Maths Curriculum Map	
Endeavour Federation Curriculum vision	At the Endeavour Federation, we follow an adapted National Curriculum, with wellbeing central to everything we do. We offer a broad and balanced curriculum, with all pupils having the opportunity to study Maths and English up to GCSE level with a range of BTEC/GCSE options in other subjects. The study of these subjects, allows pupils to apply theoretical knowledge to the practical elements of the curriculum. We believe in all our pupils and have high expectations for their futures. A comprehensive package of both pastoral and learning support, delivered by highly trained staff, allows them to navigate their learning journeys and improve their life outcomes, becoming the best versions of themselves.

Maths curriculum vision	Our curriculum aims to develop our pupils' mathematical understanding by breaking the National Curriculum objectives into smaller steps which develop skills and knowledge to meet the National Curriculum requirements. This enables all pupils to make good progress from their starting points.
	    Understanding is at the core of our curriculum. Pupils' often start with gaps in their learning and it is important that their needs are understood but expectations remain high. A Concrete, Pictorial, Abstract approach is used to provide a physical/visual representation of mathematical concepts and problems. This helps to develop their conceptual understanding, teaches different strategies to tackle a problem and provides scaffolds to access concepts which a pupil may feel is beyond their abilities. This in turn develops a pupils confidence and motivation for learning.
	    It is important that pupils know more than a mathematical procedure, because of this each lesson follows a Fluency, Reasoning, Problem-solving model, which allows for skills practice and challenge in every lesson for every pupil.
	    Our curriculum follows a spiral model where taught content is revisited within other units, this keeps skills current and develops a pupil's ability to recall content.
	    Mathematical vocabulary development is essential to provide the greatest opportunities for success. We focus on this through the teaching of key words and the use of ELKLAN strategies to develop understanding of what these words mean.
	    It is important that our pupils see the value and purpose of maths in the real world, for this reason we highlight the links to potential careers through talks and lessons, cultural capital and essential life skills (see cultural capital map).

Careers (CEIAG)	Cultural Capital	Enrichment Opportunities	Preparing for life in modern Britain	Literacy and Communication

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	Autumn		Spring		Summer	
Year 5	Place Value

Addition and Subtraction | Multiples, factors, powers of 10

Fractional understanding | Multiplication & division

Adding & subtracting fractions | Decimals and Percentages

Perimeter and Area | Multiplication of fractions

Decimals | Properties of shape

Position and direction |
| Year 6 | Place Value

Addition and Subtraction | Multiplication and Division

Comparing and ordering fractions | Ratio

Adding and Subtracting fractions | Decimals

Percentages

Perimeter, area & volume | Multiplying and dividing fractions

Statistics | Properties of Shape

Position and direction |
| Year 7 | Place Value

Addition and Subtraction | Multiplication and Division

Primes and proofs. | Fractions, Decimal & Percentage Equivalence

Sequences | Understand & use algebraic notation

Equality & Equivalence | Constructing, measuring & using notation

Geometric Reasoning | Geometric Reasoning (cont.)

Sets and Probability |
| Year 8 | Developing Number Sense

Directed Number | Fractions and Percentages of amounts

Add and subtract fractions | Ratio and Scale

Multiplicative Change | Multiplying and dividing fractions

Working in the Cartesian Plane | Tables and probability

Brackets, equations and inequality | Sequence

Indices

Angles in parallel lines & polygons |
| Year 9 | Line symmetry and reflection

Fractions and Percentages | Three-dimensional shape

Constructions and congruency | Number

Maths & Money

Form & solve equations | Testing Conjecture

Deduction, Rotation & translation | Enlargement and Similarity

Solving ratio and proportion problems | Probability

The data handling cycle |
| Year 10 | Types of numbers and sequences

Indices and roots | Manipulating expressions

Collecting, representing & interpreting data | Ratios and Fractions

Percentages and interest | Representing solutions & equations of inequalities

Angles and Bearing | Straight line graphs

Rates | Simultaneous equations

Probability |
| Year 11 | Standard Index form

Working with circles | Congruence, similarity and enlargement

Vectors | Expanding and factorising

Change of subject

Functions | Trigonometry

Pythagoras theorem | Revision (Individual gap filling/ Past Papers/Quizzes etc) | EXAMS |

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Year 5		
Term 1	**Term 2**	**Term 3**

Core Knowledge/ Skills and Concepts

Place Value

- Roman numerals to 1,000
- Understand number to 1,000,000
- Read and write numbers to 1,000,000
- Powers of 10
- 10/100/1,000/10,000/100,000 more or less
- Partition numbers to 1,000,000
- Number line to 1,000,000
- Compare and order numbers to 1,000,000
- Round to the nearest 10, 100 or 1,000
- Round within 100,000
- Round within 1,000,000

Addition and Subtraction

- Mental strategies
- Add whole numbers with more than four digits
- Subtract whole numbers with more than four digits
- Round to check answers
- Inverse operations (add and subtract)
- Multi-step addition and subtraction problems

Multiplication and division – Formal methods

- Multiply 2-digits by 1-digit
- Multiply 3-digits by 1-digit
- Multiply 4-digits by 1-digit
- Multiply 2-digits (area model)
- Multiply 2-digits by 2-digits
- Multiply 3-digits by 2-digits
- Multiply 4-digits by 2-digits (basic practice)
- Multiply 4-digits by 2-digits
- Divide 2-digits by 1-digit (1)
- Divide 2-digits by 1-digit (2)
- Divide 3-digits by 1-digit
- Divide 4-digits by 1-digit
- Divide with remainders

Add and subtract fractions

- Add and subtract fractions same denominator
- Add fractions within 1
- Add fractions with total greater than 1
- Add to a mixed number
- Add two mixed numbers
- Subtract fractions

Multiplying fractions

- Multiply unit fractions by an integer
- Multiply non-unit fractions by an integer
- Multiply mixed numbers by integers
- Calculate fractions of a quantity
- Fraction of an amount
- Using fractions as operators
- Fraction problem solving

Decimals

- Adding decimals within 1
- Subtracting decimals within 1
- Complements to 1
- Adding decimals - crossing the whole
- Adding decimals (same number of d. p)
- Subtracting decimals (same number of d.p)
- Adding and subtracting decimals with the same number of d.p problem solving
- Adding decimals different number of d.p
- Subtracting decimals different number of dp
- Adding and subtracting decimals with a different number of d.p problem solving
- Adding & subtracting wholes and decimals

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- Compare calculations
- Find missing numbers

Multiplication and Division

- Multiples
- Common multiples
- Factors
- Common factors
- Prime numbers
- Square numbers
- Cube numbers
- Multiply by 10, 100 and 1,000
- Divide by 10, 100 and 1,000
- Multiples of 10, 100 and 1,000

Fractional Understanding

- Find fractions equivalent to a unit fraction
- Find fractions equivalent to a non-unit fraction
- Recognise equivalent fractions
- Convert improper fractions to mixed numbers
- Convert mixed numbers to improper fractions
- Compare fractions less than 1
- Order fractions less than 1
- Compare and order fractions > than 1

- Subtract from a mixed number
- Subtract from a mixed number - breaking the whole
- Subtract two mixed numbers

Decimals and Percentages

- Decimals up to 2 d.p.
- Decimals as fractions (1)
- Decimals as fractions (2)
- Understand thousandths
- Thousandths as decimals
- Rounding decimals
- Order and compare decimals
- Understand percentages
- Percentages as fractions and decimals
- Equivalent F.D.P

Perimeter and area

- Measure perimeter
- Perimeter on a grid
- Perimeter of rectangles
- Perimeter of rectilinear shapes
- Calculate perimeter
- Counting squares
- Area of rectangles
- Area of compound shapes
- Area of irregular shapes

- Decimal sequences
- Multiplying decimals by 10, 100 and 1,000
- Dividing decimals by 10, 100 and 1,000

Properties of shape

- Identify angles
- Compare and order angles
- Measuring angles in degrees
- Measuring with a protractor
- Drawing lines and angles accurately
- Drawing lines and angles accurately
- Calculating angles on a straight line
- Calculating angles around a point
- Triangles
- Quadrilaterals
- Calculating lengths and angles in shapes
- Regular and irregular polygons
- Reasoning about 3-D shapes

Position and direction

- Describe position
- Draw on a grid
- Position in the first quadrant
- Translation and translation with coordinates
- Line of symmetry
- Complete a symmetric figure
- Reflection and reflection with coordinates

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Year 6		
Term 1	**Term 2**	**Term 3**

Core Knowledge/ Skills and Concepts

Term 1	**Term 2**	**Term 3**
Place Value • Numbers to 1,000,000 • Numbers to 10,000,000 • Read and write numbers to 10,000,000 • Powers of 10 • Number line to 10,000,000 • Compare and order any integers • Round any integer • Negative numbers **Four Operations** • Add and subtract integers • Common factors • Common multiples • Rules of divisibility • Primes to 100 • Square and cube numbers • Multiply up to a 4-digit number by a 2-digit number • Solve problems with multiplication • Short division • Division using factors • Introduction to long division	**Ratio** • Use ratio language • Ratio and fractions • Introducing the ratio symbol • Calculating ratio • Using scale factors • Calculating scale factors • Ratio and proportion problems • Ratio and proportion problems (2) **Adding and Subtracting Fractions** • Add and subtract simple fractions • Add and subtract any two fractions • Add mixed numbers • Subtract mixed numbers • Multi-step problems **Decimals** • Decimals up to 2 d.p. • Understand thousandths • Three decimal places • Multiply by 10, 100 and 1,000 • Divide by 10, 100 and 1,000	**Multiplying and Dividing Fractions** • Multiply fractions by integers • Multiply fractions by fractions • Divide a fraction by an integer • Divide any fraction by an integer • Mixed questions with fractions • Fraction of an amount • Fraction of an amount - find the whole **Statistics** • Read and interpret line graphs • Draw line graphs • Use line graphs to solve problems • Circles • Read and interpret pie charts • Pie charts with percentages • Draw pie charts • The mean **Properties of Shape** • Measure with a protractor • Draw lines and angles accurately

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- Long division with remainders
- Solve problems with division
- Solve multi-step problems
- Order of operations
- Mental calculations and estimation
- Reason from known facts

Compare and order fractions
- Equivalent fractions and simplifying
- Equivalent fractions on a number line
- Compare and order (denominator)
- Compare and order (numerator)

- Multiply decimals by integers
- Divide decimals by integers
- Division to solve problems
- Decimals as fractions
- Fractions to decimals (1)
- Fractions to decimals (2)

Percentages
- Understand percentages
- Fractions to percentages
- Equivalent FDP
- Order FDP
- Percentage of an amount (1)
- Percentage of an amount (2)
- Percentages - missing values

Perimeter, Area and Volume
- Shapes - same area
- Area and perimeter
- Area of a triangle (1)
- Area of a triangle (2)
- Area of a triangle (3)
- Area of a parallelogram
- What is volume?
- Volume - counting cubes
- Volume of a cuboid

- Introduce angles
- Angles on a straight line
- Angles around a point
- Calculate angles
- Vertically opposite angles
- Angles in a triangle
- Angles in a triangle - special cases
- Angles in a triangle - missing angles
- Angles in special quadrilaterals
- Angles in regular polygons
- Draw shapes accurately
- Draw nets of 3-D shapes

Position and direction
- The first quadrant
- Four quadrants
- Translations
- Reflections

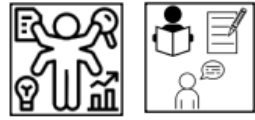| Year 7		
Term 1	**Term 2**	**Term 3**

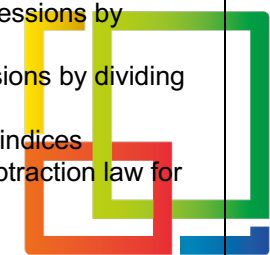|	**Term 1**	**Term 2**	**Term 3**
Core Knowledge/ Skills and Concepts	**Place Value** • Recognise the PV of any number in an integer up to 1 billion • Understand and write integers up to 1 billion in words and figures • Integers and decimals on a number line • Round integers to the nearest power of 10 • Compare 2 numbers using = ≠ < > ≤ ≥ • Order a list of integers • Find range and median of a set of numbers • Understand place value for decimals • Compare and order numbers up to 1 billion **Addition & subtraction** • Properties of addition and subtraction • Mental methods - addition and subtraction • Use formal method for addition (including of decimals) • Use formal method for subtraction (including of decimals) • Select the most appropriate method: mental, written or calculator • Solve problems in context of perimeter • Solve financial maths problems **Multiplication & Division** • Properties of multiplication and division • Understand and use factors • Understand and use multiples • Multiply and divide by powers of 10 • Covert metric units • Use formal methods to multiply (including decimals) • Use formal methods to divide (including decimals)	**FDP Equivalences** • Represent tenths and hundreds (diagrams and number lines). • See relationship between fractions and decimals • Convert between fractions and decimals – tenths and hundredths • Understand the meaning of percentage using a hundred square • Convert between simple fractions, decimals and percentages • Use and interpret pie charts **Sequences** • Describe and continue sequences • Predict and continue sequences • Sequences in a table and graphically • Linear and non-linear sequences • Continue linear sequences • Continue non-linear sequences • Explain the term to term rule **Understand and use algebraic notation** • Given a numerical input, find the output of a single function machine • Use inverse operations to find the input given the output • Use diagrams and letters to generalise number operations • Use diagrams and letters with single function machines • Find the function machine given a simple expression • Substitute values into a single operation expression	**Construction & measuring** • Understand and use letter and labelling conventions including those for geometric figures • Draw and measure line segments including geometric figures • Understand angles as measure of turn • Classify angles • Draw and measure angles up to 180°e • Draw and measure angles between 180° and 360° • Identify perpendicular and parallel lines • Recognise types of angles • Recognise types of quadrilaterals **Geometric Reasoning** • Understand and use the sum of angles at a point • Understand and use the sum of angles on a straight line • Understand and use the equality of vertically opposite angles • Know and apply the sum of all angles in a triangle • Know and apply the sum of all angles in a quadrilateral • Solve angle problems using properties of triangles and quadrilaterals **Sets and probability** • Generate sample spaces for single events • Calculate the probability of a single event • Understand and use the probability scale • Know that the sum of probabilities of all possible outcomes is 1

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Prime Numbers and Proof
- Find and use multiples
- Identify factors of numbers and expressions
- Recognise and identify prime numbers
- Recognise square and triangular numbers
- Find common factors of a set of numbers including HCF
- Find common multiples of a set of numbers including LCM
- Write a number as a product of its prime factors
- Make and test conjectures
- Use counterexamples to disprove a conjecture

- Find numerical inputs and outputs for a series of two function machines
- Use diagrams and letters with a series of two function machines
- Find the function machine given a two-step expression
- Substitute values into two-step expressions
- Generate sequences given an algebraic rule
- Represent one- and two-step functions graphically

Equality and equivalence
- Understand the meaning of equality
- Understand and use fact families, numerically and algebraically
- Solve one-step linear equations involving +/- using inverse operations
- Solve one-step linear equations involving x/÷ using inverse operation
- Understand the meaning of like and unlike terms
- Understand the meaning of equivalence
- Simplify algebraic expressions by collecting like terms, using the ≡ symbol

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Year 8		
Term 1	**Term 2**	**Term 3**

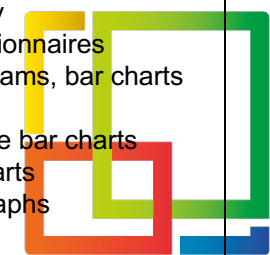|	**Term 1**	**Term 2**	**Term 3**
Core Knowledge/ Skills and Concepts	**Developing Number Sense** • Know and use mental strategies for addition and subtraction • Know and use mental strategies for multiplication and division • Know and use mental strategies for decimals • Know and use mental strategies for fractions • Use factors to simplify calculations • Use known number facts to derive other facts • Use known algebraic facts to derive other facts • Know when to use a mental method, written method or calculator. **Operations and equations with directed Number** • Understand and use representations of directed numbers • Order directed numbers using lines and appropriate symbols • Perform calculations that cross zero • Add directed numbers • Subtract directed numbers • Multiply and divide directed numbers • Use a calculator for directed numbers • Evaluate algebraic expression with directed number • Introduce 2 step equations	**Ratio and Scale** • Understand the meaning and representation of ratio • Understand and use ratio notation • Solve problems involving ration of the form 1:n or n:1 • Solve proportional problems involving the ratio m:n • Divide a value into a given ratio • Express ratio in their simplest integer form • Compare ratio and related fractions • Understand π as the ratio between diameter and circumference **Multiplicative change** • Solve problems involving direct proportion • Explore conversion graphs • Convert between currencies • Explore relationship between similar shapes • Understand scale factors as multiplicative representations • Draw and interpret scale diagrams • Interpret maps using scale factors and ratios **Multiplying and dividing fractions** • Represent multiplication of fractions • Multiply a fraction by an integer • Find the product of a pair of unit fractions • Find the product of a pair of any fractions • Divide an integer by a fraction • Divide a fraction by a unit fraction • Understand and use the reciprocal • Divide any pairs of fractions	**Tables and probability** • Construct sample spaces for 1 or more events • Find probabilities from sample spaces • Find probabilities from two-way tables • Find probabilities from Venn diagrams **Brackets, Equations and Inequalities** • Form algebraic expressions • Use directed numbers with algebra • Multiply out of a single bracket • Factorise into a single bracket • Expand multiple single brackets and simplify • Form and solve equations with brackets • Understand and solve simple inequalities **Sequences** • Generate sequences given a rule in words • Generate sequences given a simple algebraic rule • Generate sequences given a complex algebraic rule **Indices** • Adding and subtracting expressions with indices • Simplifying algebraic expressions by multiple indices • Simplify algebraic expressions by dividing indices • Using the addition law for indices • Using the addition and subtraction law for indices

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Fractions and percentages of amounts	**Working in the Cartesian Plane**	**Angles in parallel lines and polygons**
- Find a fraction of a given amount - Use a given fraction to find the whole and/or other fractions - Find a percentage of a given amount using mental methods - Find a percentage of a given amount using a calculator **Addition and Subtraction of fractions** - Understand representations of fractions - Convert between mixed numbers and improper fractions - Add and subtract fractions - Add and subtract fractions from integers expressing the answer as a single fraction - Understand and use equivalent fractions - Add and subtract fractions where denominators share a common multiple - Add and subtract fractions with any denominator - Add and subtract improper fractions and mixed numbers	- Work with coordinates in all four quadrants - Identify and draw lines that are parallel to the axes - Recognise and use the line $y = x$ - Recognise and use the lines of the form $y = kx$ - Link $y = kx$ to direct proportion problems - Recognise and use lines of the form $y = x+a$ - Explore graphs with negative gradients ($y = -kx$, $y = a - x$, $x + y = a$) - Link graphs to linear sequences - Plot graphs of the form $y = mx + c$	- Understand and use basic angles rules and notation - Investigate angles between parallel lines and the transversal - Identify and calculate with co-interior, alternate and corresponding angles - Solve complex problems with parallel lines - Construction triangles and special quadrilaterals - Investigate the properties of special quadrilaterals - Identify and calculate with sides and angles in special quadrilaterals - Understand and use the sum of exterior angles and polygons - Calculate and use the sum of the interior angles in any polygon - Calculate missing interior angles in regular polygons

Year 9		
Term 1	**Term 2**	**Term 3**

Core Knowledge/ Skills and Concepts

Line symmetry and reflection
- Recognise line of symmetry
- Reflect a shape in a horizontal or vertical line (shapes touching the line and not touching the line)
- Reflect a shape in a diagonal line (shapes touching the line and not touching the line

Fractions and percentages
- Convert fluently between key fractions, decimals and percentages
- Calculate key fractions, decimals and percentages of an amount without calculators
- Calculate key fractions, decimals and percentages of an amount with calculators
- Convert between decimals and percentages greater than 100%
- Percentage decrease with a multiplier
- Calculate percentage increase and decrease using a multiplier
- Express one number as a fraction or a percentage of another without a calculator
- Express one number as a fraction or a percentage of another with a calculator
- Work with percentage change
- Choose appropriate methods to solve percentage problems

Three dimensional Shapes
- Know names of 2-D and 3-D shapes
- Recognise prisms
- Accurate nets of cuboids and 3-D shapes
- Sketch and recognise nets of cuboids and other 3-D shapes

Numbers
- Integers, real and rational numbers
- Work with directed number
- Solve problems with integers
- Solve problems with decimals
- Highest Common factor and Lowest Common Multiple
- Adding and subtracting fractions
- Multiplying and dividing fractions
- Solve problems with fractions
- Numbers in standard form

Maths and Money
- Solve problems with bills and bank statements
- Calculate simple interest
- Calculate compound interest
- Solve problems with VAT
- Calculate wages and taxes
- Solve problems with exchange rates
- Solve unit pricing problems

Forming and Solving Equations
- Solve one and two-step equations and inequalities
- Solve one and two-step equations and inequalities with brackets
- Inequalities with negative numbers
- Solve equations with unknowns on both sides
- Equations and inequalities in other mathematical concepts
- Formulae and Equations
- Rearrange formulae (1 step)
- Rearrange formulae (2 step)

Enlargement and Similarity
- Recognise enlargement and similarity
- Enlarge a shape by a positive integer scale factor
- Enlarge a shape by a positive integer scale factor from a point
- Enlarge a shape by a positive fractional scale factor
- Work out missing sides and angles in a pair of given similar shapes

Solve ratio and Proportion problems
- Solve problems with direct proportion
- Direct proportion and conversion graphs
- Solve problems with inverse proportion
- Solve ratio problems given the whole or part
- Solve 'best buy' problems

Probability
- Single event probability
- Relative frequency
- Expected outcomes
- Independent events
- Use diagrams to work out probabilities

The data handling cycle
- Set up a statistical enquiry
- Design and criticise questionnaires
- Draw and interpret pictograms, bar charts and vertical line charts
- Draw and interpret multiple bar charts
- Draw and interpret pie charts
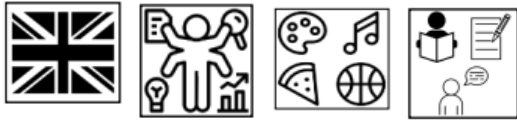- Draw and interpret line graphs

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- Plans and elevations
- Find area of 2-D shapes
- Surface area of cube and cuboids
- Surface area of triangular prisms
- Surface area of cylinder
- Volume of cubes and cuboids
- Volume of other 3-D shapes

Constructions and congruency
- Draw and measure angles
- Construct and interpret scale drawings
- Locus of distance from a point
- Locus of distance from a straight line/shape
- Locus equidistant from 2 points
- Construct a perpendicular bisector
- Construct a perpendicular from a point
- Construct a perpendicular to a point
- Locus of distance from two lines
- Construct an angle bisector
- Construct triangle from given information
- Identify congruent figures
- Explore congruent triangles
- Identify congruent triangles

Testing conjecture
- Factors, multiples and primes
- True or false
- Always, sometimes, Never
- Show that
- Conjecture about number
- Expand a pair of binominals
- Conjectures with algebra

Deduction
- Angles in parallel lines
- Solve angle problems (using chains of reasoning)
- Angle problems with algebra
- Conjecture with angles
- Conjecture with shapes

Rotation and Translation
- Identify the order of rotational symmetry of a shape
- Compare and contrast rotational symmetry with lines of symmetry
- Rotate a shape about a point on a shape
- Rotate a shape about a point not on a shape
- Translate points and shapes by a given vector
- Compare rotation and reflection of shapes

- Choose the most appropriate diagram for given set of data
- Represent and interpret grouped quantitative data
- Find and interpret the range
- Compare distributions using charts
- Identify misleading graphs

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Year 10		
Term 1	**Term 2**	**Term 3**

Core Knowledge/ Skills and Concepts

Term 1

Types of Number and sequence
- Understand the difference between factors and multiples
- Understand primes and express a number as a product of its prime factors
- Find the HCF and LCM of a set of numbers
- Describe and continue arithmetic and geometric sequences
- Explore other sequences
- Find the rule for the nth term of a linear sequence

Indices and Roots
- Square and cube numbers
- Calculate higher powers and roots
- Powers of ten and standard form
- The addition and subtraction rules for indices
- Understand and use the power zero and negative indices
- Work with powers of powers
- Calculate with numbers in standard form

Manipulating Expressions
- Simplify algebraic expressions
- Use identities
- Form and solve equations and inequalities with fractions
- Represent numbers algebraically
- Algebraic arguments and proof

Term 2

Ratios and Fractions
- Compare quantities using a ratio
- Link ratios and fractions
- Share in a ratio (given total or one part)
- Use ratios and fractions to make comparisons
- Link ratios and graphs
- Solve problems with currency conversion
- Link ratios and scales
- Use & interpret ratios of the form 1 : n & n : 1
- Solve best buy problems
- Combine a set of ratios
- Link ratio and algebra

Percentages and Interest
- Convert and compare fractions, decimals and percentages
- Work out percentages of amounts (with and without a calculator)
- Increase and decrease by a given percentage
- Express one number as a percentage of another
- Calculate simple and compound interest
- Repeated percentage change
- Find the original value after a percentage change
- Solve problems involving growth and decay
- Solve problems involving percentages, ratios and fractions

Term 3

Straight Line Graphs
- Equations of lines parallel to the axis and y = x and y = -x
- Using tables of values
- Compare gradients
- Compare intercepts
- Understand and use $y = mx + c$
- Write an equation in the form $y = mx + c$
- Find the equation of a straight line from a graph
- Interpret gradient and intercept of real life graphs

Rates
- Solve speed, distance and time problems without a calculator
- Solve speed, distance and time problems with a calculator
- Use distance/time graphs
- Solve problems with density, mass and volume
- Solve problems and their graphs
- Rates of change and their units

Simultaneous Equations
- Understand that equations can have more than one solution
- Determine whether a given (x, y) is a solution to a pair of linear simultaneous equations
- Solve a pair of linear simultaneous equations by substituting a know variable
- Solve a pair of linear simultaneous equations by substituting an expression

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Collecting, Representing and Interpreting Data
- Understand populations and samples
- Primary and secondary data
- Construct and interpret frequency tables and frequency polygons
- Construct and interpret two-way tables
- Construct and interpret line and bar charts (including composite bar charts)
- Construct and interpret pie charts
- Criticise charts and graphs
- Find and interpret averages from a list
- Find and interpret averages from a table
- Construct and interpret time series graphs
- Construct and interpret stem-and-leaf diagrams
- Compare distributions using charts and measures
- Construct and interpret scatter graphs
- Draw and use a line of best fit
- Understand extrapolation

Representing solutions and equations of inequalities
- Understand the meaning of a solution
- Form and solve one-step and two-step equations
- Form and solve one-step and two-step inequalities
- Show solutions to inequalities on a number line
- Interpret representation on number lines as inequalities
- Draw straight line graphs
- Find solutions to equations using straight line graphs
- Form and solve equations with unknowns on both sides
- Form and solve inequalities with unknowns on both sides
- Form and solve more complex equations and inequalities

Angles and Bearings
- Use cardinal directions and related angles
- Draw and interpret scale diagrams
- Understand and represent bearings
- Measure and read bearings
- Make scale drawings using bearings
- Calculate bearings using angle rules
- Solve bearings problems using Pythagoras and trigonometry

- Solve a pair of linear simultaneous equations using graphs
- Solve a pair of linear simultaneous equations by subtracting equations
- Solve a pair of linear simultaneous equations by adding equations
- Use a given equation to derive related facts
- Solve a pair of linear simultaneous equations by adjusting one equation
- Solve a pair of linear simultaneous equations by adjusting both equations
- Form a pair of linear simultaneous equations from given information
- Form and solve pair of linear simultaneous equations from given information

Probability
- Know how to add, subtract and multiply fractions
- Find probabilities using equally likely outcomes
- Use the property that probabilities sum to 1
- Using experimental data to estimate probabilities
- Find probabilities from tables, Venn diagrams and frequency trees
- Construct and interpret sample spaces for more than one event
- Calculate probability with independent events
- Use tree diagrams for independent events
- Use tree diagrams for dependent events

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Year 11		
Term 1	**Term 2**	**Term 3**

Core Knowledge/ Skills and Concepts

Term 1

Standard Index Form
- Investigate positive powers of 10
- Work with numbers greater than 1 in standard form
- Investigate negative powers of 10
- Work with numbers between 0 and 1 in standard form
- Compare and order numbers in standard form
- Mentally calculate numbers in standard form
- Add and subtract numbers in standard form
- Multiply numbers in standard form
- Use a calculator to work with numbers in standard form

Working with Circles
- Recognise and label parts of a circle
- Calculate fractional parts of a circle
- Calculate the length of an arc
- Calculate the area of a sector
- Understand and use the volume of a cylinder and cone
- Understand and use the volume of a sphere
- Understand and use the surface area of a sphere
- Understand and use the surface area of a cylinder and cone

Term 2

Expanding and Factorising
- Expand and factorise with a single bracket (R)
- Expand binomials (R)
- Factorise quadratic expressions
- Solve equations equal to 0
- Solve quadratic equations by factorisation

Changing the subject
- Solve linear equations
- Solve inequalities
- Form and solve equations and inequalities in the context of shape
- Change the subject of a simple formula
- Change the subject of a known formula
- Change the subject of a complex formula

Functions
- Use function machines
- Substitution into expressions and formulae
- Use function notation
- Graphs of quadratic functions

Trigonometry
- Explore ratio in similar right-angled triangles
- Work fluently with the hypotenuse, opposite and adjacent sides
- Use the tangent ratio to find missing side lengths
- Use the sine and cosine ratio to find missing side lengths
- Use the sine, cosine and tangent to find missing side lengths

Term 3

Revision
- Past exam paper practice
- Individual "Gap filling" revision
- "Tough topic" recap
- Quizzes

EXAMS

- DATES TBC – Autumn term 2023

- Paper 1 (Calculator)
- Paper 2 (Non-Calculator)
- Paper 3 (Non-Calculator)

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Congruency, Similarity and Enlargement
- Enlarge a shape by a positive integer scale factor
- Enlarge a shape by a fractional scale factor
- Identify similar shapes

- Work out missing sides and angles in a given pair of similar shapes
- Use parallel line rules to work out missing angles
- Establish a pair of triangles are similar
- Understand the difference between congruence and similarity
- Understand and use conditions for congruent triangles

Vectors
- Understand and represent vectors
- Use and read vector notation
- Draw and understand vectors multiplied by a scalar
- Draw and understand addition of vectors
- Draw and understand addition and subtraction of vectors

   ------------ **MOCK EXAMS** ----------

- Use the sine, cosine and tangent to find missing angles
- Calculate sides in right-angled triangles using Pythagoras' Theorem
- Select the appropriate method to solve right-angled triangle problems
- Work with key angles in right-angled triangles

Pythagoras' Theorem
- Squares and square roots
- Identify the hypotenuse of a right-angle triangle
- Determine whether a triangle is right-angled
- Calculate the hypotenuse of a right-angled triangle
- Calculate missing sides in right-angled triangles
- Use Pythagoras' theorem on coordinate axis
- Explore proofs of Pythagoras' theorem

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