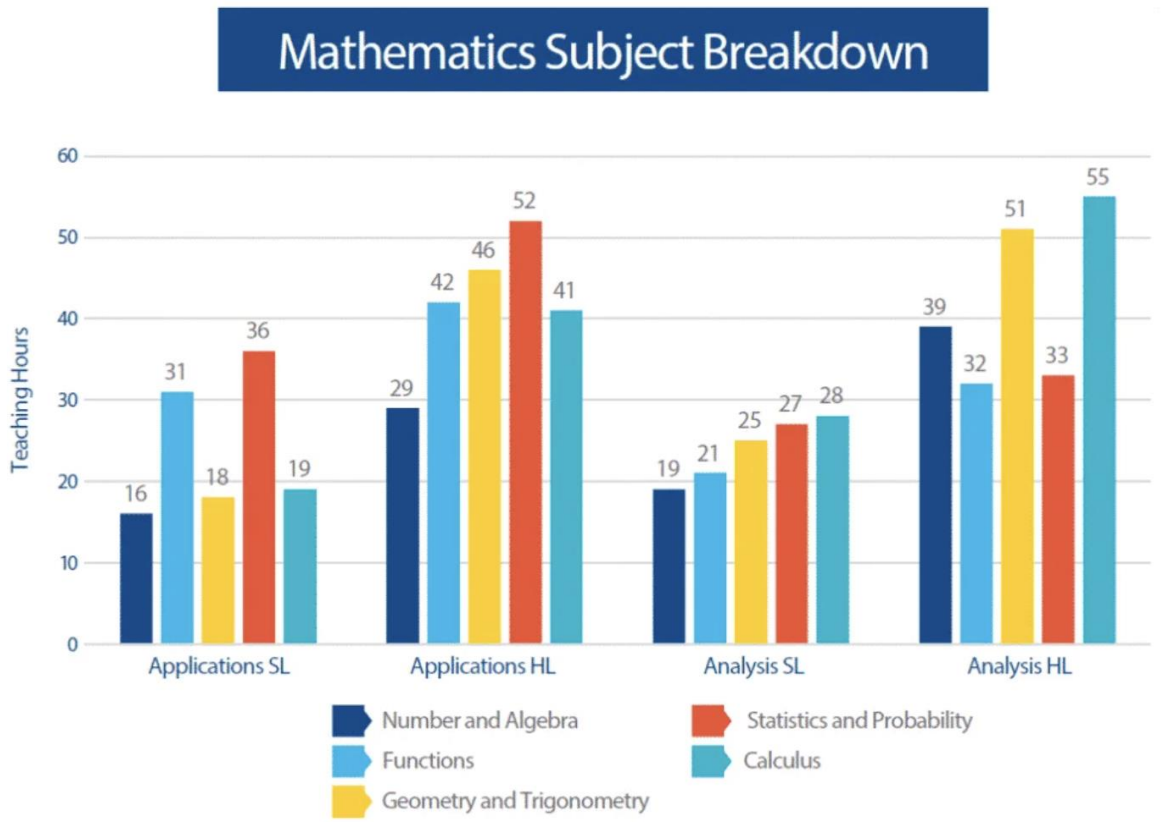
Group 5: Mathematics

AIMS
1. develop a curiosity and enjoyment of mathematics, and appreciate its elegance and power 2. develop an understanding of the concepts, principles and nature of mathematics 3. communicate mathematics clearly, concisely and confidently in a variety of contexts 4. develop logical and creative thinking, and patience and persistence in problem solving to instill confidence in using mathematics 5. employ and refine their powers of abstraction and generalization 6. take action to apply and transfer skills to alternative situations, to other areas of knowledge and to future developments in their local and global communities 7. appreciate how developments in technology and mathematics influence each other 8. appreciate the moral, social and ethical questions arising from the work of mathematicians and the applications of mathematics 9. appreciate the universality of mathematics and its multicultural, international and historical perspectives 10. appreciate the contribution of mathematics to other disciplines, and as a particular "area of knowledge" in the TOK course 11. develop the ability to reflect critically upon their own work and the work of others 12. independently and collaboratively extend their understanding of mathematics.

LIST OF TOPICS
1. Numbers 2. Functions 3. Trigonometry 4. Statistics and Probability 5. Calculus

ASSESSMENT OBJECTIVES
1. **Knowledge and understanding**: recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.

2. **Problem-solving**: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
3. **Communication and interpretation**: transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
4. **Technology**: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
5. **Reasoning**: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
6. **Inquiry approaches**: investigate unfamiliar situations, both abstract and real-world, involving organizing and analyzing information, making conjectures, drawing conclusions and testing their validity.



ASSESSMENT TYPE	COMPONENT	WEIGHT %

Internal Assessment	Mathematical Exploration: A written work that involves investigating an area of mathematics. The emphasis is on mathematical communication (including formulae, diagrams, graphs and so on), with accompanying commentary, good mathematical writing and thoughtful reflection.	20
External Assessment	Paper One Paper Two Paper Three	SL 40 / HL 30 SL 40 / HL 30 HL 20