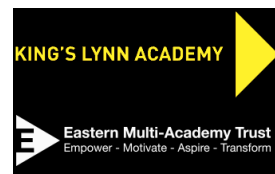


# Implementation: Curriculum Narrative



**Subject: Maths**

**Year: 7**

**Author: J Crockett**

## Key Knowledge

*Pupils will know*

Key Threshold Concepts:

### Key Threshold Concepts

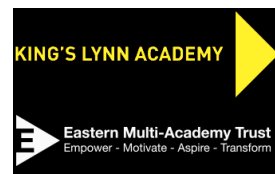
- Know the first 15 square numbers and first 5 cube numbers
- Times tables (up to 12x12)
- Number bonds (-100 up to 100)
- Know percentage and decimal equivalents for fractions with a denominator of 2, 3, 4, 5, 8 and 10
- Know that the area of a triangle =  $\text{base} \times \text{height} \div 2$
- Know that the diameter of a circle is twice the radius
- Know the conventions for a 2D coordinate grid (four quadrants)
- Know that mean =  $\text{sum of data} \div \text{number of pieces of data}$
- Know the first 15 square numbers and first 5 cube numbers
- Know the symbols =,  $\neq$ ,  $<$ ,  $>$ ,  $\leq$ ,  $\geq$
- Know the order of operations (BIDMAS) including brackets
- Know basic algebraic notation
- Know that area of a trapezium =  $((a + b) \div 2) \times h$
- Know the names and properties of special triangles and quadrilaterals

## Key Skills

*Pupils will be able to*

Subject Skills:

- Use positive integer powers and associated real roots
- Multiply and divide numbers with up to three decimal places by 10, 100, and 1000
- Use division to divide numbers up to four digits by a one-digit number
- Generate and describe linear number sequences
- Use simple ratio to compare quantities
- Write a fraction in its lowest terms by cancelling common factors
- Add and subtract fractions and mixed numbers with different denominators
- Multiply and divide pairs of fractions in simple cases
- Find percentages of quantities
- Solve missing angle problems involving triangles, quadrilaterals, angles at a point and angles on a straight line
- Calculate the volume of cubes and cuboids ( $b \times h \times d$ )
- 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



## 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 8 Overview, with many concepts revisited and investigated to a further degree.
- The mathematics involved is revisited in each topic spiralling from topics covered in Year 6 and also within the same year.
- For example in the first term of Year 7 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 timestable information.

## Cross-Curricular Knowledge Links:

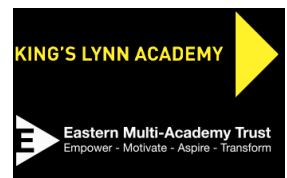
*Cross-curricular knowledge*

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

## 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 Hegarty 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 7. 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: Countdown 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](#)