

Mathematics Faculty

Our intent

At Millbay we believe that everybody can learn and enjoy Mathematics. Our priority is to provide a rich, warm and engaging classroom environment where students learn together, guided, inspired and supported by an expert teacher. High quality teaching makes a difference to students' learning. To maximise the impact teachers need to work on an agreed curriculum. Our curriculum :

- Offers a clear and coherent sequencing of big mathematical ideas, concepts, knowledge, and forward facing techniques both within each year and across years so that new ideas are built on the firm foundations of existing ones.
- Gives a coherent view of mathematics as a network of concepts highlighting the connection between them so that students experience mathematics not as a collection of disparate topics but as a connected whole.

Think Like A Creative: We believe strongly in our curriculum pedagogy 'Think Like A Creative'.

The stages of this are as follows: *Discover, Experiment, Create, Perform, Evaluate*. Some examples of how we embed this pedagogy in our subject are as follows:



- **Discover:** Pattern spotting. Noticing the links between concepts.
- **Experiment:** Deliberate practice with pattern spotting and variation. Exploring the boundaries of concepts.
- **Create:** Creating a meaning set of notes. Links from previous to current learning.
- **Perform:** Talk like a mathematician. Write like a mathematician. Think on a page.
- **Evaluate:** Current understanding and next steps.

Key Stage 3 Curriculum

Our year 7 to 9 students follow the White Rose curriculum with adaptations when needed. It is a small step approach, building in a spiral model and supports the five themes of teaching for mastery. It meets the National Curriculum aims to incorporate a balance of developing fluency, reasoning and problem solving and provides students the opportunity to exceed the National Curriculum.

In year 7, students start with sequences to launch algebraic thinking, making a fresh start from KS2 by engaging in something new and building on fundamental reasoning skills. Visual patterns are explored and students are encouraged to spot patterns, abstract nth term is not introduced until year 8. This reflects the importance of the concrete, visual and abstract approach.

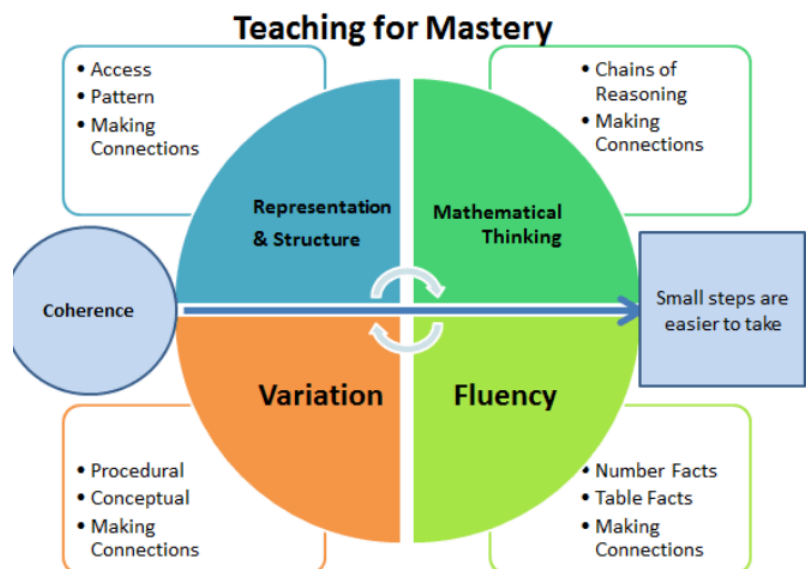
Learning is taught in blocks, at the end of the block there is an assessment but we feel it is too late to address misconceptions at this point and have built in progress checks after every few lessons. These provide an opportunity to address misconceptions promptly with whole class feedback and give the teacher a snapshot of student understanding. The teacher uses their profession fidelity as key concepts may need revisiting.

Lesson design links to prior learning to ensure all can access the new learning and identifies carefully-sequenced steps in progression to build secure understanding. Examples, representations and models are carefully selected to expose the structure of mathematical concepts and emphasise connections, enabling pupils to develop a deep knowledge of mathematics. Use and explicit teaching of precise mathematical language enables all pupils to communicate their reasoning and thinking effectively. Our teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching. We have a working relationship with the NECTM improving the teaching for mastery at Millbay. Our collaborative planning time reflects this.

By the end of key stage 3, students should have developed these skills whilst deepening their subject knowledge in the following areas:

KS3 include:

- Number,
- Algebra,
- Ratio, proportion and rate of change
- Geometry, Shape and measures,
- Probability,
- Statistics.



Key Stage 4 Curriculum

Our year 10 and early year 11 students follow the White Rose curriculum and adaptations have been made to offer a higher, intermediate and foundation scheme of learning. This is to ensure that tiering decisions are not made too early and encourage a culture of deeper learning and curiosity. We have developed a relationship with Plymouth University and take students thinking of studying Mathematics at A'level to a taster day.

After the first assessment in year 11 students will follow a bespoke curriculum. This is created by comparing our cohorts data with the global centre data produced by Edexcel and sequences areas of development in a progressive manner. Assessments are regular and built from exam questions ensuring students have exam practice and access to mark schemes. Target setting becomes personalised and independent learning is promoted.

Students will have deepened their subject knowledge in the 6 distinct areas whilst improving the skills of fluency, reasoning and problem solving, making deductions and inferences, preparing them to achieve at GCSE and beyond. The GCSE course will provide a strong foundation for further academic and vocational study and for employment, to give students the appropriate mathematical skills, knowledge and understanding to help them progress to a full range of courses in further and higher education. This includes Level 3 Mathematics courses as well as Level 3 and undergraduate courses in other disciplines such as biology, geography and psychology, where the understanding and application of mathematics is crucial

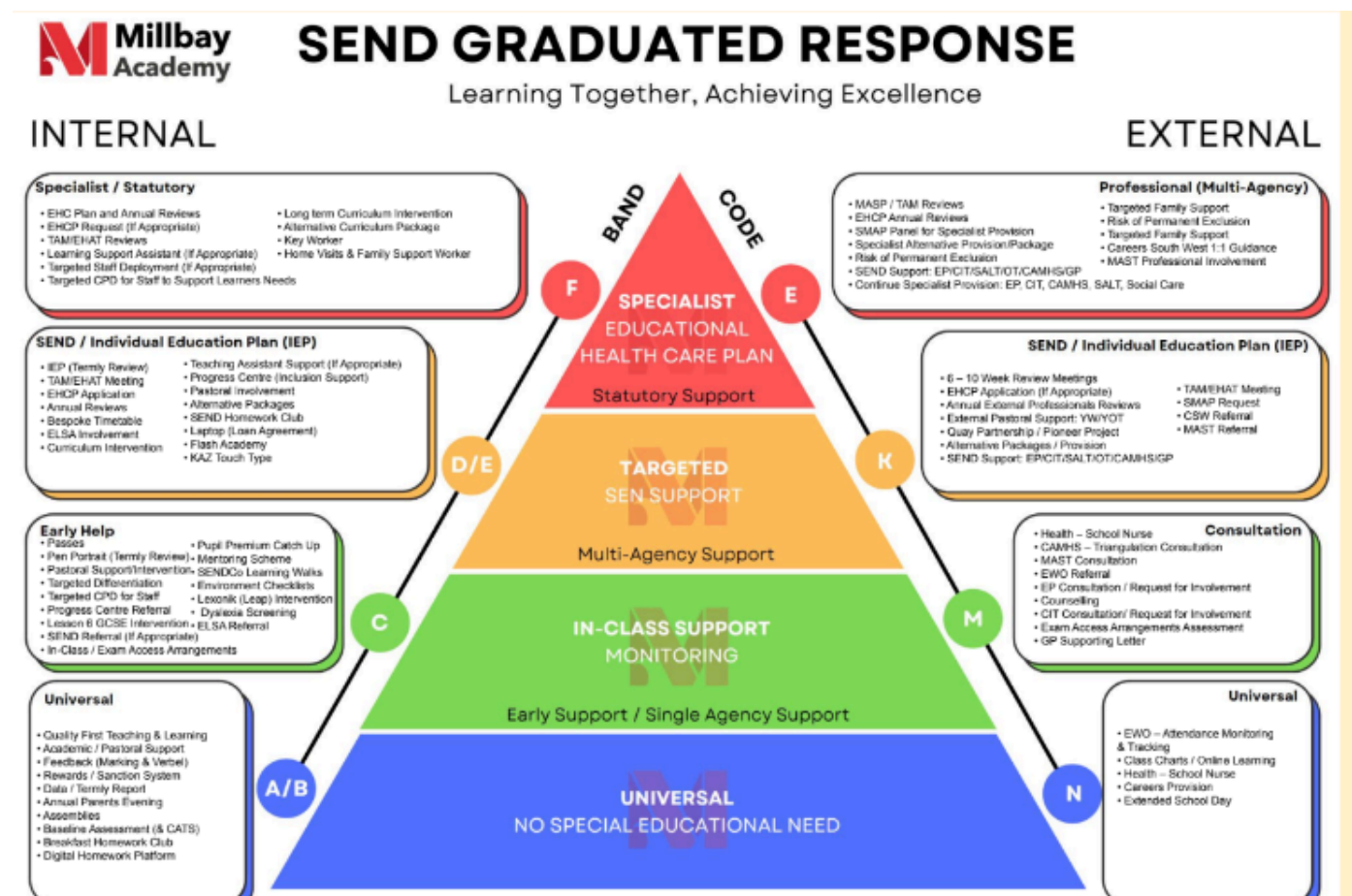
Mathematics is a creative and highly interconnected discipline that has been developed in many different cultures over centuries, providing the solution to some of history's most intriguing problems. The human brain has not evolved as quickly as the developments and discoveries have and this is why learning Mathematics can appear troublesome and daunting. It is a universal language which is essential to everyday life, critical to science, technology, and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

SEND/INCLUSION

Within the Mathematics Faculty we believe that everybody can learn and enjoy mathematics and continually train our staff to develop our adaptive teaching and use of scaffolding, so that we can support all of our students' needs and develop each individual. Teachers ensure they are aware of each students' pen portrait.

We provide a nurture provision where the lead teacher has worked with the NECTM work group "Securing foundations at year 7" and continues to improve our offering.

We work with the "Higher-level Maths Achievement" to embed a culture of high expectations and equitable access to challenging maths topics. Both of these groups have been recommended in the latest Curriculum and assessment review.





Curriculum Accessibility - Maths



All Pupils:

- access an adapted curriculum designed by the subject leader that is appropriate for all but is also meaningful, challenging & ambitious.
- are provided a range of activities to engage them and allow them to effectively communicate their understanding.
- are closely monitored and supported pastorally to ensure their emotional wellbeing is prioritised.
- named on each lesson seating plan so that pupils are known to staff and we foster a feeling of each pupil having their own place in the community.
- record work in a variety of ways, allowing access to the curriculum through multi-sensory learning.
- are supported with their behaviour choices in a positive environment, school use restorative consequences so that pupils can reflect and be supported to meet the community's behaviour expectations.
- receive feedback in lessons that results in further progress across the curriculum.

Some Pupils Need:

- use of concrete and pictorial representations during teaching and when working independently to aid their understanding.
- dual coding to reduce their cognitive load.
- use of manipulatives e.g. multilink, numicon, Cuisenaire rods, algebra discs.
- scaffolding such as number lines hint sheets and writing frames pupil's have a clear understanding of the expectations.
- clear vocabulary explanations and/or introductory vocabulary work to prepare for a task.
- one-to-one interaction and targeted intervention by the teacher.
- a specific seat in lessons to meet a sensory or a learning need.
- adapted lesson structure, e.g. more paired/ discussion work or increased mini-plenaries.
- targeted interventions to fill gaps in understanding.
- extra support in a lesson from an additional adult so that the pupils needs, academic or pastoral are effectively met.

Specific Pupils Need:

- personalised long-term learning outcomes with carefully planned incremental targets to achieving their outcomes.
- access to a quiet space to ensure they can be supported to meet their potential.
- additional support in lessons from an adult who is attuned to their individual pastoral and learning needs.
- bespoke timetables taking in to account their needs to ensure that they are taught in an environment that best supports their needs.
- curriculum adaptations to allow for engagement through pupil interests (project focus or word problem context).
- long-running interventions to support challenges around number understanding and understanding of calculations.
- additional teaching time in maths through a reduced timetable that allows capacity in timetable.
- personalised homework to be set or support in school to complete homework.

Millbay Academy SEND Department: Relationships - Routine - Regulation

Subject Literacy

EEF disciplinary literacy.

Co-curriculum Enrichment

Axiom maths.