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 operations1c. Factors, multiples, primes, standard form and surds Algebra:2a. Algebra: the basics, setting up, rearranging and solving equations 2b. Sequences  | N2, N3, N5, N14, N15N3, N6, N7N3, N4, N8, N9N1, N3, N8, A1, A2, A3, A4, A5, A6, A7, A17, A20, A21N9, A23, A24, A25 |
| **Autumn 2** | Data Handling3a. Averages and range 3b. Representing and interpreting data and scatter graphs 14b. Cumulative frequency, box plots and histograms ShapesVolume and surface area of prismsRevisionRecall and consolidation of the topics covered | G14, S2, S3, S4, S5S1, S2, S3, S4, S6S1, S3, S4 |
| **Spring 1** | Numbers4a. Fractions and percentages 4b. Ratio and proportion Shapes5a. Polygons, angles and parallel lines5b. Pythagoras’ Theorem and trigonometry RevisionRecall and consolidation of the topics covered | N2, N3, N8, N10, N12, N13, R3, R9N11, N12, N13, R3, R4, R5, R6, R7, R8, R10G1, G3, G4, G6, G11A4, N7, N8, N15, G6, G20, G21 |
| **Spring 2** | Shapes13a. Graphs of trigonometric functions 13b. Further trigonometry Algebra6a. Graphs: the basics and real-life graphsRevisionRecall and consolidation of the topics covered | A8, A12, A13, G21N16, G11, G20, G22, G23N13, N15, A8, A10, A14, A15, R1, R11 |
| **Summer 1** | Algebra6b. 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 RevisionRecall and consolidation of the topics covered | A9, A10, A12, A17, R8, R10N8, A4, A11, A12, A18 to A22N8, A4, A9, A11, A18, A19, A21N1, A22 |
| **Summer 2** | Shapes7a. Perimeter, area and circles 7b. 3D forms and volume, cylinders, cones and spheresData Handling 10. Probability RevisionRecall and consolidation of the topics covered for the end of year exam. | N8, N14, N15, R1, G1, G9, G14, G16, G17, G18N8, N15, G12, G13, G14, G16, G17N5, P1 to P9 |

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

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **NC Reference** |
| **Autumn 1** | AlgebraFunctionsShapes8a. Transformations 8b. Constructions, loci and bearings   | A5, A6, A7R6, G5, G6, G7, G8, G24, G25R2, G1, G2, G3, G12, G13, G15, G19 |
| **Autumn 2** | Algebra6a. Graphs: the basics and real-life graphs6b. Linear graphs and coordinate geometry Shapes16a. Circle theoremsAlgebra9a. Solving quadratics and simultaneous equations 9b. InequalitiesData Handling10. Probability Numbers11. Multiplicative Reasoning Shapes12. Similarity and congruence in 2D and 3D RevisionRecall and consolidation of the topics covered | N13, N15, A8, A10, A14, A15, R1, R11A9, A10, A12, A17, R8, R10G9, G10N8, A4, A9, A11, A18, A19, A21N1, A22N5, P1 to P9N3, N12, N13, R1, R6, R10, R11, R14, R16R6, R12, G5, G6, G17, G19 |
| **Spring 1** | Shapes13a. Graphs of trigonometric functions 13b. Further trigonometry Algebra17: Changing the subject of formulae (more complex), algebraic fractions, solving equations arising from algebraic fractions, rationalising surds, proof and functionsIterative methods, transformation of functionsRevisionRecall and consolidation of the topics covered | A8, A12, A13, G21N16, G11, G20, G22, G23N8, A4 to A7, A18 |
| **Spring 2** | Shapes16b. Circle geometry 18: Vectors and geometric proof19a. Reciprocal and exponential graphs; Gradient and area under graphs  | A16R14, R15, A7, A12, A13, A14, A15 |
| **Summer 1** | Cross Curricular Revision to support Engineering maths AQA)And to Recall and consolidate GCSE maths7.1 Equations of the topics covered7.2.1 M1 – Arithmetic and numerical computation7.2.2 M2 – Handling data7.2.3 M3 – Algebra7.2.4 M4 – Graphs | E1 - E6M1.1 – M1.7M2.1 – M2.4M3.1 – M3.4M4.1 – 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 value1b. Decimals 1c. Indices, powers and roots 1d. Factors, multiples and primes Algebra2a. Algebra: the basics 2b. Algebraic expressions and substitution into formula  | N1, N2, N3, N4, N14, N15N1, N2, N3, N13, N15N6, N7N4, N5N1, N3, A1, A3, A4A2, A4, A5, A6, A7, A21 |
| **Autumn 2** | Data Handling3a. Tables, charts and graphs3b. Pie charts 3c. Scatter graphs 7: Statistics, sampling and the averages 14b. Cumulative frequency, box plots and histograms ShapesVolume and surface area of prismsRevisionRecall and consolidation of the topics covered | G14, S2, S4, S5G2, G15, S2, S4S4, S6S1, S2, S4S1, S3, S4 |
| **Spring 1** | Numbers4a. Fractions, decimals and percentages4b. Percentages11a. Ratio11b. Proportion Algebra5a. Equations and inequalities5b. Sequences RevisionRecall and consolidation of the topics covered | N1, N2, N3, N8, N10, N12, N13, R3, R9, S2)N12, N13, R9N11, N13, R1, R2, R3, R4, R5, R6, R8, R12N13, R1, R5, R7, R10, R13, R14N1, N15, N16, A2, A3, A5, A7, A17, A21, A22A7, A23, A24, A25) |
| **Spring 2** | Shapes6a. Properties of shapes, parallel lines and angle facts6b. Interior and exterior angles of polygons UNIT 8: Perimeter, area and volume | G1, G3, G4, G6, G11, G15, A8G1, G3, G7 |
| **Summer 1** | NumberUNIT 14: Multiplicative reasoning: more percentages, rates of change, compound measures18a. FractionsAlgebra16a. Quadratic equations: expanding and factorising 16b. Quadratic equations: graphs | N2, N3, N8A4, A11, A18)A11, A12, A14, A18 |
| **Summer 2** | Shapes15a. Plans and elevations 15b. Constructions, loci and bearings UNIT 17: Perimeter, area and volume 2: circles, cylinders, cones and spheresNumber18b. Indices and standard formRevisionRecall and consolidation of the topics covered for the end of year exam. | G1, G2, G9, G12, G13, G15R2, G2, G5, G15N7, N9 |

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

|  |  |  |
| --- | --- | --- |
| **Term** | **Focus** | **National Curriculum Reference** |
| **Autumn 1** | Algebra 9a. Real-life graphs9b. Straight-line graphs UNIT 10: TransformationsUNIT 13: ProbabilityRevisionRecall and consolidation of the topics covered for the end of year exam. | N13, A7, A8, A9, A10, A14, R1, R11, R14, G11, G14A7, A9, A10, A12, A17 |
| **Autumn 2** | UNIT 12: Right-angled triangles: Pythagoras and trigonometry19a. Similarity and congruence in 2D19b. VectorsRevisionRecall and consolidation of the topics covered for the end of year exam. | R6, R12, G5, G6, G7, G19G24, G25 |
| **Spring 1** | 20 Rearranging equations, graphs of cubic and reciprocal functions and simultaneous equationsRevisionRecall 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 maths7.1 Equations of the topics covered7.2.1 M1 – Arithmetic and numerical computation7.2.2 M2 – Handling data7.2.3 M3 – Algebra7.2.4 M4 – Graphs | E1 - E6M1.1 – M1.7M2.1 – M2.4M3.1 – M3.4M4.1 – M4.4 |
| **Summer 2** | Revision for final exams. Past papers |  |