Prior learning topics

As noted in the previous section on prior learning, it is expected that all students have extensive previous mathematical experiences, but these will vary. It is expected that mathematical studies SL students will be familiar with the following topics before they take the examinations, because questions assume knowledge of them. Teachers must therefore ensure that any topics listed here that are unknown to their students at the start of the course are included at an early stage. They should also take into account the existing mathematical knowledge of their students to design an appropriate course of study for mathematical studies SL.

Students must be familiar with SI (*Système International*) units of length, mass and time, and their derived units.

The reference given in the left-hand column is to the topic in the syllabus content; for example, **1.0** refers to the prior learning for Topic 1—Number and algebra.

Learning how to use the graphic display calculator (GDC) effectively will be an integral part of the course, not a separate topic. Time has been allowed in each topic of the syllabus to do this.

	Content	Further guidance
1.0	Basic use of the four operations of arithmetic, using integers, decimals and fractions, including order of operations.	*Examples*: $2(3+4\times 7)=62$; $2\times 3+4\times 7=34$.
	Prime numbers, factors and multiples.	
	Simple applications of ratio, percentage and proportion.	
	Basic manipulation of simple algebraic expressions, including factorization and expansion.	*Examples*: $ab+ac=a(b+c)$; $(x+1)(x+2)=x^2+3x+2$.
	Rearranging formulae.	*Example*: $A=\frac{1}{2}bh \quad \Rightarrow \quad h=\frac{2A}{b}$.
	Evaluating expressions by substitution.	*Example*: If $x=-3$ then $x^2-2x+3=(-3)^2-2(-3)+3=18$.
	Solving linear equations in one variable.	*Examples*: $3(x+6)-4(x-1)=0$; $\frac{6x}{5}+4=7$.
	Solving systems of linear equations in two variables.	*Example*: $3x+4y=13$, $\frac{1}{3}x-2y=-1$.
	Evaluating exponential expressions with integer values.	*Examples*: $a^b, b\in\mathbb{Z}$; $2^{-4}=\frac{1}{16}$; $(-2)^4=16$.
	Use of inequalities $<, \leq, >, \geq$. Intervals on the real number line.	*Example*: $2<x\leq 5,\ x\in\mathbb{R}$.
	Solving linear inequalities.	*Example:* $2x+5<7-x$.
	Familiarity with commonly accepted world currencies.	*Examples*: Swiss franc (CHF); United States dollar (USD); British pound sterling (GBP); euro (EUR); Japanese yen (JPY); Australian dollar (AUD).

	Content	Further guidance
2.0	The collection of data and its representation in bar charts, pie charts and pictograms.	
5.0	Basic geometric concepts: point, line, plane, angle. Simple two-dimensional shapes and their properties, including perimeters and areas of circles, triangles, quadrilaterals and compound shapes. SI units for length and area. Pythagoras' theorem. Coordinates in two dimensions. Midpoints, distance between points.	