Maths

Aims:

- Create students who think, write, and speak like mathematicians.
- Revisit, embed, and build upon topics covered in Y7 and Y8 to prepare for KS4
- Understand how to structure and record their thoughts and processes in a clear and logical way
- Improve techniques for problem solving through generating links between topics

Content:

Initially, students will use the product of primes topic to recap key vocabulary and number work from earlier years. This will then be used to inform methods of expanding and factorising brackets. Solving linear equations is a vitally important skill as students move towards KS4 so is revisited before revealing graphical ways to reach a solution. These skills will then be transferred into working with inequalities. Rearranging formulae will be covered before the end of half term 2 to prepare students for work with speed, area and Pythagoras' Theorem in half terms 3 and 4.
In the final term, students will be able to create links between the numerical and algebraic topics that have had a heavy focus in Year 7 and Y8 to work geometrically with volume and angles in parallel lines.

Curriculum Map

Year	Term	Curriculum	Assessment
9	Term 1	Product of primes revisits key number theories that will then assist in expanding and factorising algebraic expressions. Solving equations topic revisited and explored further through graphing techniques. Further development into inequalities and rearranging formulae.	Topic Assessments End of Unit Assessments
	Term 2	Using formula in calculations to cover topics involving speed, area of a circle, and Pythagoras' Theorem in right angled triangles. Similarity covered and used to introduce the trigonometric ratios	Topic Assessments End of Unit Assessments
	Term 3	Plans, elevations and nets to explore the properties of 3D shapes before calculating volume of prisms, pyramids, and spheres. Angles in parallel lines covered in depth before constructions allow parts of the ideas to be drawn.	Topic Assessments End of Unit Assessments

Assessment:

In class feedback will be provided throughout lessons using a variety of methods that check for understanding such as mini-whiteboards, vote cards, and carefully selected questioning. Students will receive regular and specific feedback between lessons using peer and self-review techniques to develop the reflective and resilient STRIPE habit. Techer input in these feedback routines will be given if, and when, needed to support and personalise the student review process.

Low stakes quizzes and retrieval practice will be used regularly to provide students with self-assessment opportunities.

Pre-topic tests will be carried out using online, multiple choice questions to highlight any areas of improvement before the topic begins to inform teacher planning.

Topic assessments will be carried out at the end of each topic. These will be short 15-20 minutes paper-based quizzes containing questions from each of the BASE levels. The aim of these assessments is to determine the understanding of a topic at the point of study.

End of unit assessments will be used one a half term to assess the retention of a mixture of topics after a period of 'forgetting'. This method determines whether the content has been truly assigned to long term memory rather than just understanding and the time of study.

Extended Learning:

Extended learning in Maths will take two forms: retrieval via online platforms and open-ended tasks based upon the driving question for that term. The online extended learning will be set once a week and there is an expectation that even though it is computer-based, a clear record of methods is recorded in the exercise book. Open-ended tasks investigating the mathematical contribution to the driving question will be set over a longer period of time, normally two weeks.

Connection to the JTFS Approach

Whole School Theme	How does Maths support this?
STRIPE	STRIPE tags will be added to all lessons to demonstrate which STRIPE habit produces the most effective and efficient mathematics. Reflective and resilient review tickets will be used regularly to promote understanding of the students' pathway through the topic. Following each unit assessment there will be a STRIPE review to assess how performance was affected by implementation of the STRIPE habits.
STEAM	In class discussions to show how mathematical topics can be applied in job roles in conjunction with other STEAM subjects.
Literacy	Key words will be integrated into every lesson. Student explanations will need to contain subject specific vocabulary when presenting their thoughts to promote improved oracy.
Numeracy	'Know your Numeracy' tags will be used across all subjects with a maths emphasis so common teaching methods are used throughout the school.
SMSC, British Values and Citizenship	Problems in context, such as speed, provide chance to understand the impact of the topic as well as hinterland experiences regarding Pythagoras and his beliefs.