Curriculum Statement - Maths

Our Intent:	
What is the vision (big picture) for your subject?	Our curriculum empowers students with the mathematical knowledge, skills, and confidence to thrive in life beyond school. We are committed to ensuring every student becomes mathematically and numerically literate, enabling them to engage critically and creatively with the world around them.
What are the key concepts that underpin your subject?	Across KS3 and KS4 our curriculum is comprised of five main areas of study: Number, Ratio and Proportion, Algebra, Geometry, Statistics and Probability. At KS5 these areas continue in more depth and with the addition of Calculus and Mechanics.
Which key themes are repeated over time?	Our curriculum aims to ensure that all students: **become fluent** with the core concepts, definitions, vocabulary and mathematical procedures; **reason mathematically** following an argument, proof, justification or line of reasoning; and **can problem-solve**, that is apply their knowledge to both routine and non-routine problems through recognising the context of problems and breaking problems down into smaller steps. These three strands, fluency, reasoning, and problem solving, form the backbone of our curriculum. They are interwoven into every unit of study, allowing students to build procedural fluency, understand mathematical structures, and apply their knowledge to unfamiliar contexts.
What knowledge and skills will students have at the end of each key stage?	**KS2**: By the end of year 6, pupils will be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils will develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation.
	KS3: By the end of Key Stage 3 (end of Year 9), students will have developed a solid foundation in core mathematical concepts that prepare them for GCSE Maths. This includes many topics in the areas of Number, Algebra, Geometry, Statistics and Probability. Students will be prepared for GCSE level study with the declarative knowledge, procedural knowledge and conditional knowledge from KS3.
	KS4: By the end of KS4 students will have developed a strong understanding core mathematical concepts to prepared them for their next academic steps. Students will have a strong knowledge of many topics within the areas of Number, Algebra, Geometry, Statistics and Probability. Students studing Higher tier will develop a deep understanding of the additional knowledge covered in Higher, for example: surds, function notation, graph transformation, non-right angled trigonometry, histograms and many more. Students will have a clear understanding of the declarative knowledge, procedural knowledge and conditional knowledge of the content covered in GCSE.
	KS5: By the end of KS5 students will have a secure understanding of the mathematical concepts covered at A level. Students will leave KS5 equipped with the mathematical tools and knowledge required to succeed in higher education, degree apprenticehsips, or employment in mathematically-rich fields. In particular students chosing to study mathematics at university will have a secure understanding of all the required prerequisites for university level study.
Does your curriculum intent match or exceed the breadth of the National Curriculum/Subject specification?	The intended curriculum covers the full scope of the national curriculum at KS3 and knowledge and skills are carefully matched to ensure they are covered. The intended curriculum at KS4 again covers the full scope of the national curriculum, with Higher students covering content in more depth and additional content. In KS5 students will have covered many topics in the areas of Algebra, Calculus, Geometry, Statistics and Mechanics. Students will have a strong understanding of declarative knowledge, procedural knowledge and conditional knowledge of the content covered at KS5.
How do you ensure that learning is sequenced effectively over time in your subject?	Our curriculum is carefully sequenced to ensure a coherent progression of knowledge and skills. Each topic builds on prior learning, reinforcing core concepts while introducing new content at increasing levels of complexity. Spaced retrieval and revisiting of topics are embedded to support long-term retention. Topics are taught with coherent, consistent, forward facing and mathematically sound methods and procedures
How have you decided what knowledge and skills you want students to learn in your subject?	Students cover the knowledge and skills outlined in the national curriculum. At Key Stay 3 this is based on the national curriculum and follows the White Rose Scheme of Work. At Key Stage 4 this is based on the GCSE Specification from Pearson Edexcel and follow the Pearson 2 year scheme of work.
How do you plan to cater for cultural capital e.g. trips, visits, enrichment, careers, applied learning, real world application & power skills development?	To foster cultural capital, the plan is to offer diverse trips, visits, and enrichment opportunities such as university visits to broaden students' understanding of maths in the world. This includes engaging in real-world application of learning, developing essential power skills, and connecting classroom knowledge to a broader range of cultural experiences. These experiences connect mathematical concepts to the real world and highlight diverse applications of mathematics in society.
What are your main instruments of the curriculum used to implement, deliver, and assess your curriculum effectively? (Materials should privilege thinking over task completion - memory is the residue of thought)	The curriculum is fully resourced and is prepared for teachers to ensure consistently high quality. Each lesson has clear worked examples, checks for understanding and deliberate practice. and colour coded slides make this explicit to both teachers and students. Tasks provided for students prioritise students practising and applying the mathematical knowledge they are studying. Students in year 7 to 10 are assessed once per half term, and students in year 11 are assessed once per fortnight. Each assessment is comprised of exam style questions, and builds in difficulty like a real exam. Students in year 12 and 13 are assessed twice per half term, with each assessment composed of exam style questions.
How is homework used to encourage, enthuse and develop pupils' skills and understanding?	Homework is used to consolidate students knowledge by giving students additional opportunity to practice and review prior knowledge. For year 7 to 10 homework is set on Sparx maths, this ensures that students are set personally targeted questions and that teachers can address gaps in class. In year 11 students are set homework past papers to ensure that they repeatedly see exam style questions. For year 12 and 13 homework is set to give students repeated practice of topics.
How are you ensuring that each teacher has the requisite subject knowledge to teach effectively?	As a department we regularly discuss upcoming topics and content in department meetings. As a team we work together to support each other. Where individuals require more personal support with subject knowledge this is provided through the subject coordinator, deputy subject coordinator and lead practitioners.
Our Implementation:	
What will we see when we drop into your subject lessons and why?	A lesson will involve a do now (to ensure students retrieve and revisit prior information), modelling and worked examples which students copy and green box in their books (to clearly instruct students of the new content), checks for understanding using mini whiteboards (to ensure that students are ready for deliberate practice) and deliberate practice (so that students embed the new information). Students will mark each answer in green pen to ensure they are correct. Lessons will involve opportunity for fluency practice, reasoning and problem solving. Twice per half term students will complete DIRT (Directed Improvement Reflection Time) which will be based on either assessment performance or a teacher book check. This DIRT will involve students being retaught a topic and having deliberate practice on that topic. DIRT will be completed in green pen in books.
How do you adapt or tailor your curriculum to meet the needs of students with different starting points (KS2 data)?	Concepts from KS2 are recovered in KS3 to ensure that students are confident with key prior knowledge. Teachers continually use checks for understanding, such as using mini whiteboards, to assess how students have understood and address gaps when they arrive.
How do you stretch students who are high prior attainment?	Students are challenged through exploring topics in more depth (rather than acceleration through content) and through the use of reasoning and problem solving. Shared resources are provided that ensure all students are challenged.
How do you support and scaffold (visual, verbal & written) for students who are SEND?	These experiences connect mathematical concepts to the real world and highlight diverse applications of mathematics in society. Content is scaffolded through the use of explict worked examples and modelling to ensure that the steps students need to cover are clearly and explicitly taught. Subject specific vocabulary is explicitly taught through the use of examples and non-examples to ensure that all students have a clear understanding of each definition. Careful attention is paid to the teaching of tier 2 and tier 3 vocabularly to ensure that students have a secure understanding of the vocabularly needed.
How do you support students who are disadvantaged?	Our belief is that high expectations and high-quality teaching benefit all students, particularly those who are disadvantaged. Disadvantaged students are supported by high quality teaching resources and planning that is provided for teachers, which embeds the use of explicit instruction, checks for understanding and deliberate practice. The use of manipulatives, both physical and digital, ensure that students follow a concrete, pictoral, abstract path to understanding mathematical concepts which ensures that have a secure understanding of the mathematical concepts being studied.
Our Impact:	
How are you monitoring implementation in your subject area?	Teaching and learning is regularly monitored through the use of learning walks and book looks. Teachers recieve feedback either by email or in person following a learning walk and feedback following a book look is shared with the department.
How do you check the rigour in planning and resourcing in your subject area?	Shared department resources are quality assured by the subject coordinator to ensure that they are consistently high quality. Teachers use these shared resources for their lessons but adapt them to the need of the students in their class. Suggestions and improvements are shared by the team so that the resources continue to iterate and improve.
How do you use assessment in your subject area?	Students are assessed once per half term, or once per fortnight for year 11. Following an assessment the teacher provides DIRT for the students. This means that students stick in the completed DIRT template into their books. This template states the topics that the class did well on and the topics that the class struggled wtih. The teacher will then reteach the highlighted topics and students will have an opportunity for deliberate practice of these topics. DIRT is completed in green pen in exercise books.
How do assessments identify gaps in students' knowledge and their ability to apply that knowledge fluently and accurately?	For KS3 and KS4 assessments are build from past GCSE questions. For KS5 assessments are built from past A level questions. This allows us to see precisely where the knowledge gaps are and whether students are struggling with fluency of skills or application of skills and knowledge. When teachers mark an assessment they can then identify what topics students have struggled with for DIRT. Assessments are cumulative and so highlight to teachers where students have gaps in their understanding from recent or prior content. For year 11 mock exams a QLA is created that precisely identifies what topics students have struggled with and these are then topics to recover in class and during intervention.
How is knowledge remembered in your subject?	Teachers use a do now each lesson which reviews prior content to ensure that students regularly revisit prior content. A do now is comprised of four questions which are: last lesson, last week, last topic and last year. Students revisit topics in future years where they return to topics to cover them in more depth. All assessments are cumulative which means they cover all knowledge up until that point.

BUDMOUTH ACADEMY WEYMOUTH
AN ASPIRATIONS ACADEMY

Curriculum Overview: Maths

		Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 7		**Algebra** Sequences, Algebraic Notation, Equality and Equivalence	**Place Value and Number** Place Value, Four Operations, Averages and Range, Rounding	**Statistics and Number** Graphing Data, Fractions Decimals and Percentages	**Directed Number, Fractions and Geometry** Directed Number, Fractions and Percentages of Amounts, Perimeter and Area	**Speed and Number** Speed Distance and Time, Properties of Number	**Fractions and Geometry** Add and Subtract Fractions, Angles and Polygons
Year 8		**Proportional Reasoning** Ratio and Scale, Multiplicative Change, Multiplying and Dividing Fractions:	**Representations** Working in the Cartesian Plane, Representing Data	**Algebraic Techniques** Brackets, Equations and Inequalities, Sequences, Indices	**Developing Number** Fractions and Percentages, Standard Index Form, Number Sense	**Developing Geometry** Angles in Parallel Lines and Polygons, Line Symmetry and Reflection, Area of Trapeziums and Cirlces	**Reasoning with Data** Data Handling Cycle, Measures of Location
Year 9		**Reasoning with Algebra** Straight Line Graphs, Forming and Solving Equations, Factors Multiples and Primes	**Constructing in 2 and 3 Dimensions** Three Dimensional Shapes, Construction and Congruency, Number	**Reasoning with Number** Number, Using Percentage, Maths and Money, Deduction	**Reasoning with Geometry** Rotation and Translation, Pythagoras and Trigonometry	**Reasoning with Proportion** Enlargement and Similarity, Ratio and Proportion, Rates	**Representations** Probability, Algebraic Representations
GCSE Foundation	Year 10	**Number** **Algebra**	**Graphs Charts and Tables** **Fractions and Percentages**	**Equations, Inequalities and Sequences** **Angles** **Averages and Range**	**Perimeter, Area and Volume 1** **Graphs** **Transformations**	**Ratio and Proportion** **Pythagoras and Trigonometry**	**Probability**
	Year 11	**Multiplicative Reasoning** **Constructions, Loci and Bearings**	**Quadratic Equations and Graphs** **Perimeter, Area and Volume 2**	**Fractions, Indices and Standard Form** **Congruence Similarity and Vectors**	**More Algebra**	**Exam Practice**	**External Exams**
GCSE Higher	Year 10	**Number** **Algebra**	**Averages and Tables** **Fractions, Ratio and Percentage**	**Angles and Trigonometry** **Graphs**	**Area and Volume,** **Transformations and Constructions**	**Equations and Inequalities**	**Probability**
	Year 11	**Multiplicative Reasoning** **Similarity and Congruence**	**More Trigonometry** **Further Statistics**	**Equations and Graphs** **Circle Theorems**	**More Algebra** **Vectors and Geometric Proof** **Proportion and Graphs**	**Exam Practice**	**External Exams**
A Level Maths	Year 12	**Algebraic Expressions** **Quadratics** **Equations and Inequalities** **Trigonometric Ratios** **Trigonometric Indenties and Equations**	**Statistics: Data Collection** **Statistics: Measures of Location and Spread** **Graphs and Transformations** **Mechanics: Modelling** **Mechanics: Constant Accerlation** **Vectors**	**Statistics: Representation of Data** **Statistics: Correlation** **Straight Line Graphs** **Algebraic Methods** **Mechanics: Forces and Motion**	**Circles** **Binomial Expansion**	**Statistics: Probability** **Exponentials and Logarithms** **Differentiation**	**Statistics: Statistical Distributions** **Statistics: Hypothesis Testing** **Integration** **Mechanics: Variable Accerlation**
	Year 13	**Radians** **Trigonometric Functions** **Trigonometry and Modelling** **Algebraic Methods** **Functions and Graphs**	**Differentiation** **Sequences and Series** **Mechanics: Moments**	**Statistics: Regression, Correlation and Hypothesis Testing** **Statistics: Conditional Probability** **Mechanics: Forces and Friction** **Binomial Expansion** **Parametric Equations**	**Numerical Methods** **Integration** **Mechanics: Projectiles** **Vectors**	**Statistics: Normal Distribution** **Mechanics: Application of Forces** **Mechanics: Further Kinematics**	**External Exams**