Implementation: Curriculum Narrative

Subject: Maths	Year: 8	Author: J Crockett

Key Knowledge *Pupils will know*	Key Skills *Pupils will be able to*
Key Threshold Concepts: *Key Threshold Concepts* • Know the first 15 square numbers and first 5 cube numbers • Know the symbols =, ≠, <, >, ≤, ≥ • Know the order of operations (BIDMAS) including brackets • Know basic algebraic notation • Know that area of a trapezium = ((a + b) ÷ 2) × h • Know the names and properties of special triangles and quadrilaterals • Know how to write a number as a product of its prime factors • Know how to round to significant figures and decimal places • Know that circumference = 2πr = πd • Know that area of a circle = πr^2 • Know that probability is measured on a 0-1 scale • Know that the sum of all probabilities for a single event is 1 • Know the methods of dealing with ratio as parts of an overall problem • Know the difference between the ways of displaying statistical data	Subject Skills: • Use positive integer powers and associated real roots • Apply the four operations with decimal numbers • Write a quantity as a fraction or percentage of another • Use multiplicative reasoning to interpret percentage change • Add, subtract, multiply and divide with fractions and mixed numbers • Simplify and manipulate expressions by collecting like terms • Simplify and manipulate expressions by multiplying a single term over a bracket • Substitute numbers into formulae • Solve linear equations in one unknown • Apply the four operations with negative numbers • Apply the multiplication, division and power laws of indices • Factorise an expression by taking out common factors • Change the subject of a formula when two steps are required • Solve linear equations with unknowns on both sides • To be able to manipulate ratio problems in context To be able to recognise pie charts, bar charts, line charts and display data in this format.

Subject Specific Knowledge and Sequencing:

Subject specific knowledge and sequencing
The KLA mathematics timeline and subject sequence of learning contains a number maths topic headings. Key concepts and skills are embedded within each of these topics
The skills and knowledge have been identified and highlighted where knowledge spirals within the subject.

An example of one topic and the spiral nature is below…

Algebra Topics

Year 7	Term 1	Sequences
Year 7	Term 1	Algebraic Notation
Year 7	Term 1	Equality and Equivalence
Year 8	Term 2	Brackets, Equations and Inequality
Year 8	Term 2	Sequences
Year 9	Term 1	Straight Line Graphs
Year 9	Term 1	Forming and Solving Equations
Year 9	Term 1	Testing Conjectures
Year 10 (Foundation)	Term 2	Algebra Quadratics, Rearranging Formulae and Identities
Year 10 (Foundation)	Term 2	Inequalities
Year 10 (Foundation)	Term 2	Simultaneous Equations
Year 10 (Foundation)	Term 2	Algebra and Graphs
Year 10 (Foundation)	Term 3	Solving Quadratic Equations
Year 10 (Higher)	Term 1	Algebra Quadratic, Rearranging Formula and Identities
Year 10 (Higher)	Term 2	Further Equations and Graphs
Year 10 (Higher)	Term 2	Simultaneous Equations
Year 10 (Higher)	Term 3	Inequalities
Year 11 (Foundation)	Term 1	Algebra Quadratics, Rearranging Formulae and Identities
Year 11 (Foundation)	Term 1	Algebra and Graphs
Year 11 (Foundation)	Term 1	Solving Quadratic Equations
Year 11 (Foundation)	Term 1	Quadratic Graphs
Year 11 (Higher)	Term 1	Further Equations and Graphs
Year 11 (Higher)	Term 1	Simultaneous Equations
Year 11 (Higher)	Term 1	Algebraic Fractions

Prerequisites and Spiral Teaching:

- Key concepts and skills linked to and expanded from the Year 7 Overview.
- Leads into the Year 9 Overview, with many concepts revisited and investigated to a further degree.
- The designed Timeline of topics follows a similar format to those covered in Year 7, topics are adapted and extended from the following year. The mathematics involved is revisited in each topic spiralling from Year 7 and also within the same year.
- For example in the first term of Year 8 we explore numbers and number systems and counting and comparing, this then leads into calculating and then spirals later in the course to calculating with fractions, decimals and percentages.
- We move through number, algebra, geometry, probability, ratio and statistics throughout the course. The sequence is repeated throughout the year and throughout the student's time in KLA.
- Lesson starters are used to recap prior knowledge throughout the course from lesson to lesson.
- Teachers use lesson starter to constantly revisit previous knowledge throughout the course to enable students to become more familiar at recalling essential techniques and threshold concepts.
- Topic tests are used by teachers throughout the course to assess a student's ability at application and recall of key threshold concepts and techniques.
- A weekly 'torture time' is used by teachers to address the well documented issue surrounding the ability of students to quickly recall and use timetables information.

Cross-Curricular Knowledge Links:

Cross-curricular knowledge

- Area calculations in technology
- Calorie calculation in PE/Food tech
- % increase and decrease in business
- Time calculations in history
- Quantity and units in Science

Reading Lists / Sources / Reading around the subject recommendations:

Reading lists / sources / reading around the subject recommendations

The KLA Maths department have a number of suggested further activities as a possible source of exploring around the topics covered in our Year 7 maths curriculum. We actively encourage the use of Sparx maths, and the PiXL App as methods of further a student's mathematical base and further problem solving. These NRICH puzzles or investigations have been

selected as a possible way to further discussion around the topics taught throughout year 8. The hyperlinks are below:

Exploring primes activities
Eratosthenes' sieve
NRICH: Factors and multiples
NRICH: Powers and roots
NRICH: Greater than or less than?
NRICH: Cinema Problem
NRICH: Funny factorisation
NRICH: Skeleton
NRICH: Long multiplication
NRICH: Notes on a triangle
NRICH: Property chart
NRICH: Quadrilaterals game
NRICH: Your number is ...
NRICH: Crossed ends
NRICH: Number pyramids and More number pyramids
NRICH: Rod fractions
NRICH: Toad in the hole
NRICH: Mixing lemonade
NRICH: Food chains
NRICH: Tray bake
NRICH: Shifting times tables
NRICH: Odds and evens and more evens
NRICH: Temperature
NRICH: Triangle problem
NRICH: Square problem
NRICH: Two triangle problem
NRICH: Would you rather?
NRICH: Keep it simple
NRICH: Egyptian fractions
NRICH: The greedy algorithm
NRICH: Fractions jigsaw
NRICH: Countdpwn fractions
NRICH: Inspector Remorse
NRICH: Quince, quonce, quance
NRICH: Weighing the baby
NRICH: Can They Be Equal?
NRICH: Transformation Game
NRICH: Picturing the World
NRICH: Charting Success
NRICH: M, M and M
NRICH: The Wisdom of the Crowd

Autumn	**Proportional Reasoning**				**Representations**			
	Ratio and scale	Multiplicative change	Multiplying and dividing fractions		Working in the Cartesian plane	Representing data	Tables & Probability	
Spring	**Algebraic techniques**				**Developing Number**			
	Brackets, equations and inequalities		Sequences	Indices	Fractions and percentages	Standard index form	Number sense	
Summer	**Developing Geometry**				**Reasoning with Data**			
	Angles in parallel lines and polygons	Area of trapezia and circles	Line symmetry and reflection		The data handling cycle		Measures of location	