs1118.co.uk)