

Faculty Website Curriculum information

Mathematics

Subject vision

Being an able mathematician ensures that you will have excellent problem-solving skills regardless of your ability. We want students to enjoy mathematics so that their love for the subject goes beyond school.

Topics/ units being studied

Key Stage 3

Year 7	Year 8	Year 9
<ol style="list-style-type: none"> 1. Number: Place Value, Rounding, Directed Numbers, Addition & Subtraction, Multiplication & Division 2. Multiples, Powers & Roots, Factors Primes, Standard Form 3. BIDMAS, Fractions 4. Geometric Notation, Measurements, Perimeter, Area, Surface Area, Volume 5. Algebraic Conventions & Vocabulary, Simplifying Expressions, Brackets, Formulae 6. Direct Proportion, Language and Ratio Notation, Ratio Tables, Using Ratios 	<ol style="list-style-type: none"> 1. FDP, Percentages 2. Further Percentages, Interest 3. Substitution, Linear Equations, Formulae 4. Patterns, Arithmetic Sequences, Quadratic Sequences, Other Sequences 5. Probability, Venn Diagrams 6. Angles, Constructions 	<ol style="list-style-type: none"> 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

Key Stage 4

Year 10	Year 11
<ol style="list-style-type: none"> 1. Number: Powers & Roots, BIDMAS, HCF & LCM 2. Algebra: Expanding & Simplifying, Factorising, Solving equations 3. Data: Averages, Statistical diagrams 4. Fractions, Percentages and Decimals: Four rules of fractions, converting between fractions, decimals and percentages, Percentage increase, Interest 5. Ratio & Proportion: Direct/Inverse Proportion and Ratio 6. Angles, Pythagoras' Theorem & Trigonometry: Angles in polygons & parallel lines, Pythagoras' Theorem in 2D and 3D, Trigonometry in right-angles triangles and any triangle 7. Mensuration: Perimeter, Area & Volume. 8. Algebra: Sequences, Inequalities, Simultaneous Equations and Proof. 9. Probability: Language, one & two events, probability space, probability trees, conditional probability & mutually exclusive events. 	<ol style="list-style-type: none"> 1. Compound Measures: Speed, density, pressure 2. Algebra: Inequalities, quadratic equations, sequences, proof. 3. Probability: Language, one & two events, probability space, probability trees, conditional probability, mutually exclusive events. 4. Transformations & Congruency: Translations, Rotations, Reflections, Enlargements. Loci & constructions, Plans & Elevations, bearings and congruent triangles 5. Further Algebra: Surds, Functions, Graph Transformations, Simplifying rational expressions. 6. Circles: Circle Theorem 7. Vectors: Geometric Vectors and Geometric Proof.

Key Stage 5

Year 12: Pure AS level	Year 13: Pure A level
<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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.

<ul style="list-style-type: none"> 5. Logarithms: Laws of logarithms, Changing bases, curve fitting 6. Argument & Proof: Proof by exhaustion, counter example & direct proof. 	<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 1. Vectors: parallel vectors, component vectors, magnitude 2. Kinematics: Velocity/Time graphs, Constant Acceleration Equations, Variable acceleration, 3. Forces & Dynamics: Newtons' Laws of Motion: 	<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 1. Probability: Conditional Probability, modelling with probability, Normal Distribution 2. Correlation: Testing correlation, testing normal distribution

Additional information about your subject

At KS3 we have offered trips to Chester Zoo and students from all year groups are invited to take part in the UK maths Challenge at various points through the year. The faculty also run maths competitions across all year groups.

Contact information

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

Head of Faculty: Mr. L. Cleasby (lcleasby@wrhs1118.co.uk)

Assistant Head of Faculty/KS4 coordinator: Mrs S. Saleem (smsaleem@wrhs1118.co.uk)

Key Stage 3 Coordinator: Mr. A. Hakiman (ahakiman@wrhs1118.co.uk)

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