| 2021/ 2022 | AUTUMN | | SPRING | | SUMMER | |
|---|---|---|---|---|---|---|
| | HT1 | HT2 | HT3 | HT4 | HT5 | HT6 |
| **Y 7** | Area of study<br>Number and calculations<br>Key concepts/ Knowledge<br>Place value Integer and decimal calculations Factors, multiples and primes Fractions and decimals Mental Calculations, Estimations Measures and measuring Calculating with fractions<br>Assessment method<br>AQA assessment | Area of study<br>Number, Algebra, shape<br>Key concepts/ Knowledge<br>Negative numbers Orders of operation Algebra Expressions, Substitution Formulae, functions, Equations Simplifying Expressions Translating and rotating shapes Symmetry and tessellations<br>Assessment method<br>AQA assessment | Area of study<br>percentages / Proportion<br>Key concepts/ Knowledge<br>Percentages Ratio Proportional Reasoning Compound Measures<br>Assessment method<br>AQA assessment | Area of study<br>Shape and space<br>Key concepts/ Knowledge<br>Perimeter and area Triangles and parallelograms Trapeziums and compound shapes Problem solving with area and perimeter Plans, elevations, properties of 3d shapes Volume and surface area of cuboids Applying algebra to shape questions.<br>Assessment method<br>AQA assessment | Area of study<br>Sequences<br>Key concepts/ Knowledge<br>Sequences: linear and non-linear Term to term and position to term rule Nth term rule Co-ordinates, drawing straight line graphs Conversion graphs<br>Assessment method<br>AQA assessment | Area of study<br>Angles and data<br>Key concepts/ Knowledge<br>Estimating, drawing and measuring angles Angle reasoning (straight line/ around a point/complementary) Angles: parallel lines, triangles Pictograms, bar charts, line graphs, pie charts<br>Assessment method<br>AQA assessment |
| **Y 8** | Area of study<br>Number and algebra<br>Key concepts/ Knowledge<br>Whole number/decimal calculations Estimations, Sig Figures, Rounding Bounds Powers, Roots and to Surds Index laws, indices Standard form Substitution and solving equations<br>Assessment method<br>AQA assessment | Area of study<br>Algebra and shape<br>Key concepts/ Knowledge<br>solving harder equations writing and rearranging Formulae representing and solving Inequalities Linear sequences: nth term straight line graphs, y = mx+ c distributive law: expanding and factorising brackets Enlargement and scale factor<br>Assessment method<br>AQA assessment | Area of study<br>Ratio / Proportion<br>Key concepts/ Knowledge<br>Ratio and Proportion Direct Proportion Percentages: reverse, percentage change Percentages, simple interest, Units of measurement and compound measures<br>Assessment method<br>AQA assessment | Area of study<br>Data/probability<br>Key concepts/ Knowledge<br>Mean, median, mode, range Averages problem solving Averages from tables Probability Experimental probability, relative frequency, expectation Probability problems, frequency trees, Venn diagrams<br>Assessment method<br>AQA assessment | Area of study<br>Shape and space<br>Key concepts/ Knowledge<br>Areas of rectangles, parallelograms, triangles Areas of trapeziums, compound shapes area and circumference of circles Volume and surface area of cuboids<br>Assessment method<br>AQA assessment | Area of study<br>Proportion, scale and constructions<br>Key concepts/ Knowledge<br>Pie charts Ratio and map Scales Angles and bearings Constructions and loci<br>Assessment method<br>AQA assessment |
| **Y 9** | Area of study<br>Number<br>Key concepts/ Knowledge<br>Calculations: whole numbers, fractions, decimals Profit, financial maths; balance statements Rounding and bounds Powers, Roots, intro to surds, laws of indices Ratio, standard form Percentage multipliers, original, new and change Percentages: simple and compound interest<br>Assessment method<br>AQA assessment | Area of study<br>Algebra<br>Key concepts/ Knowledge<br>Formulae and rearrangement substituting and solving equations Adding and multiplying terms Expanding and factorising Adding algebraic fractions Expanding and factorising quadratics Enlargements including negative and fractional<br>Assessment method<br>AQA assessment | Area of study<br>Probability and Data<br>Key concepts/ Knowledge<br>Tree diagrams, combined probability Venn Diagrams Data: Averages, Spread, problems Mean and median from a table Cumulative frequency and box plots<br>Assessment method<br>AQA assessment | Area of study<br>Data / angles<br>Key concepts/ Knowledge<br>Histograms Scatter graphs, time series Angles on a straight line and around a point Angles in parallel lines Angles in polygons Similar polygons<br>Assessment method<br>AQA assessment | Area of study<br>Proportion and shape<br>Key concepts/ Knowledge<br>Proportion, pie charts Circle circumference and area Sector perimeter and area Volumes of and surface areas of prisms<br>Assessment method<br>AQA assessment | Area of study<br>Sequences<br>Key concepts/ Knowledge<br>Nth terms of linear sequences Linear sequences and graphs Gradient, y = mx +c Plotting non-linear graphs<br>Assessment method<br>AQA assessment |

| | SKILLS FOR LIFE/ FUTURE LEARNING AND EMPLOYMENT |
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| **NOTES** | The ability to calculate fluently and rigorously is key to all areas of employment. One reason for this is the fact that money is key to how the world works, and understanding how to calculate with money is key to operating successfully in any industry. We also measure things in the physical world using Maths, so time, distance, speeds, volumes, etc. are key to successfully understanding and working within the world. Maths is also key to understanding physical space and spatial reasoning, for example through the study or areas, perimeters, volumes, and angles. Many jobs require workers to be aware of and work with the physical space around them and within their products, for example engineers, builders, architects, etc. Understanding probability prepares students for the world of risk and reward, and empowers them to make prudent decisions in their personal and professional lives. At key stage 3 we focus on fluent calculations, probability, understanding proportion and spatial awareness, to prepare our students for understanding and working within the world. We also introduce students to algebra and more advanced forms of data analysis, to prepare students for KS4. |

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| **Y10** | Area of study<br>Number<br>Key concepts/ Knowledge<br>Ratio, percentages, multipliers Compound interest and growth Reverse percentage and percentage change Measurements and compound measures Bounds problem solving and Compound Measures Product rule for counting Surds<br>Assessment method<br>AQA assessment | Area of study<br>Algebra<br>Key concepts/ Knowledge<br>Equations and rearranging formulae Solving simultaneous equations (elimination) Factorising quadratics, expanding Double and triple brackets Factorising and solving quadratics Simultaneous equations (substitution) Sketching quadratic graphs Transformations<br>Assessment method<br>AQA assessment | Area of study<br>algebra/ Proportion<br>Key concepts/ Knowledge<br>Solving identities Ratio: combining, difference given, problems Direct and Inverse Proportion Direct/inverse equations Direct/inverse equations with exponents<br>Assessment method<br>AQA assessment | Area of study<br>Sequences and Graphs<br>Key concepts/ Knowledge<br>Nth term of linear and quadratic graphs $Y = mx + c$, finding gradient Line segments, midpoints, perpendicular lines Graphs of direct and inverse proportion Solving equations graphically Shading inequalities<br>Assessment method<br>AQA assessment | Area of study<br>Shape and graphs<br>Key concepts/ Knowledge<br>Volume of prisms and cuboids Volumes of cones, pyramids and frustums Areas of 2d shapes - exam problems Distance, time and Kinematic Graphs Areas under curves<br>Assessment method<br>AQA assessment | Area of study<br>Probability/Shape<br>Key concepts/ Knowledge<br>Relative frequency and probability Probability of combined events Venn diagrams and Venn notation Exploring circle theorems<br>Assessment method<br>AQA assessment |
| **Y11** | Area of study<br>Number and formulae<br>Key concepts/ Knowledge<br>Understanding and rearranging formula Compound change, growth and decay Surds Pythagoras Negative and fractional indices The product rule for counting Solving equations revision Recursive sequences and iteration<br>Assessment method<br>AQA assessment | Area of study<br>Shape<br>Key concepts/ Knowledge<br>3D Pythagoras Similarity, ASF and VSF Right angled trigonometry Non right angled trig Volumes and surface areas of 3d solids Inverse and direct proportion Transformations<br>Assessment method<br>AQA assessment | Area of study<br>Functions, graphs and algebra<br>Key concepts/ Knowledge<br>Linear functions and graphs Non-linear functions and graphs: cubic, Exponential, reciprocal Circle Theorems Circle graphs and tangents Algebraic proof<br>Assessment method<br>AQA assessment | Area of study<br>Exam preparation<br>Key concepts/ Knowledge<br>Solving algebraic fractions Inverse and composite functions Vectors Probability revision Data revision Proportion revision<br>Assessment method<br>AQA assessment | Area of study<br>Past Papers and revision<br>Key concepts/ Knowledge<br>Key concepts Exam Technique Combining different areas of Maths for exam-style questions<br>Assessment method<br>Past exam Papers | Area of study<br>Examinations<br>Key concepts/ Knowledge<br>Exam Revision<br>Assessment method<br>Past exam Papers |

## SKILLS FOR LIFE/ FUTURE LEARNING AND EMPLOYMENT

**NOTES**

Mathematics has been a key endeavour of humanity for thousands of years. In Science, it provides a foundation for understanding the physical laws that govern the world and the universe, and is therefore a key to a future career in Science. In engineering, it guides us to develop new structures and processes to benefit humanity. In order to become engineers, students have to develop a fluency and a deep understanding of all areas of the curriculum. In finance and accounting, it allows us to see how our energies and resources can most usefully be spent. Understanding formulae and calculations, in topics such algebra and compound change, prepare students for careers in finance and accounting. In data and statistics, Maths allows us to see trends and patterns in ways that are meaningful, bringing clarity, perspective and wisdom. Many Mathematicians go on to work in data analysis. In everyday life, it allows us to make prudent decisions with regards to our jobs, our time and our finances; our families and our households.

In key stage 4 we develop algebraic fluency, proportional reasoning and compound change, advanced spatial reasoning and calculations, multi-event probability, and data analysis, amidst others, to help prepare students for the world of work and as well as successful, well-rounded lives.