Mathematics Curriculum Plan - Whole Academy

PRIMARY	KEY STAGE 3	KEY STAGE 4	KEY STAGE 5

Curriculum Intent

The Mathematics curriculum has been designed to give students the knowledge and skills required for a solid foundation and understanding of problem-solving skills in accordance to the updated National Curriculum and age related expectations. We aim to ensure all students have a secure sense of number throughout their journey at KBA.
Topics are ordered so that skills and knowledge are built upon, and prerequisite skills for future topics are learned in a logical and layered order so that they can be implemented and interwoven with new skills and knowledge. Pupils are graded using the key performance indicators (KPIs) used widely across all UL schools.

1. **How do you ensure consistent delivery of the subject across all key stages?**

Maths is taught using a mastery approach throughout the whole academy where students will have a maths lesson every day. The topics taught (which are detailed below) progress in a logical and layered order and build upon previous learning. Students are formally and informally assessed throughout their journey and any gaps in knowledge are identified and addressed.

2. **How does the curriculum cater for disadvantages, SEND and other minority group students?**

All children have access to the same curriculum and differentiated support is provided where necessary. For example, in KS1 and KS2 there are manipulatives available for the students to use.
Another example is that a scaffolded scheme of learning is followed for low attaining Year 9 and 10 students to break the topics into smaller, more manageable chunks and gives time every week to work on basic number skills such as times tables.
There are smaller teaching groups, focus groups, intervention groups and additional teaching support in the classroom provided in the both primary and secondary phases.

3. **How does the curriculum embed prior knowledge and aid long-term retention of knowledge?**

There is also informal recap within lessons such as starters and arithmetic quizzes. This approach to lesson structure ensures the Rosenshine principles are embedded in the teaching. There are regular assessments throughout the year which are cumulative and ensure prior knowledge is revisited and helps to ensure long-term retention of knowledge.

PRIMARY

Year	Term 1 & 2	Term 3 & 4	Term 5 & 6
EYFS	**Numbers and place value** **Addition and subtraction** **Number and place value** **Addition and subtraction** **Measurement** *- Verbally Count to 5* - *Numbers 1,2,3, 4, 5, 6, 7 Recognise digit* - *Count out* - *Subitise* - *Discuss/look at addition/subtraction facts* - *Verbally Count to 10* - *Recall number bond facts to 5*	**Addition and subtraction** **Number and place value** **Addition and subtraction** **Geometry** - *Numbers 8, 9 ,10* - *Recognise digit* - *Count out* - *Discuss/look at addition/subtraction facts* - *Recall number bond facts to 5* - *Model comparing two quantities up to 10- model using more/less to describe groups* - *Recap number recognition/composition 1-10.* - *Recall number bond facts to 5* - *Comparing two quantities up to 10- children using more and less to describe groups* - *Verbally Count to 15* - *Verbally Count to 20*	**Addition and subtraction** **Number and place value** **Multiplication and division** **Geometry** **Measurement** - *Verbally Count to 30* - *Count back from 10* - *Recap number recognition/composition 1-10.* - *Odds/evens Doubles/sharing* - *Verbally Count back from 20* - *Writing numbers*

1	**Place value** (*within 10*) **Addition and subtraction** (*within 10*) **Place Value** (*within 20*) **Geometry** (Shape - *3D and 2D*)	**Addition and subtraction** (*within 20*) **Place value** (*within 50*) **Measurement** (Length and height - *Measuring*) **Measurement** (Weight and volume – *Introduce and compare*)	**Multiplication and division** (*Count in 2s, 5s 10s, equal groups, arrays and doubles*) **Fractions** (*Half and Quarter*) **Place Value** (*within 100*) **Geometry** (Position and direction – *Turns and position*) **Measurement** (Money – *Recognise and count coins/notes*) **Measurement** (Time – *To hour, half hour, write and compare*)
2	**Place value** (*Represent numbers to 100*) **Addition and subtraction** (*2 digit by 1 digit, addition of two 2-digit numbers*) **Multiplication and division** (*Equal groups and arrays*) **Measurement** (Money – *Count, select, compare, total*)	**Multiplication and division** (*2s, 5s, 10s including division, odd and even numbers*) **Fractions (***Half, quarter, third, unit and non unit fractions, equivalence ½ and 2/4*) **Geometry** (Properties of shape – *Sides, vertices, symmetry, faces, edges and making patterns*) **Statistics** (*Tallys, Pictograms and block diagrams*)	**Measurement** (Length and height - *cm and m*) **Geometry** (Position and direction – *Movement and turns*) **Measurement** (Time – *Time to 5 minutes, hours and days, duration of time*) **Measurement** (*Mass, capacity, volume and temperature*)
3	**Place value** (*Represent numbers to 1000*) **Addition and subtraction** (*3 digit by 3 digit*) **Multiplication and division** (*Multiply and divide by 3, 4 & 8*)	**Multiplication and division** (*Multiply and divide 2 digits by 1 digit*) **Measurement** (Money – *Pounds and pence, add/subtract money, conversion*) **Statistics** (*Tally, pictograms, bar charts and tables*) **Measurement** (Length and Perimeter – *Add/subtract length, equivalence, measure/calculate perimeter*) **Fractions** (*Half, quarter, third, unit and non unit fractions, equivalence ½ and 2/4 and count in fractions*)	**Fractions (***Whole, tenths, tenths as decimals, fractions of a set of objects, equivalence, comparison, ordering, add/subtract*) **Measurement** (Time – *Months and years, time to minute, am/pm, 24 hour clock, duration, measurement*) **Geometry (**Properties of shape – *Turns and angles, horizontal/vertical, parallel/perpendicular*) **Measurement** (Mass and capacity – *Measure, compare, add/subtract)*
4	**Place value** (*Represent to 10,000, round to 1000, negative numbers, roman numerals to 100*) **Addition and subtraction** (*4 digit by 4 digit, estimation, efficiency, strategies*) **Measurement** (Length and perimeter – *Kilos,*	**Multiplication and division** (*Multiply/divide by 11 & 12, factors, 3 digit by 1 digit multiplication*) **Measurement** (Area – *Counting, making and comparing area)* **Fractions** (*Equivalent fractions, add/subtract*	**Decimals** (*Bonds to 10/100, wholes, write, compare, order, round decimals and halves/quarters*) **Measurement** (Money - *Ordering, estimating and four operations*) **Measurement** (Time – *Hours/minutes/seconds,*

	perimeter on grid, rectangles and rectilinear shapes) **Multiplication and division** (*Multiply/divide by 10,100,1000. Multiply/divide by 6, 9 & 7*)	*fractions, subtract from whole amounts, calculate fractions of a quantity*) **Decimals** (*Recognise tenths & hundredths, tenths as decimals, divide 1 & 2 digits by 10, hundredths as decimals, divide 1 & 2 digits by 100*)	*Years/months/weeks/days, analogue to digital 12hr/24hr*) **Statistics** (*Interpret charts, comparison/sum/difference, line graphs*) **Geometry** (Properties of shape – *Compare and order angles, triangles, quadrilaterals, lines of symmetry*) **Geometry** (Position and direction – *Describe, draw and move*)
5	**Place value** (*Represent to 100,000, round within 1,000,000, numbers to 1,000,000, roman numerals to 1000*) **Addition and subtraction** (*Add/subtract more than 4 digits, round to estimate, inverse operations, multi-step problems*) **Statistics** (*Read and interpret line graphs and tables, two-way tables and timetables*) **Multiplication and division** (*Common factors, prime, square, cube numbers, multiply and divide by 10,100,1000, multiples of 10,100,1000*) **Measurement** (Perimeter and Area – *Calculate perimeter, area of rectangles, compound shapes and irregular shapes)*	**Multiplication and division** (*Multiply 4 digits by 1 digit, multiply 2 digits, multiply 3 digits by 2 digits, divide 4 digits by 1 digit, divide with remainders*) **Fractions** (*Improper/mixed, compare and order fractions less than and greater than 1, add/subtract fractions, add/subtract mixed numbers, multiply unit fractions/mixed numbers, fractions of a quantity, fractions of an amount, fractions as operators)* **Decimals and percentages** (*Decimals up to 2 dp, decimals as fractions, thousandths, thousandths as decimals, rounding decimals, Percentages as fractions and decimals, equivalent FDP*)	**Decimals** (*Add/subtract decimals within 1, add/subtract wholes and decimals, multiply and divide decimals by 10, 100, 1000*) **Geometry** (Properties of shape – *Measure angles in degrees, draw lines/angles accurately, calculate angles, regular and irregular polygons, reasoning 3D shapes*) **Geometry** (Position and direction – *Translation, coordinates, reflection*) **Measurement** (Converting units) **Measurement** (Volume – Compare and estimate)
6	**Place value** (*Numbers to 10,000,000, round any number*) **Addition, subtraction, multiplication and division** (*Add and subtract integers, 4 digit by 2 digit multiplication, short division, division using factors, long division, order of operations*) **Fractions** (*Simplify, mixed addition and subtraction, multiply and divide by integers, multiply by fractions, fractions of an amount*) **Geometry** (*Position and direction – Quadrants, translation, reflections*)	**Decimals** (*3 dp, multiply and divide by integers, decimals as fractions, fractions to decimals)* **Percentages** (*Fractions to percentages, order FDP, percentage of an amount, missing values*) **Algebra** (*Rules, expressions, substitution, formulae, equations, enumerate possibilities*) **Measurement** (Converting units – *Metric*) **Measurement** (Perimeter, area and volume – *Area of triangle/parallelogram, volume of cuboid*) **Ratio** (*Ratio and fractions, calculating ratio, scale factors*)	**Statistics** (*Pie charts, mean)* **Geometry** (Properties of shape – *vertically opposite angles, angles in triangles/quadrilaterals/polygons, 3-D nets*)

KEY STAGE 3

	1st Half of the year (Sep – Jan)	2nd Half of the year (Jan-July)
7	• Place value and Number sense • Addition and Subtraction • Perimeter • Rounding & Estimation (in real life situations) • Multiplication and Division • Factors and Multiples • Area of rectangles and triangles and parallelograms	• Fractions as part of a whole • Fractions as a value • Fractions as an operation • Order of operations • Basic rules of algebra • Expand and factorise • Substitution • Angles • Polygons • Symmetry and reflection • Coordinates • Mean • Two way tables & Venn diagrams
	Mid-Year Assessment – all topics in 1st half of Year 7	**End of Year Assessment – includes all topics from Year 7**
8	• Indices • Prime Factorisation • Rounding • Fractions • Percentages revision • Linear equations • Coordinates and basic graphs	• Units of measurement • Angles • Circumference • Proportional reasoning • Fractions, decimals and percentages • Ratio • Area of circle and trapezia • Presenting and interpreting data • Averages • 3-D visualisation • Volume
	Mid-Year Assessment - includes topics from all of Year 7 and 1st half of Year 8	**End of Year Assessment - includes all topics from Year 7 and 8**
9	• Place value & Number Properties • 4 Rules - Decimals • Rounding and estimation • Indices Powers & Roots • Factors, Multiples & Primes • Ratio (basic) • FDP • Fractions • Percentages • Proportion	• Notation • Simplifying & Index Laws • Expanding & Factorising • Expressions & Substitution • Linear Equations • Linear Inequalities • Perimeter & Area • Pythagoras • Properties of shapes • Angle facts

		• Parallel lines • Circles • Volume • Surface Area • Sequences • Basic vectors • Plans and elevations
	Mid-Year Assessment – includes topics from all of Year 7 and 8 and the 1st half of Year 9	**End of Year Assessment - includes all topics from Year 7, 8 and 9**

9 Set 1	• Indices Powers & Roots • Factors, Multiples & Primes • Multiply and divide decimals • Rounding and estimation • Bounds • Use a calculator • Ratio • FDP • Fractions • Percentages • Proportion	• Notation • Expanding & Factorising • Expressions & Substitution • Linear equations • Linear Inequalities • Perimeter & Area & Measures • Pythagoras • Right-Angled Trigonometry • Properties of shapes • Angle facts • Parallel lines • Circles • Volume • Surface Area • Sequences • Basic vectors • Transformations • Plans and elevations
	Mid-Year Assessment – includes topics from all of Year 7 and 8 and the 1st half of Year 9	**End of Year Assessment - includes all topics from Year 7, 8 and 9**

KEY STAGE 4 – Foundation (typically set 3, 4 and 5 in Year 10 and set 3, 4, 5, 6 and 7 in Year 11)

	1st Half of the year (Sep – Jan)	2nd Half of the year (Jan-July)
10	• Linear equations and inequalities (9.15-9.16) • Angle facts – polygons and parallel lines (9.20-9.21) • Volume and surface area (9.23) • Rearrange formulae • Linear Graphs, including understanding gradient and intercept • Compound Measures • Quadratic graphs, TP and roots • Linear Simultaneous Equations • Further graphs	• Sequences (9.24) • Circles (9.22) • Probability • Standard Form • Simple interest • Ratio (further) • Growth & Decay • Statistics • Plans & elevations • Constructions & Loci
	Mid-Year Assessment - includes all topics from Year 7, 8 9 and the 1st half of Year 10	**End of Year Assessment - - includes all topics from Year 7, 8 9 and 10**
11	• Pythagoras • Right Angled Trigonometry • Bearings & Scale Drawings • Four operations including integers, fractions and decimals • Ratio and proportion • Percentages • Types of numbers • Expressions and equations	• Transformations • Congruence • Vectors • Similar shapes • Class specific revision topics for mock exams **March Mock Exams** • Class specific revision topics for exams
	November Mock Exams	**ACTUAL GCSE EXAMS.**

KEY STAGE 4 – Higher

	1st Half of the year (Sep – Jan)	2nd Half of the year (Jan-July)
10	• Rearrange formulae • Linear Graphs, including understanding gradient and intercept • Compound Measures • Quadratic graphs, TP and roots • Linear Simultaneous Equations • Further graphs • Further expanding & factorising	• Probability • Capture & Recapture • Standard Form • Proportion (further) • Surds • Recurring decimals • Bounds • Growth & Decay • Simple interest • Ratio (further) • Right angled Trigonometry • Plans & elevations • Constructions & Loci • Similar shapes
	Mid-Year Assessment - includes all topics from Year 7, 8 9 and the 1st half of Year 10	**End of Year Assessment - includes all topics from Year 7, 8 9 and 10**
11	• Algebraic Proof • Solving quadratic and further simultaneous equations • Functions • Iteration • Quadratic Inequalities • Bearings • Circle Theorems • Further trigonometry and trigonometric graphs • Class specific revision topics for mock exams	• Statistics (Higher tier topics) • Transformations • Congruence • Vectors • Gradients (further) and area under a graph • Kinematics • Graphical transformations • Class specific revision topics for mock exams
		March Mock Exams • Class specific revision topics for exams
	November Mock Exams	**ACTUAL GCSE EXAMS.**

KEY STAGE 5

MATHS	September – November	December – March	March - June
12	• Quadratics • Equations and Inequalities • Correlation • Differentiation • Algebraic Methods (1) • Constant Acceleration • Integration • Straight line graphs • Forces & motion • Trigonometric ratios • Tangents and normal • Probability • Trigonometric identities and equations • Circles • Binomial expansion (homeworks also cover Data collection, Measures of location & spread and Representation of data)	• Exponentials and logarithms • Vectors (1) • Statistical distributions • Sequences and series • Vectors (2) • Hypothesis testing • Binomal Expansion • Proofs • Variable acceleration • Modelling	• Algebraic methods • Trigonometric Functions
	November Mock Exam	**March Mock Exam**	**End of Year Exam**
13	• Differentiation (1) • Radians • Integration • Trigonometry and modelling • Trigonometric Functions • Parametric Equations • Regression, correlation and hypothesis testing • Projectiles • Differentiation (2) • Conditional probability • Forces and friction	• Vectors • Normal distribution • Momentum • Sequences and series • Functions and graphs • Application of forces • Binomial expansion • Numeric methods • Further kinematics	• Revision, practice and examination
	November Mock Exam	**March Mock Exam**	**ACTUAL A LEVEL EXAMINATION**