

Subject Intent

Our Mathematics curriculum aims to ensure that all pupils become confident mathematicians, who can solve real life problems and reach their full potential in qualifications work. The curriculum is based on the Maths Mastery principles. Pupils are encouraged to build their fluency by securing their knowledge of mathematical facts and models, and then use this understanding to solve a wide range of problems. Pupils in Years 10 and 11 work towards Entry Level and Functional Skills qualifications, as well as a Prince's Trust unit on Managing Money. Their curriculum moves further towards applying knowledge in reasoning and problem solving tasks, including organising events, learning about banking and budgeting, and also sitting exams where appropriate. Most qualification work is assessed by KS4 staff and the subject leader, and then moderated by external qualifications bodies, although pupils accessing Functional Skills are required to sit a formal examination that is externally marked and graded. Mathematical skills are further embedded through the foundation subject curriculums, and the leaders of these subjects contribute to the assessment of pupils in areas such as measures, money and statistics. We also plan multiple opportunities for our pupils to use mathematics in real world situations, through for example, role play, enterprise projects and visits out of school.

| Year Group | 10 | Week/s | Topic/Theme <i>Key vocabulary including Tier 3 subject specific words</i> | Learning Outcomes Knowledge and Skills To know, to use, to apply... | Links to: Links Literacy and Numeracy SMSC and British Values Gatsby Benchmarks Learning Behaviours/Skills Builder |
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| Term | | | | | |
| Autumn | | 1-4 | <p>Place value, addition and subtraction.</p> <p>Digit, numeral, total, value, equal, calculation, sum, difference, share, total, twice, triple.</p> | <ul style="list-style-type: none"> Write, order and compare whole numbers up to 1000. Know the value of each digit in a 3-digit number. Understand vocabulary associated with numerical calculations: sum, difference, share, total, twice, triple. Add and subtract whole numbers from an initial value no greater than 1000. <p>Enrichment Activities Ideas: play different card games and bingo. Investigate prices and partition to £ and p.</p> <p>Key Questions: What is...? How would you show....?</p> | <p>Literacy Take part in discussions, talk or write about pictures, answer questions</p> <p>Skills Builder Staying positive, Problem solving</p> |
| | | 5-8 | <p>Fractions, decimals and percentages.</p> <p>Decimal point, decimal place, halves, quarters, thirds, quarters, fifths, tenths, equivalent, denominator, numerator</p> | <ul style="list-style-type: none"> Add and subtract decimals in context, i.e. money, mensuration etc. Recognise equivalent fractions including fractional quantities greater than 1 Calculate thirds, quarters, fifths and tenths of quantities where the answer is an integer. Use fractions in context. Order decimals and fractions. Recognise equivalent fraction, decimal and percentage notation. Understand that 1% is equivalent to dividing by 100. Find 1%, 25%, 50% for three digit numbers, limited to results which are whole number answers. <p>Enrichment Activities Ideas: link to shopping and sales. Use money in the local community – calculate totals and change. Design and make an equivalent fraction domino game.</p> <p>Key Questions: What examples can you find to...? How would you solve....?</p> | <p>Gatsby Benchmark 4 Skills Builder Staying positive, Problem solving</p> |

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| | 9-10 | <p>Multiples</p> <p>Multiple, multiply, divide, counting, equal, pairs, factor, product, inverse, equation, calculate, divisible</p> | <ul style="list-style-type: none"> Know and use multiplication of numbers up to 10 by 3, 4, 5 and 10. Recognise when a two-digit number is divisible by 2, 3, 4, 5 and 10. <p>Enrichment Activities Ideas: online games and activities</p> <p>Key Questions: Can you recall...? Can you select....?</p> | <p>SMSC Offer reasoned views.</p> <p>Skills Builder Problem solving, speaking, listening.</p> |
| | 11-12 | <p>Lists and Outcomes</p> <p>Venn diagram, probability, likelihood, tally, frequency, possibilities, outcomes</p> | <ul style="list-style-type: none"> Use a two-circle Venn Diagram to sort and classify numeric and graphic data by two criteria. Use systematic listing strategies to identify different outcomes of two combined events, i.e. rolling two dice. Understand and complete a tally chart including numerical frequency. Complete or extract information from lists with a maximum of two columns or two rows. <p>Enrichment Activities Ideas: link to ordering meals/food and the different outcomes (lists), online games and activities.</p> <p>Key Questions: Why did...? How could you prove/disprove....?</p> | <p>SMSC and British Values Investigate moral and ethical issues, offer reasoned views, knowledge of different socio-economic groups in Britain. (Individual liberty and mutual respect).</p> <p>Gatsby Benchmarks 2 and 3</p> <p>Skills Builder Speaking, listening, teamwork</p> |
| Spring | 1-2 | <p>Shapes and Solids</p> <p>Polygons – circle, triangle, square, rectangle, pentagon, quadrilateral, hexagon, octagon, heptagon Scalene, right-angled, equilateral. side, edge, corner, square face, rectangular face, triangle face, cube, cuboid, cross-section, pyramid, sphere, cone, cylinder.</p> | <ul style="list-style-type: none"> Sort and classify polygons by number of sides, e.g. triangle, quadrilateral, pentagon, hexagon. Distinguish between different triangles (equilateral, isosceles, right angled and scalene). Know and use the terms side, edge, corner, square face, rectangular face, triangle face, cube, cuboid, cross-section, pyramid, sphere, cone, cylinder. <p>Enrichment Activities Ideas: Design and make a money box/container (3D shape), use triangles to make their own artwork.</p> <p>Key Questions: What would you recommend ...? How would you evaluate....?</p> | <p>Literacy Develop vocabulary</p> <p>Skills Builder Creativity, problem solving.</p> |
| | 3-4 | <p>Symmetry and Transformations</p> <p>Reflect, rotate, translate, horizontal, vertical, symmetry, tessellate, degrees (turn)</p> | <ul style="list-style-type: none"> Identify lines and draw shapes, which have horizontal and/or vertical lines of symmetry. Rotate, reflect and translate simple shapes to form tessellated pattern. Draw the rotation of a simple object through 90 degrees on squared paper. | <p>SMSC and British Values Interest in faiths (Islamic patterns), participate positively in art, Enjoy learning about the world around them. (Mutual respect)</p> <p>Skills Builder Creativity, problem solving.</p> |

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| | | | <p>Enrichment Activities Ideas: symmetrical patterns and designs, Andrew Goldsworthy natural art.</p> <p>Key Questions: How s...? How would you rate....?</p> | |
| | 5-6 | <p>Proportionality, Scales and Graphs</p> <p>Proportion, scale, parts, scale, divisions, dial, conversion, convert</p> | <ul style="list-style-type: none"> Solve simple proportion problems by doubling constituent parts, e.g. adapt a four person recipe for eight people. Read and mark a scale or dial whose divisions are labelled and represent 2, 5 or 10 units. Read dial and scales in familiar contexts. Interpret graphs in real-world contexts, e.g. money conversion, cost-time. <p>Enrichment Activities Ideas: Link to life skills and recipes (cooking), link to money conversions and holidays</p> <p>Key Questions: How would you test...? How is....?</p> | <p>SMSC and British Values Investigate moral and ethical issues, offer reasoned views, knowledge of different socio-economic groups in Britain. (Individual liberty and mutual respect).</p> <p>Skills Builder Staying positive, problem solving.</p> |
| | 7-12 | <p>Revision and Assessment</p> <p>Timetable, survey, budget, public transport, change, cost, duration, departure, arrival</p> | <ul style="list-style-type: none"> Pupils will complete their two assessment papers and a practical task. For the practical task, pupils will organise a visit to Meadowhall using public transport. <p>Enrichment Activities Ideas: Life skills – pupils to travel to Meadowhall and buy a meal.</p> <p>Key Questions: Which one...? What is....?</p> | <p>Literacy Answer questions Gatsby Benchmarks 2,3,4 and 5 Skills Builder Aiming high, staying positive. Careers Know how to make plans and decisions carefully including how to solve problems and deal appropriately with influences on you</p> |
| Summer | 1 | <p>Formulae</p> <p>Sequence, increase, decrease, rule, function, input, output, operation.</p> | <ul style="list-style-type: none"> Complete a sequence increasing or decreasing by 2, 3, 5 or 10. Use a simple one-step function machine to determine outputs for given inputs. | <p>Literacy Develop vocabulary Skills Builder Problem solving.</p> |
| | 2 | <p>Estimations and Approximations</p> <p>Round, estimate, value, approximate, decimal place</p> | <ul style="list-style-type: none"> Round numbers less than 100 to the nearest ten or whole number. Estimate totals using rounded values. Estimate approximate total cost and expected change for a number of items (no more than ten) to be bought. <p>Enrichment Activities Ideas: Life skills and money</p> <p>Key Questions: What approach would you use to...?</p> | <p>Literacy Develop vocabulary Skills Builder Problem solving.</p> |

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| | 3-5 | <p>Units of Measure – Area, Perimeter and Angles.</p> <p>Area, perimeter, centimetres squared (cm²), clockwise, anticlockwise, acute, obtuse, right-angle, protractor</p> | <ul style="list-style-type: none"> Calculate the area of rectangles drawn on cm square grids. Understand and use the terms 'clockwise' and 'anticlockwise' and the idea of 'quarter turn', 'half turn' and 'three quarters turn'. Recognise lines greater than, equal to, and less than 90 degrees in shapes. Measure acute angles to the nearest 10 degrees using a protractor. <p>Enrichment Activities Ideas: Link to Sports Leaders - Draw a pitch for a sporting event, design their own game linked to turns.</p> <p>Key Questions: What is the main idea of...? What can you say about....?</p> | Gatsby – 5,6 |
| | 6-7 | <p>Units of Measure – Money</p> <p>Coin, note, bank card, cash, total, add, change, more, less, customer, increase, decrease, combine, decimal point.</p> | <ul style="list-style-type: none"> Use £ and p notation. Select coins equivalent to an amount of money up to £5. Order a collection of coins and notes. Give change from £5. <p>Enrichment Activities Ideas: Life skills – pupils to use money in the community</p> <p>Key Questions: Which one...? What is....?</p> | <p>Gatsby – 4,3 Literacy – role play Skills Builder Problem solving, teamwork, leadership.</p> <p>Careers Recognise how you are changing, what you have to offer and what's important to you</p> |
| | 8-10 | <p>Units of Measure – Time</p> <p>Clock face, hands, hour, minute, second, analogue, digital, am, pm, 24-hour display, 12-hour display, leap year, convert.</p> | <ul style="list-style-type: none"> Find start or end times for a planned time period. Calculate the duration given the start and end times. Understand and use am/pm method of stating time. Read and write time for digital and analogue clocks (in hours and in fifteen minute intervals). Use a calendar to solve problems. <p>Enrichment Activities Ideas: Life skills – pupils to use time for independent travel and travelling in the community.</p> <p>Key Questions: Which is the best option...? Why did you choose....?</p> | Gatsby – 4, 3 Literacy – role play Skills Builder Problem solving, teamwork, leadership. |
| | 11-12 | <p>Averages and Trends</p> <p>Scale, frequency, bar graph, pictogram, icon, key, average, mean, median, range, scatter graph, plot, line of best fit,</p> | <ul style="list-style-type: none"> Construct and interpret a bar graph, using a frequency scale in 5s or 10s. Draw and interpret a pictogram with scale in multiples of 2, 4, 5 or 10. Order small list of numbers (up to ten numbers) to identify middle value (median). | <p>SMSC and British Values – (democracy)</p> <p>Gatsby - 2 Literacy Ask questions, answer questions, speak coherently, use and correct punctuation. Skills Builder Problem solving, staying positive.</p> |

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| | | <p>positive correlation, negative correlation.</p> | <ul style="list-style-type: none"> • Understand and use 'range' as the difference between the biggest and smallest recorded values on an appropriate frequency diagram. • Plot scatter graphs for pairs of data values. Interpret given lines of best fit for points on a given scatter graph. <p>Enrichment Activities Ideas: conduct a whole school survey on a topical or current affairs issue.</p> <p>Key Questions: Can you elaborate on your choice...? What way would you design....?</p> | |
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Intended impact:
 Pupils will have worked towards, or achieved, an Entry Level qualification that they can build upon in Year 11. They will have experienced problems set in a wide variety of contexts and will present their answers in full sentences (number or words), developing their ability to problem solve and stay positive. In addition, the interactive and practical nature of the curriculum will have helped them to develop teamwork, speaking and listening skills.

