

# Northampton International Academy **Maths Curriculum Overview**



### Why Teach Mathematics?

We believe that mathematics will allow students to establish life-long skills to make informed decisions and choices throughout their lives. Our curriculum aims to support children in securing conceptual understanding through:

- making rich connections across mathematical ideas to develop fluency, reasoning and solving increasingly sophisticated problems
- using concrete manipulatives to support conceptual understanding
- the use of variation to help children notice and understand pattern and structure
- fostering and maintaining a curiosity about mathematics in the world around us
- creative teaching approaches and rich tasks
- developing an appreciation of the beauty and elegance of mathematics ٠
- applying their mathematical knowledge to other areas of the curriculum

We want our children to be able to think like mathematicians and provide them with the necessary financial literacy and mathematical knowledge in preparation for the next step in their educational journey and ultimate employment.

### **Progression of Substantive Concepts**

Schemes of work create a spiral curriculum designed to embed the practice of retrieval persistently throughout the subject, so students retain and build upon knowledge throughout their time at NIA.

We revisit concepts each year but add complexity to the units studied to ensure to develop confidence and fluency in the subject. In Key Stage 5 we further develop the concepts learnt prior and offer the opportunities to utilise mathematical concepts in broader contexts.



Reasoning

Fluency

Substantive Topics and Units of Work on Scheme by Year Taught									
Primary		1	2	3	4	5	6	Secondary	KS3&4
Ж Ж Ж Ж	Number							Number	
+ - × ÷	Calculations								
	Fractions, Decimals, Percentages and Ratio							Ratio, Proportion and Rates of Change	
	Measures							Geometry and Measures	
$\langle \cdot \rangle$	Time								
	Geometry								
	Position								
 Ш �	Statistics							Statistics	
2a + 3	Algebra							Algebra	
							Probability		

In the primary phase lessons are delivered using the concrete, pictorial abstract structure, which allows students to represent their work mathematically in a number of ways, as well as allowing them to self select concrete resources to aid them to complete problems. As students progress through to secondary, pictorial and abstract methods continue to be used to support learning, and where appropriate concrete resources are continued to be used where topics lend themselves to this. At the secondary level students continue to be encouraged to self select the methods which allow them to access the learning best. And teachers model problems using varying methods to demonstrate this.



### **Retrieval and Recall**

Retrieval and Recall is embedded in the approaches we use to teach mathematics. Starters follow a structure of "Last Lesson, last week, last month, last year" to ensure students are well practiced in retrieving prior knowledge at the beginning of a lesson. Using mixed topic homework also allows students to practice retrieving older knowledge, as well as referring to their own revision practices to support the completion of these homework tasks. Using this strategy supports students conceptual understanding as well as forging links across the units, and strengthening the neural connections which enable learners to think more mathematically in problem based situations.



## **Concrete, Pictorial, Abstract (CPA)**