

Implementation: Curriculum Narrative



Subject: Maths

Year: 7

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Key Knowledge

Pupils will know

Key Threshold Concepts:

Key Threshold Concepts

- 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 the conventions for a 2D coordinate grid (four quadrants)
- 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 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 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
- 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

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



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

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 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 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: 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](#)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Algebraic Thinking						Place Value and Proportion					
	Sequences		Understand and use algebraic notation		Equality and equivalence		Place value and ordering integers and decimals			Fraction, decimal and percentage equivalence		
Spring	Applications of Number						Directed Number			Fractional Thinking		
	Solving problems with addition & subtraction		Solving problems with multiplication and division		Fractions & percentages of amounts		Operations and equations with directed number			Addition and subtraction of fractions		
Summer	Lines and Angles						Reasoning with Number					
	Constructing, measuring and using		Developing geometric reasoning				Developing number		Sets and probability		Prime numbers and	