CURRICULUM INTENT OVERVIEW PLAN (KS4)

|  |
| --- |
| Intent Statement – at Brook Sixth Form College, we believe learning mathematics with passion will help learners to gain in depth knowledge and confidence in the subject which in turn enable students to develop mathematical skills, and achieve good academic qualifications, allowing them to progress to A level mathematics or enable them to succeed in their chosen career at the end of year 11.  How are you trying to accomplish this, with this Programme of Study (PoS)? |
| To develop passion in the subject the curriculum is designed and delivered in a collaborative learning atmosphere where the students are encouraged to have communication in the classroom and they feel that it’s okay to ask questions. Challenging mathematical concepts are delivered with ease, using subject specific terminology, notation, real life facts, generalisations, interactive methods and techniques.  Further the maths curriculum is designed to provide students with a range of skills and knowledge that enable them to succeed, not only in their maths education and examinations, but to also provide a solid foundation in engineering maths and for their futures. An ability to understand and interpret mathematical information presented in a variety of forms and be able to translate from one to another. |
| Aims – what do you want pupils to be able to know and do by the time they finish this Programme of Study (PoS)? |
| At the end of two years course, learners should: - Have a deep and broad understanding of the application of maths to a range of problems, as per the National Curriculum for KS4. - Possess a well-rounded knowledge of number properties, calculation skills and algebraic manipulation, an appreciation of shape, space and measure, an appreciation of ratio and proportion (and its role in life) and a broad understanding of statistics and probability - Be fluent in a range of skills across the 5 key areas of mathematics (number, algebra, ratio & proportion, shape, space & measure, and statistics & probability) achieved through clear expert instruction and refined through purposeful practice, interleaving and spaced practice. - Be able to apply logic and reason to understand, unpick and solve a range of problems, including the skills of planning, conjecturing, making generalisations, developing a mathematical argument, justification, and proof - Have an appreciation of mathematics in real life contexts, and have some understanding of where the skills they have developed are used in society and other areas of specialism - Have an appreciation of the language of mathematics and be able to articulate their thoughts, ideas, and conjectures in a mathematically accurate way. |
| **Priority 2: Ensuring that an appropriate (post pandemic) curriculum is delivered effectively, leading to excellent student outcomes and destinations** |
| Entry level test helps to identify the ability of the students and put them in correct sets. Stretch and challenge material should be available to all students in all lessons. Milestone assessments and mini assessments help the teachers to identify the gaps in their knowledge. Students are given feedback on their work and provided with personalised feedback to allow students to make the progress that is most suitable for them, encouraging them to extend their thinking further to more complex contexts where appropriate.  Analysis of ALPs data to identify trends regarding the performance of groups of students: SEND, EAL, PP, Low ability and high ability shows excellent attainment results. |

**Lessons are sequenced to address the national curriculum content in two years**

**KS4 CURRICULUM: Mathematics (Year 10 – Higher)**

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **National Curriculum Reference** |
| **Autumn 1** | Number:  1a. Calculations, checking and rounding  1b. Indices, roots, reciprocals and hierarchy of operations  1c. Factors, multiples, primes, standard form and surds  Algebra:  2a. Algebra: the basics, setting up, rearranging and solving equations  2b. Sequences | N2, N3, N5, N14, N15  N3, N6, N7  N3, N4, N8, N9  N1, N3, N8, A1, A2, A3, A4, A5, A6, A7, A17, A20, A21  N9, A23, A24, A25 |
| **Autumn 2** | Data Handling  3a. Averages and range  3b. Representing and interpreting data and scatter graphs  14b. Cumulative frequency, box plots and histograms  Shapes  Volume and surface area of prisms  Revision  Recall and consolidation of the topics covered | G14, S2, S3, S4, S5  S1, S2, S3, S4, S6  S1, S3, S4 |
| **Spring 1** | Numbers  4a. Fractions and percentages  4b. Ratio and proportion  Shapes  5a. Polygons, angles and parallel lines  5b. Pythagoras’ Theorem and trigonometry  Revision  Recall and consolidation of the topics covered | N2, N3, N8, N10, N12, N13, R3, R9  N11, N12, N13, R3, R4, R5, R6, R7, R8, R10  G1, G3, G4, G6, G11  A4, N7, N8, N15, G6, G20, G21 |
| **Spring 2** | Shapes  13a. Graphs of trigonometric functions  13b. Further trigonometry  Algebra  6a. Graphs: the basics and real-life graphs  Revision  Recall and consolidation of the topics covered | A8, A12, A13, G21  N16, G11, G20, G22, G23  N13, N15, A8, A10, A14, A15, R1, R11 |
| **Summer 1** | Algebra  6b. Linear graphs and coordinate geometry  15: Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics  9a. Solving quadratics and simultaneous equations  9b. Inequalities  Revision  Recall and consolidation of the topics covered | A9, A10, A12, A17, R8, R10  N8, A4, A11, A12, A18 to A22  N8, A4, A9, A11, A18, A19, A21  N1, A22 |
| **Summer 2** | Shapes  7a. Perimeter, area and circles  7b. 3D forms and volume, cylinders, cones and spheres  Data Handling  10. Probability  Revision  Recall and consolidation of the topics covered for the end of year exam. | N8, N14, N15, R1, G1, G9, G14, G16, G17, G18  N8, N15, G12, G13, G14, G16, G17  N5, P1 to P9 |

**KS4 CURRICULUM: Mathematics (Year 11 – Higher)**

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **NC Reference** |
| **Autumn 1** | Algebra  Functions  Shapes  8a. Transformations  8b. Constructions, loci and bearings | A5, A6, A7  R6, G5, G6, G7, G8, G24, G25  R2, G1, G2, G3, G12, G13, G15, G19 |
| **Autumn 2** | Algebra  6a. Graphs: the basics and real-life graphs  6b. Linear graphs and coordinate geometry  Shapes  16a. Circle theorems  Algebra  9a. Solving quadratics and simultaneous equations  9b. Inequalities  Data Handling  10. Probability  Numbers  11. Multiplicative Reasoning  Shapes  12. Similarity and congruence in 2D and 3D  Revision  Recall and consolidation of the topics covered | N13, N15, A8, A10, A14, A15, R1, R11  A9, A10, A12, A17, R8, R10  G9, G10  N8, A4, A9, A11, A18, A19, A21  N1, A22  N5, P1 to P9  N3, N12, N13, R1, R6, R10, R11, R14, R16  R6, R12, G5, G6, G17, G19 |
| **Spring 1** | Shapes  13a. Graphs of trigonometric functions  13b. Further trigonometry  Algebra  17: Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof and functions  Iterative methods, transformation of functions  Revision  Recall and consolidation of the topics covered | A8, A12, A13, G21  N16, G11, G20, G22, G23  N8, A4 to A7, A18 |
| **Spring 2** | Shapes  16b. Circle geometry  18: Vectors and geometric proof  19a. Reciprocal and exponential graphs; Gradient and area under graphs | A16  R14, R15, A7, A12, A13, A14, A15 |
| **Summer 1** | Cross Curricular Revision to support Engineering maths AQA)  And to Recall and consolidate GCSE maths  7.1 Equations of the topics covered  7.2.1 M1 – Arithmetic and numerical computation  7.2.2 M2 – Handling data  7.2.3 M3 – Algebra  7.2.4 M4 – Graphs | E1 - E6  M1.1 – M1.7  M2.1 – M2.4  M3.1 – M3.4  M4.1 – M4.4 |
| **Summer 2** | Revision for final exams |  |

**KS4 CURRICULUM: Mathematics (Year 10 – Foundation)**

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **NC Reference** |
| **Autumn 1** | Number:  1a. Integers and place value  1b. Decimals  1c. Indices, powers and roots  1d. Factors, multiples and primes  Algebra  2a. Algebra: the basics  2b. Algebraic expressions and substitution into formula | N1, N2, N3, N4, N14, N15  N1, N2, N3, N13, N15  N6, N7  N4, N5  N1, N3, A1, A3, A4  A2, A4, A5, A6, A7, A21 |
| **Autumn 2** | Data Handling  3a. Tables, charts and graphs  3b. Pie charts  3c. Scatter graphs  7: Statistics, sampling and the averages  14b. Cumulative frequency, box plots and histograms  Shapes  Volume and surface area of prisms  Revision  Recall and consolidation of the topics covered | G14, S2, S4, S5  G2, G15, S2, S4  S4, S6  S1, S2, S4  S1, S3, S4 |
| **Spring 1** | Numbers  4a. Fractions, decimals and percentages  4b. Percentages  11a. Ratio  11b. Proportion  Algebra  5a. Equations and inequalities  5b. Sequences  Revision  Recall and consolidation of the topics covered | N1, N2, N3, N8, N10, N12, N13, R3, R9, S2)  N12, N13, R9  N11, N13, R1, R2, R3, R4, R5, R6, R8, R12  N13, R1, R5, R7, R10, R13, R14  N1, N15, N16, A2, A3, A5, A7, A17, A21, A22  A7, A23, A24, A25) |
| **Spring 2** | Shapes  6a. Properties of shapes, parallel lines and angle facts  6b. Interior and exterior angles of polygons  UNIT 8: Perimeter, area and volume | G1, G3, G4, G6, G11, G15, A8  G1, G3, G7 |
| **Summer 1** | Number  UNIT 14: Multiplicative reasoning: more percentages, rates of change, compound measures  18a. Fractions  Algebra  16a. Quadratic equations: expanding and factorising  16b. Quadratic equations: graphs | N2, N3, N8  A4, A11, A18)  A11, A12, A14, A18 |
| **Summer 2** | Shapes  15a. Plans and elevations  15b. Constructions, loci and bearings  UNIT 17: Perimeter, area and volume 2: circles, cylinders, cones and spheres  Number  18b. Indices and standard form  Revision  Recall and consolidation of the topics covered for the end of year exam. | G1, G2, G9, G12, G13, G15  R2, G2, G5, G15  N7, N9 |

**KS4 CURRICULUM: Mathematics (Year 11 – Foundation)**

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **National Curriculum Reference** |
| **Autumn 1** | Algebra  9a. Real-life graphs  9b. Straight-line graphs  UNIT 10: Transformations  UNIT 13: Probability  Revision  Recall and consolidation of the topics covered for the end of year exam. | N13, A7, A8, A9, A10, A14, R1, R11, R14, G11, G14  A7, A9, A10, A12, A17 |
| **Autumn 2** | UNIT 12: Right-angled triangles: Pythagoras and trigonometry  19a. Similarity and congruence in 2D  19b. Vectors  Revision  Recall and consolidation of the topics covered for the end of year exam. | R6, R12, G5, G6, G7, G19  G24, G25 |
| **Spring 1** | 20 Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equations  Revision  Recall and consolidation of the topics covered for the end of year exam. Past papers |  |
| **Spring 2** | Recall and consolidation of the topics covered for the end of year exam. Past papers |  |
| **Summer 1** | Cross Curricular Revision to support Engineering maths AQA)  And to Recall and consolidate GCSE maths  7.1 Equations of the topics covered  7.2.1 M1 – Arithmetic and numerical computation  7.2.2 M2 – Handling data  7.2.3 M3 – Algebra  7.2.4 M4 – Graphs | E1 - E6  M1.1 – M1.7  M2.1 – M2.4  M3.1 – M3.4  M4.1 – M4.4 |
| **Summer 2** | Revision for final exams. Past papers |  |