

**INTENT**

The ambitious curriculum in Mathematics will provide students with opportunities to develop skills linked to numerical thinking, as well as an awareness of the application of numerical, geometric and abstract algebraic

### Bilton School Planning for Progress over Time Programme of Study

**The bigger picture:**

We look to develop the following skills in our mathematicians:

FLUENCY • Quick and accurate recall of key facts • Knowledge/selection of appropriate techniques/strategies.

REASONING • Applying logical thinking to a situation to derive the correct problem solving strategy • The bridge between fluency and problem solving.

PROBLEM SOLVING • Finding a way to apply knowledge and skills to answer unfamiliar types of problems.

This skill sets allows our learners to flourish with the skills needed to function in an ever evolving world.

**IMPLEMENTATION**

Year 12	1-P	9-P	10-P	11-P	12-P	1-M	2-M	3-M	4-M	1-S (Yr 2)
<b>Topic</b>	Algebraic Expressions	Trigonometric Ratios	Trigonometric Identities and Equations	Vectors	Differentiation	Modelling in Mechanics	Constant Acceleration	Forces and Motion	Variable Acceleration	Regression, correlation and hypothesis testing
<b>Progress and assessment</b>	End of topic assessments completed using end points as the assessment criteria.									
<b>Homework</b>	Set on Classcharts and will re-enforce the work completed in class.									
<b>Literacy (including reading)</b>	Problem solving questions integrated into lessons.									
<b>Social, Moral, Spiritual and Cultural Development</b>	To model real world situations using mathematics									
<b>British Values and Cultural Capital</b>	Use MWB in classrooms to develop independence, self-esteem and build confidence. Within lessons, respect is encouraged and anything other than this is challenged. Mistakes are welcomed and used as discussion points to address misconceptions. A variety of approaches to solving problems are taught and discussed. Students are encouraged to develop resilience (linked to developing life long learners). Students are given a choice of tasks in lessons (red, amber, green/bronze, silver, gold) often linked to their levels of learning. E-safety is promoted through blended learning opportunities (MathsWatch)									
<b>End Points</b>	Index Laws	The Cosine Rule	Angles in all four quadrants	Vectors	Gradients of curves	Constructing a model	Displacement-time graphs	Force diagrams	Functions if time	Exponential models
	Expanding brackets	The Sine Rule	Exact values of trigonometric ratios	Representing vectors	Finding the derivative	Modelling assumptions	Velocity-time graphs	Forces as vectors	Using differentiation	Measuring correlation
	Factorising	Area of triangles	Trigonometric identities	Magnitude and direction	Differentiating $x^n$	Quantities and units	Constant acceleration formulae 1	Forces and acceleration	Maxima and minima problems	Hypothesis testing for zero correlation
	Negative and fractional indices	Solving triangle problems	Simple trigonometric ratios	Position vectors	Differentiating quadratics	Working with vectors	Constant acceleration formulae 2	Motion in 2 dimensions	Using integration	
	Surds	Graphs of sine, cosine and tangent	Harder trigonometric equations	Solving geometric problems	Differentiating terms with two or more terms		Vertical motion under gravity	Connected particles	Constant acceleration formulae	
	Rationalising denominators	Transforming trigonometric graphs	Equations and identities	Modelling with vectors	Gradients, tangents and normal			Pulleys		
					Increasing and decreasing functions					
					Second order derivatives					
					Stationary points					
					Sketching gradient functions					
					Modelling with differentiation					