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Southchurch High School

Abstract

Students are carefully provided with feedback on their learning to enable them to improve.   
They gain the knowledge leading onto the skills that are necessary to enable them to become successful lifelong learners.

Curriculum – Maths

Intent, Curriculum Map & Curriculum



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# Whole School INTENT

**Southchurch students embrace learning opportunities.**

# INTENT, IMPLEMENTATION & IMPACT

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| Intent   * Students are problem solvers, building their confidence and love for learning mathematics. Develop their use of logical reasoning and problem solving to apply the mathematical skills needed in their chosen careers and all other aspects of the real world. |
| **Implementation**  • Sequencing of the curriculum  • Adaptive teaching (to take into account of what the learners know and don't know)  • Extending opportunities for extracurricular |
| **Impact**  • All students will achieve their potential with altered trajectories |

# KS2 Links

[KS2 Maths National Curriculum](https://assets.publishing.service.gov.uk/media/5a7da548ed915d2ac884cb07/PRIMARY_national_curriculum_-_Mathematics_220714.pdf)

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| **Number – number and place value**  § read, write, order and compare numbers up to 10 000 000 and determine the value of each digit  § round any whole number to a required degree of accuracy  § use negative numbers in context, and calculate intervals across zero  § solve number and practical problems that involve all the above.  **Number – addition, subtraction, multiplication and division**  § multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication  § divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context  § divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context  § perform mental calculations, including with mixed operations and large numbers  § identify common factors, common multiples and prime numbers  § use their knowledge of the order of operations to carry out calculations involving the four operations  § solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why  § solve problems involving addition, subtraction, multiplication and division  § use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.  **Number – fractions (including decimals and percentages)**  § use common factors to simplify fractions; use common multiples to express fractions in the same denomination  § compare and order fractions, including fractions > 1  § add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions  § multiply simple pairs of proper fractions, writing the answer in its simplest form  § divide proper fractions by whole numbers  § associate a fraction with division and calculate decimal fraction equivalents for a simple fraction  § identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places  § multiply one-digit numbers with up to two decimal places by whole numbers  § use written division methods in cases where the answer has up to two decimal places  § solve problems which require answers to be rounded to specified degrees of accuracy  § recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. |  | **Ratio and proportion - Proportion**  § solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts  § solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison  § solve problems involving similar shapes where the scale factor is known or can be found  § solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.  **Ratio and Proportion - Measurement**  § solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate  § use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places  § convert between miles and kilometers  § recognise that shapes with the same areas can have different perimeters and vice versa  § recognise when it is possible to use formulae for area and volume of shapes  § calculate the area of parallelograms and triangles  § calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm3) and cubic meters (m3), and extending to other units [for example, mm3 and km3].  **Algebra – Introduction**  § use simple formulae  § generate and describe linear number sequences  § express missing number problems algebraically  § find pairs of numbers that satisfy an equation with two unknowns  § enumerate possibilities of combinations of two variables. |  | **Geometry – properties of shapes**  § draw 2-D shapes using given dimensions and angles  § recognise, describe and build simple 3-D shapes, including making nets  § compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons  § illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius  § recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.    **Geometry – position and direction**  § describe positions on the full coordinate grid (all four quadrants)  § draw and translate simple shapes on the coordinate plane and reflect them in the axes.    **Statistics**  § interpret and construct pie charts and line graphs and use these to solve problems  § calculate and interpret the mean as an average.  All the content above is according to the upper KS2 programme of study. The year 6 content is a continuation of year 5 and so on. |

# CURRICULUM MAP

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| **Year Group** | **Half-term 1** | **Half-term 2** | **Half-term 3** | **Half-term 4** | **Half-term 5** | **Half-term 6** |
| **Year 7** | **Baseline Assessment**  **Number sense and calculations**  Number Sense  Adding and Subtracting  Multiplying  Dividing  Calculating with Negative Numbers  Order of Operations | **Expressions and Equations**  Expressions  Substitution  Solving Equations  **Measures**  Time  Measures | **2D Shapes**  Lines and shape properties  **Perimeter and Area**  Perimeter  Area  **Coordinates**  Coordinates and Shapes  **Factors, Multiples and Primes**  Factors and Multiples  Primes | **Fractions**  Writing and comparing fractions  Adding and subtracting fractions  **Brackets**  Single Brackets | **Angles**  Angles  Finding unknown angles  **Handling Data and Statistics**  Averages and Range  Tables and Charts  Collecting and Presenting Data  **Proportion**  Proportion word problems | **Fractions, Decimals and Percentages**  Multiplying and dividing fractions  Fractions of amounts  Fractions, decimals and percentages  **Probability**  Theoretical probability |
| **Year 8** | **Percentages**  Percentages of amounts  Percentage Change  **Money**  Calculating with Money  **Indices**  Index Laws    **Equations**  Solving Equations | **Sequences**  Term-to-term rules  Position-to-term rules  **Ratio**  Ratio  Scale Diagrams | **Rounding**  Significant Figures  **Coordinates**  Coordinates and Midpoints  **Area**  Area and Units  **Circles**  Area and Circumference  **Standard Form**  Standard form and ordinary numbers | **Venn Diagrams**  Venn Diagrams  Factors, Multiples and primes  **3d Shapes**  Nets  **Surface area and Volume**  Surface and Volume | **Linear Graphs**  Plotting graphs and finding equations  **Transformations**  Transforming Shapes  **Angles**  Finding unknown angles  **Statistical Diagrams**  Drawing and interpreting statistical diagrams | **Inequalities**  Linear Inequalities  **Brackets**  Double brackets  **Algebraic Fractions**  Fractions review  Algebraic Fractions  **Recurring Decimals**  Fractions and recurring decimals |
| **Year 9** | **Fractions and Percentages**  Fractions, decimals and percentages review  Percentage change.  **Probability**  Theoretical and experimental probability  **Standard Form**  Calculations with standard form  **Inequalities**  Linear Inequalities | **Quadratic Equations**  Factorising and solving quadratic equations  **Formulae**  Rearranging Formulae  **Constructions**  Constructing bisectors and perpendicular lines  **Circles**  Circles and Cylinders | **Rounding**  Error Intervals  **3DShapes**  Representations of 3D shapes  **Pythagoras’ Theorem**  Pythagoras’ Theorem in 2D  **Ratio and Proportion**  Ratio  Proportion word problems | **Linear Graphs**  Plotting graphs and finding equations  **Compound Measures**  Speed and rates  **Motion-time Graphs**  Distance-Time Graphs | **Quadratic Graphs**  Plotting and interpreting quadratic graphs  **Angles and Bearings**  Angles  Bearings  **Transformations**  Transforming shapes  **Similarity and Congruence**  Similarity  Congruence | **Handing Data and Statistical Diagrams**  Collecting and presenting data  Scatter Graphs  Grouped Data  **Vectors**  Column Vectors |
| **Year 10** | **Percentages**  Repeated Percentage Change  **Surface Area and Volume**  Surface Area  Volume  **Simultaneous Equations**  Linear Simultaneous Equations | **Formulae**  Rearranging Formulae  **Trigonometry**  Right-angled Trigonometry  **Constructions**  Constructions and Loci | **Linear Graphs**  Equations of Linear Graphs  **Real-Life Graphs**  Plotting and interpreting real-life graphs  **Set Notation**  Venn diagrams and set notation    **Tree Diagrams**  Independent and Dependent variables | **Compound Measures**  Density and pressure  **Ratio**  Working with Ratios and algebra    **Graphs**  Velocity-Time graphs  Cubic, reciprocal and exponential graphs | **HIGHER**  **Sequences**  Quadratic and Geometric Sequences  **Handling Data**  Sampling  **Proportion**  Direct and Inverse  **Transformations**  Transforming Shapes  **Rounding**  Bounds  **Indices**  Index Laws | **Recurring Decimals**  Fractions and Recurring decimals  **Brackets**  Expanding and Factorising brackets  **Handling Data and Statistical Diagrams**  Cumulative Frequency Graphs Box Plots |
| **FOUNDATION**  **Sequences**  Arithmetic and Geometric Sequences  **Handling Data**  Sampling  **Proportion**  Direct and Inverse  **Transformations**  Transforming Shapes  **Rounding**  Error Intervals  **Indices**  Index Laws | **Brackets**  Expanding and Factorising brackets  **Handling Data and Statistical Diagrams**  Grouped Data Drawing and Interpreting Statistical diagrams |
| **Year 11F** | **Perimeter, Area and Volume 2**  Circumference of a circle 1  Circumference of a circle 2  Area of a circle  Semicircles and sectors  Composite 2D shapes and cylinders  Pyramids and cones  Spheres and composite solids    **Fractions, Indices and Standard Form**  Multiplying and dividing fractions  Laws of indices  Writing large numbers in standard form  Writing small numbers in standard form  Calculating with standard form | **Congruence, Similarity and Vectors**  Similarity and enlargement  More similarity  Using similarity  Congruence 1  Congruence 2  Vectors 1  Vectors 2  **More Algebra**  Graphs of cubic and reciprocal functions  Non-linear graphs  Solving simultaneous equations graphically  Solving simultaneous algebraically  Rearranging formulae  Proof | **Revision based on analysis of mock exams** | **Revision based on analysis of mock exams** | **Revision based on analysis of mock exams** |  |
| **Year 11H** | **Circle Theorems**  Radii and chords  Tangents Angles in circles 1  Angles in circles 2  Applying circle theorems    **More Algebra**  Rearranging formulae  Algebraic fractions  Simplifying algebraic fractions  More algebraic fractions  Solving algebraic fractions equations  Functions  Proof | **Vectors and Geometric Proof**  Vectors and vectors notation  Vector arithmetic  More vector arithmetic  Parallel vectors and collinear points  Solving geometric problems  **Proportion and Graphs**  Direct proportion  More direct proportion  Inverse proportion  Exponential functions  Non-linear graphs  Translating graphs of functions  Reflecting and stretching graphs of functions | **Revision based on analysis of mock exams** | **Revision based on analysis of mock exams** | **Revision based on analysis of mock exams** |  |

# KS5 Links

[KS5 Maths Subject Criteria](https://assets.publishing.service.gov.uk/media/5a7f273a40f0b62305b85670/GCE_AS_and_A_level_subject_content_for_mathematics_with_appendices.pdf)[A-Level Maths Pearson Specification](https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-l3-mathematics-specification-issue4.pdf)

*The KS5 curriculum develops on from much on the higher content taught at KS4 higher tier and is split across Pure and Applied. Students would have finished year 11 having covered all the content required for this transition and this alongside our high-quality teaching for resilience and problem-solving students should also be prepared for the demands of the course.*

*In this section is an overview of AS mathematics and the skills needed across the first year and their GCSE spec reference. These skills would then develop into those needed for A2 mathematics*

*Prior Knowledge;*

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| *Pure Mathematics* | *Applied* |
| *Unit 1: Algebra and functions*  *• A4 Collecting like terms and factorising*  *• N8 Surds*  *• A19 Solving linear simultaneous equations*  *• A18 Solving quadratic equations (by factorising and completing the square)*  *• A22 Working with inequalities; Solving quadratic inequalities*  *• A12 Functional notation and shapes of standard graphs (e.g. parabola, cubic, reciprocal)*  *• N7 Rules of indices* | *Unit 1: Statistical sampling*  *• S1 Infer properties of populations or distributions from a sample, while knowing the limitations of sampling*  *• S5 Apply statistics to describe a population* |
| *Unit 2: Coordinate geometry in the (x, y) plane*  *• A9 Equation of a line, parallel and perpendicular lines*  *• G20 Pythagoras*  *• A14 Conversion graphs*  *• R10 Calculating the proportionality constant k*  *• G10 Circle theorems* | *Unit 2: Data presentation and interpretation*  *• S2 Interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data and know their appropriate use*  *• S3 Construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use*  *• S4 Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers), quartiles and inter-quartile range*  *• S6 Use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing* |
| *Unit 3: Further algebra*  *• A4 Expanding brackets*  *• A2 Substitution*  *• A6 Proof* | *Unit 3: Probability*  *• P1 Record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees*  *• P2 Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments*  *• P3 Relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale*  *• P4 Apply the property that the probabilities of an exhaustive set of outcomes sum to one; apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one*  *• P6 Enumerate sets and combinations of sets systematically, using tables, grids*  *• P7 Construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities*  *• P9 Tree diagrams and Venn diagrams* |
| *Unit 4: Trigonometry*  *• G20 Pythagoras’ Theorem and Trigonometry in right-angled triangles*  *• G22 The sine rule and the cosine rule*  *• G23 The area of a triangle*  *• G15 Bearings* | *Unit 4: Statistical distributions*  *• N1 Order positive and negative integers, decimals and fractions; use the symbols =, ≠, <, >, ≤, and ≥* |
| *Unit 5: Vectors (2D)*  *• G24 Vectors* | *Unit 5: Statistical Hypothesis testing* *• S1 Infer properties of populations or distributions from a sample, while knowing the limitations of sampling*  *• S5 Apply statistics to describe a population* |
| *Unit 6: Differentiation*  *• N8 Fractions*  *• G16 Area of 2D shapes and volume and surface area of 3D shapes*  *• A5 Rearranging equations* | *Unit 6: Quantities and units in mechanics*  *• R1 Change freely between related standard units (e.g. time, length, area, volume/capacity, mass) and compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts*  *• R11 Use compound units such as speed, rates of pay, unit pricing, density and pressure*  *• A14 Plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration*  *• A15 Calculate or estimate gradients of graphs and area under graphs (including quadratic and non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts* |
| *Unit 7: Integration*  *• N8 Fractions*  *• G16 Area of 2D shapes and volume and surface area of 3D shapes*  *• A5 Rearranging equations* | *Unit 7: Kinematics*  *(constant acceleration)*  *• R1 Change freely between related standard units (e.g. time, length, area, volume/capacity, mass) and compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts*  *• R11 Use compound units such as speed, rates of pay, unit pricing, density and pressure*  *• A2 Substitute numerical values into formulae and expressions, including scientific formulae*  *• A5 Understand and use standard mathematical formulae; rearrange formulae to change the subject*  *• A14 Plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration*  *• A15 Calculate or estimate gradients of graphs and area under graphs (including quadratic and non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts*  *• A17 Solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation)*  *• A18 Solve quadratic equations (including those that require rearrangement) algebraically by factorising, by completing the square and by using the quadratic formula* |
| *Unit 8: Exponentials and logarithms*  *• R16 Compound interest* | *Unit 8: Forces & Newton’s laws*  *• A19 Solve two simultaneous equations in two variables (linear/linear or linear/quadratic) algebraically; find approximate solutions using a graph* |
|  | *Unit 9: Kinematics 2 (variable acceleration)*  *• A11 Identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically and turning points by completing the square*  *• A14 Plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration*  *• A15 Calculate or estimate gradients of graphs and area under graphs (including quadratic and non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts* |

# End of Course Expectations

[Pearson Maths Specification](https://qualifications.pearson.com/content/dam/pdf/A%20Level/Mathematics/2017/specification-and-sample-assesment/a-level-l3-mathematics-specification-issue4.pdf)

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| **Edexcel Maths** | |
| **Aims and learning outcomes** | The aims and objectives of the Pearson Edexcel Level 1/Level 2 GCSE (9–1) in Mathematics are to enable students to:   * develop fluent knowledge, skills and understanding of mathematical methods and concepts * acquire, select and apply mathematical techniques to solve problems * reason mathematically, make deductions and inferences, and draw conclusions * comprehend, interpret and communicate mathematical information in a variety of forms appropriate to the information and context |
| **Assessment objectives** | * **AO1** - Use and apply standard techniques Students should be able to:   + accurately recall facts, terminology and definitions   + use and interpret notation correctly   + accurately carry out routine procedures or set tasks requiring multi-step solutions. * **AO2** - Reason, interpret and communicate mathematically Students should be able to:   + make deductions, inferences and draw conclusions from mathematical information   + construct chains of reasoning to achieve a given result   + interpret and communicate information accurately   + present arguments and proofs   + assess the validity of an argument and critically evaluate a given way of presenting information. Where problems require students to ‘use and apply standard techniques’ or to independently ‘solve problems’ a proportion of those marks should be attributed to the corresponding Assessment Objective. * **AO3** - Solve problems within mathematics and in other contexts Students should be able to:   + translate problems in mathematical or nonmathematical contexts into a process or a series of mathematical processes   + make and use connections between different parts of mathematics   + interpret results in the context of the given problem   + evaluate methods used and results obtained   + evaluate solutions to identify how they may have been affected by assumptions made. Where problems require students to ‘use and apply standard techniques’ or to ‘reason, interpret and communicate mathematically’ a proportion of those marks should be attributed to the corresponding Assessment Objective. |

# NATIONAL CURRICULUM LINKS

[KS4 National Curriculum](https://assets.publishing.service.gov.uk/media/5a7dc9dced915d2ac884d8ef/KS4_maths_PoS_FINAL_170714.pdf)

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| **Purpose of study**  Mathematics is a creative and highly inter-connected 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. |
| **Aims**   * The national curriculum for mathematics aims to ensure that all pupils: * become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. * 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. |

# PERSONAL DEVELOPMENT CURRICULUM

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| **Aims**  The mathematics curriculum is designed to support and promote the vision of Southchurch High School, “A community of Opportunity, Learning and Aspiration”. The curriculum recognises not only the importance of allowing students to flourish academically but also our wider role in preparing our students for their adult life beyond school. Our Personal Development programme is underpinned by five core pillars;   * **Equality and Diversity** * **Cultural Capital** * **Community and Wellbeing** * **Careers and Employability** * **Character Development.** |
| **Character Development:** All members of the school community (regardless of background or ability) understand, develop and demonstrate the values that underpin our student mission of a Community of Opportunity, Learning and Aspiration.   * **Community of Opportunity** – All students are supported and encouraged to perform Infront of their peers and watched with mutual respect. Students are provided with various, collaborative group tasks each lesson in which all learners are supported to engage equally and freely share their ideas and opinions. * **Learning** – All students have equal opportunity to access the curriculum. Students are taught and placed into mixed ability classes, ensuring all students are supported with adapted practice, where necessary, to ensure curriculum access. All students are invited to many enrichment opportunities including clubs, trips, visits and workshops. * **Aspiration** – Students are encouraged to develop their love of design through careers talks, trips and external speakers. They take every opportunity within the lesson to learn and take control over their own personal development. |
| **Equality & Diversity:** The mathematics curriculum aims to develop an understanding through the design process of showing how people of different faiths, convictions, ability, gender, heritage and ethnicity can form a successful, cohesive and happy community that draws from the best in each of us.   * Students will celebrate a “mathematician of the month” and explore how people of different faiths, convictions, ability, gender, heritage and ethnicity and their discoveries have impacted the world we live in and the advancements over the history of human civilization. We will take students on a chronological journey and complete a research and investigative activity around the month's mathematician. |
| **Wellbeing & Community** – The mathematics curriculum recognises the importance of our students knowing how to care for themselves both mentally and physically, whilst they also develop personal traits and virtues that will motivate and guide students with confidence and resilience, through the understanding of positive mindset and “learning from mistakes”. |
| **Cultural Capital** – The mathematics curriculum supports the school’s vision in ensuring that all students gain the knowledge and cultural capital they need to succeed in life through a wealth of experiences both in and outside the taught curriculum.   * **Trips & Visits:**   **TBC**   * **Extra-Curricular:**   **TBC**   * **British Values:** * **Individual Liberty**: In mathematics students are taught using a single approach, with clear teacher modelling being an important feature, how every lesson particularly at KS3, students are tasked with a “think about it” challenge which encourages problem solving where students can take an individual approach and are encouraged to showcase the skills they have acquired in any way to attempt the correct outcomes. * **Mutual Respect**: Students are respectful when listening to the opinions and views of other students. In maths we ensure all children are aware that making mistakes are part of the learning journey and when mistakes are made in lessons, individually, during peer work or class discussions that identifying these misconceptions are key to success, we ensure that as staff we challenge students who do not respect this idea, further ensuring students feel safe to make mistakes and therefore learn in our classrooms. * **The Rule of Law:** The classroom rules enable all students to develop their skills in an environment where equipment and each other’s feelings are respected. The classroom rules ensure students are all responsible for the learning environment. In mathematics we highlight the need to often follow universal mathematical rules, such as BIDMAS and the order of operations. * **Tolerance:** Students are tolerant of each other's opinions and creative ideas. Students value the wide variety of cultures that we explore from all over the world and are tolerant of different faiths and beliefs in the styles we study. We showcase in mathematics that advancements across human history have been by people across every religion, faith, gender from every corner of the globe. We celebrate this each month by celebrating a new mathematician and the impact they have made. * **Democracy:** Students are all part of the learning experience and are listened to. Students assess each other’s work and celebrate each other’s successes. All students are granted autonomy and have the chance to make choices on developing their own creativity. In Math’s we encourage discussions surrounding problem solving and “think about it tasks”, we want students to collaborate with each other and in turn reach a consensus on which method/idea is best suited or which solution is correct. We also explore percentages which can be linked to local elections and how the voting system works as well as consider how representative data is by using sampling, we also think it is important for students to have these skills to be able to identify when statistics given could be misleading. |
| **Careers & Employability –** The mathematics curriculum is designed to ensure students have a breadth of opportunities and experiences that our pupils can start to build their own future pathways on. Through the mathematics curriculum, our students are supported to develop the following skills;   * Communication * Confidence * Teamwork and Leadership * Listening and Responding * Critical thinking and problem solving * Time management * Research |

# SMSC CURRICULUM LINKS

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| **Spiritual development**  In our maths curriculum and lessons, we strive for students to develop their questioning and higher-level thinking about how the concepts they are learning link together and relate to world around them, using maths a tool to explore it! We are a subject full of specialists and try ensuring that the passion we have developed for our subject is evident to the students we teach, where we can showcase to them the beauty of mathematics be it sequences and patterns such as Fibonacci in nature, through to ensuring they can capably understand the vast amounts of data they will have access to in their lifetime and make informed decisions. |
| **Moral development**  We want students to be aware that when working on solving problems in math either in an abstract approach or real-life context every decision will have a consequence and students may have to evaluate their choices in order to get the correct solution. We also believe that students should develop sound data analysis skills to ensure they are fully equipped with the knowledge to know when data has been used to mislead and promote bias so they can make their own justified decisions. Within the classroom and the wider community, the pupils are expected to show respect to others and take responsibility for their own actions and of those around them, considering the consequences. |
| **Social development**  In math we value the importance of being able to share and discuss ideas, as well as working within a team are fundamental to making a successful mathematician. These skills are also life skills we wish to ensure we are giving the students an opportunity to develop each. Every lesson every student will have an opportunity to develop their oracy skills be it through class discussion, modelling, questioning as well as “think about it” tasks. By giving students, the chance to work with peers, students will be able to realise their own strengths, creating a sense of achievement that ultimately leads to enhanced confidence. |
| **Cultural development**  Pupils across the time spent working with the mathematics curriculum will see how lots of different cultures have affected math across its history and therefore the world we live in today. Mathematicians and their achievement will be celebrated through a research task every month allowing students to make their own discoveries, dive into and explore other cultures. When we are introducing new topics/concepts these usually start with its origins, algebra and our number system originating in the middle east, Pythagoras in ancient Greece through to how architecture and patterns in mosaics differ from region to region when discovering tessellation and symmetry. |

# Equality, Diversity and Inclusivity Links

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| **Aims**  Within the different projects we look to ensure that there is a broad range emphasising equality, diversity and inclusivity. We ensure that all students work together within pairs, groups and teams to strengthen professional relationships within the classroom and promote an acceptance for all students and the wider world around them. |