

## Maths

### Curriculum Overview

All children are entitled to a curriculum and to the powerful knowledge which will open doors and maximise their life chances. Below is a high-level overview of the critical knowledge children will learn in this particular subject, at each key stage from Year 7 to Year 11, in order to equip students with the cultural capital they need to succeed in life. The curriculum is planned vertically and horizontally giving thought to the optimum knowledge sequence for building secure schema.

	Knowledge, skills and understanding to be gained at each stage*		
	Cycle 1	Cycle 2	Cycle 3
YEAR 7	Develop algebraic thinking, including using a calculator correctly. Develop an understanding of place value and proportion, including using mental arithmetic strategies.	Apply number strategies to problem solving, work with directed number and develop fractional thinking.	Work with lines and angles, including using protractors and a pair of compasses. Reason with number and probability, using diagrams to organise information.
YEAR 8	Develop proportional reasoning including drawing and constructing scale diagrams and maps using a ruler and pair of compasses. Represent mathematical concepts using graphs, charts and tables.	Develop algebraic techniques and extend work on number including using index notation.	Develop geometric knowledge including angles, area and transformations of shapes. Develop techniques to reason with data.
YEAR 9	Develop techniques to reason with algebra, including using algebra to solve problems. Understand properties of 2D and 3D shapes, calculating surface areas, volumes, and constructing shapes using a protractor and a pair of compasses.	Reason with number including understanding money. Reason with geometry including transformations and using Pythagoras' Theorem.	Solve problems about proportion. Represent algebra using graphs and tables. Develop an understanding of probability.
YEAR 10	Develop an understanding of similarity in shapes, extending to triangles and trigonometry. Develop knowledge of algebraic techniques including forming and solving equations and inequalities.	Develop further geometric understanding to include bearings and vectors. Understand proportion and proportional change in the context of ratio, fractions, percentages, and probability.	Collect, represent and interpret data and develop work on number including non-calculator methods.
YEAR 11	Understand graphs and how to use them to solve problems. Work proficiently with algebraic equations, formulae and functions.	Consolidate multiplicative, geometric and algebraic reasoning. Consolidate mathematical communication.	Revision and exam techniques.

\*A powerful, knowledge-rich curriculum teaches both declarative knowledge (facts; knowing that something is the case; what we think about) and non-declarative or procedural knowledge (skills and processes; knowing how to do something; what we think with). There are no skills without bodies of knowledge to underpin them.

In some subjects, a further distinction can be made between substantive knowledge (the domain specific knowledge accrued e.g. knowledge of the past) and disciplinary knowledge (how the knowledge is accrued e.g. historical reasoning).

Please refer to the DAT Curriculum Principles, published on our website, for further information about how we have designed our all-through curriculum.

