

**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	2-P	3-P	4-P	5-P	6-P	7-P	8-P	13-P	14-P	1-P (Yr 2)
<b>Topic</b>	Quadratics	Equations and Inequalities	Graphs and Transformations	Straight Line Graphs	Circles	Algebraic Methods	Binomial Expansion	Integration	Exponentials and logarithms	Algebraic Methods
<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>	Solving quadratic equations	Linear simultaneous equations	Cubic graphs	$y=mx+c$	Mid-points and perpendicular bisectors	Algebraic fractions	Pascal's triangle	Integrating $x^n$	Exponential functions	Proof by contradiction
	Completing the square	Quadratic simultaneous equations	Quartic graphs	Equations of straight lines	Equation of a circle	Dividing polynomials	Factorial notation	Indefinite integrals	$y=e^x$	Algebraic fractions
	Functions	Simultaneous equations on a graph	Reciprocal graphs	Parallel and perpendicular lines	Intersections of straight lines and circles	The factor theorem	The binomial expansion	Finding functions	Exponential modelling	Partial fractions
	Quadratic graphs	Linear inequalities	Points of intersection	Length and area	Use tangent and chord properties	Mathematical proof	Solving binomial problems	Definite integrals	Logarithms	Repeated factors
	The discriminant	Quadratic inequalities	Translating graphs	Modelling with straight lines	Circles and triangles	Methods of proof	Binomial estimation	Areas under curves	Laws of logarithms	Algebraic division
	Modelling with quadratics	Inequalities on a graph	Stretching graphs					Areas under the x-axis	Solving equations using logarithms	
		Regions	Transforming functions					Area between curves and lines	Working with natural logarithms	
									Logarithms and non-linear data	