Ormiston Park Academy Curriculum Map (Years 7-11) **Department: Mathematics** **Curriculum Leader: Mubeezi**

<table>
<tr><th></th><th>HT1</th><th>HT2</th><th>HT3</th><th>HT4</th><th>HT5</th><th>HT6</th></tr>
<tr><td>KS4 OVERVIEW

The Maths Key Stage 4 curriculum is designed to implement the Academy's vision of "Aspiration, Resilience, Creativity, Respect, Integrity and Responsibility". Our curriculum is carefully designed to build resilience, aspiration and independence in our learners. It is also broad, balanced, rich and ambitious We carefully design the KS4 curriculum to further develop and build upon prior learning at KS3. They will take account of the matters, skills and processes specified in the national curriculum programs of study for key stages 2 and 3. This will further consider the life skills students will need for post-16 study or work.</td><td colspan="2">INTENT

The aim of the curriculum delivered during KS4 is to build up on the understanding, and refine the skills, that were developed at KS3. Our curriculum interweaves the subject specific content with the first and secondary order concepts of historical study, alongside core aspects of the National Curriculum.

Each topic is taught so that the key skills are mastered. The essential mathematical skills developed during KS3 are now utilised in planning, completing, and evaluating progress of students. Lessons are designed so that they address the objectives as outlined by the Edexcel specification.

The curriculum draws on real world contexts, modelling and analogies where possible, so that students find concepts more relevant and interesting. Our lessons provide opportunities for students to learn about real life maths that different industries use daily.</td><td colspan="2">IMPLEMENTATION

Typical curriculum allocation: 5 hours per week.

Throughout the GCSE course, schemes of learning and full lesson plans are available to provide support to all staff within the department. They can be easily utilised for cover lessons when required.

All schemes of learning and lesson plans are planned, developed and reviewed by the subject leads to ensure all students are delivered the content in the same coherent sequence across the two years of delivery.

Shared lesson resources, which have been designed and produced by the subject specialists across the department, link to the Edexcel GCSE specification. This continues to provide consistency, and ensure quality is delivered across all classes and year groups.

Mathswatch VLE is one of the resources for Independent/ self-study our learners use in systematic way (watch the relevant video-clip at own pace, work through the Interactive questions and self-assess one's progress.) Mastered skills are registered, questions found difficult by the learners are easily identified from the RAG record and support given during lesson time

We have a joint lesson planning, marking and moderation system to support less experienced members of the department with differentiation and assessment, and tailoring the lesson plans to their individual classes.
Students begin to work independently, to widen
their mathematic vocabulary and are gradually introduced to the range of exercises like those that they will face in the eventual examinations.</td><td colspan="2">IMPACT

2 YEAR IMPACT (5 lessons per week):
Students are fully prepared for the formal GCSE assessments.

Regular exam assessments are also completed to encourage students to frequently review the content taught. At the end of each topic, an end of topic assessment takes place which comprises of prior learning and most recent content taught. This allows teachers to assess students' understanding of key concepts in a range of questions and applying to a variety of contexts. This emphasises the need to continually revisit prior learning, enhancing long term memory stores (in line with the do more, remember more and learn more)

Students become familiar with the diverse types of questions featuring in the GCSE exams for Edexcel. They also gain an understanding of how exams are marked and an emphasis of the importance of mathematical techniques and working outs.

LONG TERM IMPACT:
Students leave the academy equipped with the math knowledge base and skills to keep them well informed within an increasingly changing society. Understanding how maths is used in everyday life at home, in society and within their chosen industry.

Students are well prepared for studying Mathematics further at KS5, and those choosing to study A levels have a solid foundation to build on.

Students are re-assessed on prior learning from Years 9 & 10 and have increased their long-term memory stores. Students have greater resilience for completing longer tasks, by breaking down the complex higher mark exam style questions into multiple layered smaller yet simpler
questions on which they gain marks.</td></tr>
<tr><td>Year 11 Higher</td><td>Key Content:
1) Counting, accuracy, powers, and surds. [N3,N5,N7,N15, A4]

2) Geometry and measure: construction and loci [G1,G2]

3) Algebra: proof [A6, G6]</td><td>Key Content:

1) Geometry and measure: Similar shapes and congruency [G6, G7]

2) Algebra: Pythagoras and Trigonometry [G6, G20, R12]

3) Statistics: Sampling and more complex diagrams [S1, S3,S4,S5]

4) Algebra: Quadratic equations, Inequalities, and graphs [A3, A4, A18]</td><td>Key Content:

1) Geometry and measure: Properties of a circle, Circle theorems [G9,G10,G11, G17,G18,A2, A16]

2) Algebra: formulae, algebraic fractions, functions</td><td>Key Content:

1) Geometry and measures: Vectors, proof [A6, G6, G10, G24, G25]

2) Algebra: proportion and graphs [R10, R14]

3) Ratio, proportion, and rates of change: Variation [R2, R7, R10, R13, R14]</td><td>Key Content:

Revision & Exam skills</td><td>Key Skills:

Revision & Exam skills</td></tr>
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			[A1, A2, A3, A4, A5, A17, A21]			
	Key Skills: - solve word problems with indices and surds - multiply, divide, add and subtract with standard index form - solve worded questions with constructions and loci - prove geometric and algebraic problems	**Key Skills:** - Similarity and congruence - Find missing lengths of similar shapes, prove congruence - More trigonometry - Sine rule, cosine rule, 3D trig and 3D Pythagoras, area of a triangle - Further statistics - Stratified sampling, cumulative frequency diagrams, histograms, box plots, interquartile ranges - Simultaneous equations - Solve graphically, and algebraically including with one quadratic - Equations and graphs - Recognise and draw quadratic graphs, iteration, find roots of cubic equations, solve cubic equations	**Key Skills:** - Circle theorems - Understand, use and prove all circle theorems, find the equation of a tangent to a circle at a given point - Rearranging formulae - Apply all four operations to algebraic fractions, find inverse functions	**Key Skills:** - Vectors and geometric proof - Calculate resultant of two vectors, prove lines are parallel and prove points are co-linear, apply vector methods to simple geometric proof - Proportion and graphs - Solve problems involving direct proportion, calculate the gradient of a tangent at a point, estimate the area under a non-linear graph	**Key skills:** Exam techniques Resilience (Work under pressure)	**Key Skills:** Exam techniques Resilience (Work under pressure)
Year 11 Foundation	**Key Content:** 1) Algebra: solving problems [A2,A3, A5, A17, A21] 2) Number: powers, standard index form [N1, N2, N3, N7, N8, N9]	**Key Content:** 1) Algebra: Quadratic expressions, equations, and graphs [A4, A5, A9, N8,] 2) Number: solving problems using FDP [N1,N2,N3,N8,N10,N11, N12]	**Key Content:** 1) Probability: Trees and outcomes [P1, P2, P6, P8] 2) Algebra: simultaneous equations, Pythagoras, Trigonometry [A19, A21, G6, G20, R12]	**Key Content:** Revision & Exam skills	**Key Content:** Revision & Exam skills	**Key Content:**
	Key Skills: - form and solve word problems - use the laws of Indices including negative indices - use the laws of fractional Indices (square-root and cube-root) - Write numbers in standard and in ordinary form	**Key Skills:** - Unit – More algebra - Expand quadratic expressions, factorise, and solve quadratic equations - Unit – Plotting and using graphs - Plot straight line graphs, quadratic graphs, and negative quadratics graphs - Unit - Ratio and Proportion - Calculate percentage change, calculate with ratio, and solve FDP problems	**Key Skills:** - Unit – Probability trees - List outcomes, construct and interpret frequency trees and probability trees - Unit – Simultaneous Equations - Solve linear simultaneous equations using elimination and substitution - Unit – Right angled triangles	**Key Skills:** Exam techniques Resilience (Work under pressure)	**Key skills:** Exam techniques Resilience (Work under pressure)	**Key Skills:**

			- Apply Pythagoras' theorem and trigonometric ratios to find missing sides and angles of right-angled triangles.			
	Assessment opportunities: Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes
Year 10 Higher	**Key Content:** 1) Number: Basic number [N1, N2, N3, N4, N5, N6, N8] 2) Number: Powers and standard form [N7, N9] 3) Number and sequences [A23, A24] 4) Algebra: Number and sequences [A25]	**Key Content:** 1) Statistics: Statistical diagrams and averages [S1 - S6] 2) Fractions, Ratio, proportion, and rates of change: Ratio and proportion [N10, N11, N12, R1 – R16, A15]	**Key Content:** 1) Geometry and measures: Angles, Right-angled triangles and Trigonometry [G1, G2, G3, G4, G6, G20, G21, G22, G23] 2) Algebra: Linear Graphs [A9, A10]	**Key Content:** 1) Algebra: Quadratic and circle graphs [A11, A12, A13, A14, A16] 2) Geometry and measures: Length, area and volume [G12, G14] -	**Key Content:** 1) Geometry and measure: Transformations, constructions and loci [G7, G8, G13] 2) Geometry and measures: Similarity [G5, G6, G7,] 3) Algebra: Algebraic manipulation, Equations and inequalities [A4, A5, A6, A7, A17, A18, A19, A20. A21, A22] -	**Key Content:** 1) Probability: Exploring and applying probability [P4-P9] 2) Number: Fractions, ratio and proportion, rate of change [R13, R14, R15, R16, N10, N11, N12, N16] -
	Key Skills: - Number, indices and standard form - Rationalising surds, negative and fractional powers, estimating answers - Algebraic reasoning and sequences - Factorising quadratics, nth term rule including quadratics, index laws in algebra	**Key Skills:** - Interpreting and representing data - Scatter graphs, stem and leaf, averages from [grouped] frequency tables - Fractions, ratios and percentages - Calculating with fractions, reverse percentages, recurring decimals	**Key Skills:** - Angles and trigonometry - Sum of interior and exterior angles of a polygon, using Pythagoras and trig ratios in right angled triangles - Constructing and sketching linear graphs - Gradients and equations of straight lines, parallel and perpendicular lines,	**Key Skills:** - drawing quadratic graphs, graphing a circle - Unit 7: Area and volume - Conversion between metric units, surface area, area and circumference of circles, volume and surface area involving circles	**Key Skills:** - Unit 8: Transformations and constructions - Reflection, rotating, translating, enlarged by negative and fractional scale factors, constructions with compass and ruler, solving problems with bearings - Unit 9: Equations and inequalities - Quadratic formula, completing the square, solve simultaneous	**Key Skills:** - Unit 10: Probability - Number of outcomes, probability trees, tree diagrams, conditional probability, mutually exclusive events - Unit 11: Multiplicative reasoning - Repeated percentage change, direct and inverse proportion, speed and acceleration

					equations, including quadratic, inequalities on number lines	
Year 10 Foundation	**Key Content:** 1) Number: Basic number [N1-N9] 2) Number: Fractions, ratio and proportion [N10, N11, N12] 3) Number: Powers and standard form [N6, N7]	**Key Content:** 1) Algebra: Number and sequences [A23, A24, A25] 2) Ratio, proportion and rates of change: Ratio and proportion and Similarity [R1-R16] 3) Geometry and measures: Transformations [G7]	**Key Content:** 1) Algebra: Algebraic manipulation [A1-A7] 2) Geometry and measures: Right-angled triangles and basic Trigonometry [G20, G21] 3) Geometry and measures: Conversion and constructing scaled drawing [G13, G14, G15]	**Key Content:** 1) Geometry and measures: Angles [G1, G2, G3] 2)Geometry and measures: Vectors [G24, G25]	**Key Content:** 1) Geometry and measures: Length, area and volume [G15, G16, G17, G18] 2) Geometry and measure: Constructions and loci [G1, G2,]	**Key Content:** 1) Probability: Exploring and applying probability [P1-P8]
	Key Skills: - Unit: Indices - Index laws and their roots, apply laws of indices - Unit: Standard form - Convert between standard form and ordinary numbers and complete calculations with standard form - Unit: Fractions - Apply all four operations to with fractions and mixed numbers - Unit: Percentage change - Increase and decrease by a percentage, calculate compound interest, calculate with multipliers	**Key Skills:** - Unit: Sequences - Generate and use arithmetic, geometric and quadratic sequences, and find the nth term of an arithmetic sequence - Unit: Ratio and similarity - Write and use basic ratios, understand ratio within geometry - Unit: Transformations - Complete all four transformations including enlarging by a fractional scale factor	**Key Skills:** - Unit: Algebraic reasoning - Revisit basic algebra skills including expanding and factorizing, solve linear inequalities, and find the equation of a straight line - Unit: Right angled triangles - Apply Pythagoras and trig ratios to right angled triangles to find missing sides and angles - Complete calculations involving decimals, convert between metric units and construct and use plans drawn to scale	**Key Skills:** - Use angles in parallel lines and calculate interior and exterior angles of any polygon, solve angle problems giving reasons - Unit: Vectors - Represent 2D vectors and calculate with vectors	**Key Skills:** - Unit: Area, surface area and volume - Find area of basic shapes, and volume of basic prisms, find surface area of cuboids and right prisms - Unit: Constructions and loci - Construct accurate triangles and quadrilaterals, construct angles and loci	**Key Skills:** - Unit: Sampling - Use the vocabulary of sampling and complete stratified sampling - Unit: Probability - Calculate relative frequency, and calculate probability using a sample space diagram, find a probability using a Venn diagram.
	Assessment opportunities: Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes

KS3 OVERVIEW

The Maths Key Stage 3 curriculum is designed to implement the Academy's vision of "Aspiration, Resilience, Creativity, Respect, Integrity and Responsibility". Our curriculum is carefully designed to build resilience, aspiration and independence in our learners. It is also broad, balanced, rich and ambitious. We carefully design the KS3 curriculum to further develop and build upon prior learning at KS2. They will take account of the matters, skills and processes specified in the national curriculum programmed of study for key stage 2. We will build upon this and evolve into KS3 preparation.

INTENT

The aim of the KS3 curriculum is for students to master the key skills and apply their knowledge to challenging and unfamiliar contexts.
We have planned and implemented a rigorous curriculum, which builds on the prior learning and skills acquired at KS2.
The content studied and skills acquired during Year 7, are revisited and extended on in Year 8.
We have the same high ambitions for all or our learners, including those with SEND or EAL. Students are taught in their tutor groups (mixed ability) in Year 7, 8 and 9 for Mathematics.
The KS3 Curriculum provides a solid foundation for the rigour of the content at GCSE. Due to all students studying four separate topics at GCSE, the KS3 curriculum is delivered across two years and GCSE courses commence in year 9. This maximises the opportunity to revisit the foundation topics of each topic, and for students to make greater connections between content and skills across the topics.
The OPA KS3 Math curriculum focuses around inspiring learning opportunities. It is broad and provides our students access to the full National Curriculum for Mathematics. We also incorporate many opportunities for cross-curricular learning, links to CEIAG and supports the Core British Values.

IMPLEMENTATION

Typical curriculum allocation: 4 hours per week.

Throughout the GCSE course, schemes of learning and full lesson plans are available to provide support to all staff within the department. They can be easily utilised for cover lessons when required.

All schemes of learning and lesson plans are planned, developed and reviewed by the subject leads to ensure all students are delivered the content in the same coherent sequence across the two years of delivery.

Shared lesson resources, which have been designed and produced by the subject specialists across the department, link to the Edexcel GCSE specification. This continues to provide consistency, and ensure quality is delivered across all classes and year groups.
We have a joint lesson planning, marking and moderation system to support less experienced members of the department with differentiation and assessment, and tailoring the lesson plans to their individual classes.
Students begin to work independently, so as to widen their mathematic vocabulary and are gradually introduced to the range of exercises similar to those that they will face in the eventual examinations.

IMPACT

3YEAR IMPACT (4uy7865 lessons per week): :
Students are fully prepared for the formal End of year assessments.

Regular exam assessments are also completed to encourage students to frequently review the content taught. At the end of each topic, an end of topic assessment takes place which comprises of prior learning and most recent content taught. This allows teachers to assess students' understanding of key concepts in a range of questions and applying to a variety of contexts. This emphasises the need to continually revisit prior learning, enhancing long term memory stores.
Students have a good understanding of the foundations of each topic, to be revisited, built and extended on at GCSE.
Students become familiar with the different types of questions featuring in the GCSE exams for Edexcel. They also gain an understanding of how exams are marked and the emphasis the importance of mathematical techniques and working outs.

LONG TERM IMPACT:
Students leave the academy equipped with the math knowledge base and skills to keep them well informed within an increasingly changing society. Understanding how maths is used in everyday life in the home, in society and within their chosen industry.

Students have been reassessed on prior learning from Years 6 & 7, and have increased their long-term memory stores. Students have greater resilience for completing longer tasks, by breaking down the complex higher mark style exam questions by making the question into multiple layered smaller simpler questions.

Students are well prepared for studying Mathematics further at KS4.

Year 9 Higher

Key Content: 1) Probability [P1, P2, P3, P4,] 2) Venn Diagrams [S2] 3) Two Way Tables [S2] 4) Tree Diagrams [S2]	**Key Content:** 1) Expanding and Factorising [A4] 2) Plotting Quadratic Graphs [A8, A12] 3) Solving Quadratic Equations [A18] 4) Completing the square and turning points [A11]	**Key Content:** 1) Ruler and compass constructions [G2, G7] 2) Congruence [G5, G19] 3) Loci [G2] 4) Pythagoras Theorem [G20]	**Key Content:** 1) Similarity and enlargement [G19] 2) Area and volume of similar shapes [N13, G16] 3)Surds [N8] 4)Trigonometric ratios [G20, G21]	**Key Content:** 1) Simultaneous equations [A19] 2) Non-linear simultaneous equations [A19] -
Key Skills: Probability • Use the product rule for finding the number of outcomes for two or more events.	**Key Skills:** Expanding and Factorising • Expand brackets. • Factorise algebraic expressions. • Expand the product of two brackets	**Key Skills:** Constructions • Construct triangles using a ruler and compasses. • Construct the perpendicular bisector of a line.	**Key Skills:** Similarity and Enlargement • Find missing lengths on similar shapes.	**Key Skills:** Simultaneous Equations • Solve simple simultaneous equations.
				Key Skills: Index Notation • Use powers and roots in calculations. • Multiply and divide using index laws. • Work out a power raised to a power. • Use negative indices.

	• Find the probabilities of mutually exclusive outcomes and events. • Work out the expected results for experimental and theoretical probabilities. • Calculate probabilities of repeated events. • Decide if two events are independent. Tree Diagrams • Draw and use frequency trees • Draw and use probability tree diagrams. • Draw and use tree diagrams to calculate conditional probability. • Draw and use tree diagrams without replacement. Venn Diagrams • Use Venn diagrams to calculate conditional probability. Two-Way Tables • Construct and use two-way tables. • Use two-way tables to calculate conditional probability.	• Solve equations involving brackets and numerical fractions. • Factorise quadratics of the form $x^2 + bx + c$. Plotting Quadratic Graphs • Draw quadratic graphs. • Solve quadratic equations using graphs. • Interpret quadratic graphs relating to real-life situations. Solving Quadratic Equations • Use equations to solve problems. • Use the difference of two squares. Completing the Square • Identify the line of symmetry of a quadratic graph.	• Construct the shortest distance from a point to a line using a ruler and compasses. • Bisect an angle using a ruler and compasses. • Construct angles using a ruler and compasses. • Construct shapes made from triangles using a ruler and compasses. Congruence • Show that two triangles are congruent. • Prove shapes are congruent. • Solve problems involving congruence. Loci • Draw a locus. • Use loci to solve problems. Pythagoras • Calculate the length of the hypotenuse in a right-angled triangle. • Solve problems using Pythagoras' theorem. • Calculate the length of a shorter side in a right-angled triangle. • Solve problems using Pythagoras' theorem.	• Use similar triangles to work out lengths in real life. Area and Volume of Similar Shapes • Use the link between linear scale factor and area scale factor to solve problems. • Use the link between scale factors for length, area and volume to solve problems. Surds • Understand the difference between rational and irrational numbers. • Simplify a surd. • Rationalise a denominator. Trigonometric Ratios • Use trigonometric ratios to find lengths and angles in a right-angled triangle. • Find angles of elevation and angles of depression. • Use trigonometric ratios to solve problems. • Know the exact values of the sine, cosine and tangent of some angles.	• Solve simultaneous equations for real-life situations. • Use simultaneous equations to find the equation of a straight line. • Solve linear simultaneous equations where both equations are multiplied. • Interpret real-life situations involving two unknowns and solve them. • Solve simultaneous equations with one quadratic equation. • Use real-life situations to construct quadratic and linear equations and solve them. • Solve simultaneous equations graphically. -	• Use fractional indices. Standard Form • Write a number in standard form. • Calculate with numbers in standard form. Percentages • Work out percentage increases and decreases. • Solve real-life problems involving percentages. • Find an amount after repeated percentage changes. • Solve growth and decay problems.
	Assessment opportunities: Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes
Year 9 Foundation	**Key Content:** 1) Probability [P1, P2, P3] 2)Venn Diagrams [S2] 3) Two Way Tables [S2] 4) Tree Diagrams [S2]	**Key Content:** 1) Expanding and factorising [A4] 2) Linear Graphs [A8, A9]	**Key Content:** 1) Ruler and compass constructions [G2, G7] 2) Congruence [G5, G19] 3) Loci [G2] 4) Pythagoras Theorem [G20]	**Key Content:** 1)Similarity and enlargement [G19] 2) Lengths of similar shapes [N13, G16] 3) Trigonometric ratios [G20, G21]	**Key Content:** 1) Quadratic Graphs [A8, A12] 2) Solve simultaneous equations graphically [A18] 3) Solving simultaneous equations algebraically[A19]	**Key Content:** 1)Index notation and rules [N6] 2)Standard Form [N9] 3)Compound percentage change [R9] 4) Reverse percentage change [R9] 5) Other growth and decay contexts [R9, R10]

	Key Skills: Probability • Calculate simple probabilities from equally likely events. • Understand mutually exclusive and exhaustive outcomes. • Use two-way tables to record the outcomes from two events. • Work out probabilities from sample space diagrams. • Find and interpret probabilities based on experimental data. • Make predictions from experimental data • Understand when events are not independent. • Solve probability problems involving events that are not independent. Venn Diagrams • Use Venn diagrams to work out probabilities. • Understand the language of sets and Venn diagrams. Tree Diagrams • Use frequency trees and tree diagrams. • Work out probabilities using tree diagrams. Understand independent events.	**Key Skills:** Expanding and factorising • Expand brackets. • Simplify expressions with brackets. • Write and use formulae with brackets. • Factorise algebraic expressions. Solving Equations • Solve simple linear equations. • Solve two-step equations. • Solve linear equations with brackets. • Solve equations with unknowns on both sides. Linear Graphs • Recognise, name and plot straight-line graphs parallel to the axes. • Recognise, name and plot the graphs of y = x and y = −x. • Plot straight-line graphs from tables of values. • Find the gradient of a line. • Identify and interpret the gradient from an equation. • Understand that parallel lines have the same gradient. • Find the equations of straight-line graphs. • Use and draw distance–time graphs to solve problems.	**Key Skills:** Constructions • Recognise 3D shapes and their properties. • Draw and interpret plans and elevations of 3D shapes. • Make accurate drawings of triangles using a ruler, protractor and compasses. • Bisect angles and lines using rulers and compasses. • Accurately draw angles and 2D shapes using a ruler, protractor and compasses. Congruence • Recognise congruent shapes. • Use congruence to work out unknown angles. • Use congruence to work out unknown sides and angles in triangles and shapes made of triangles. Loci • Draw loci for the path of points that follow a given rule. • Identify regions bounded by loci to solve practical problems. Pythagoras Theorem • Calculate the length of the hypotenuse in a right-angled triangle. • Calculate the length of a shorter side in a right-angled triangle. Solve problems using Pythagoras' theorem.	**Key Skills:** Similarity • Use similarity to solve angle problems. • Find the scale factor of an enlargement. • Use similarity to solve problems. • Determine when two shapes are definitely not (or may not be) similar. • Understand the similarity of regular polygons. • Calculate perimeters of similar shapes. Trigonometric Ratios • Use the sine, cosine and tangent ratios to calculate the length of a side in a right-angled triangle. • Use the sine, cosine and tangent ratios to calculate an angle in a right-angled triangle. • Solve problems using an angle of elevation or angle of depression. • Know the exact values of the sine, cosine and tangent of some angles.	**Key Skills:** Quadratic Graphs • Multiply double brackets. • Square single brackets. • Plot graphs of quadratic functions. • Use quadratic graphs to solve problems. • Solve quadratic equations $ax^2 + bx + c = 0$ using a graph. • Solve quadratic equations $ax^2 + bx + c = k$ using a graph. • Factorise quadratic expressions. • Solve quadratic functions algebraically. Simultaneous Equations • Solve simultaneous equations by drawing a graph. • Write and solve simultaneous equations. Solve simultaneous equations algebraically.	**Key Skills:** Index Notation • Use index notation for powers of 10. • Use index notation in calculations. • To know and use the laws of indices. Standard Form • Write large numbers in standard form. • Convert numbers from standard form into ordinary numbers. • To multiply and divide numbers in standard form. • To add and subtract numbers in standard form. Percentages • Write one number as a percentage of another. • Find a percentage of a quantity. • Use percentages to solve problems. • Calculate simple interest. • Calculate percentage increases and decreases. • Use percentages in real-life situations. • Calculate VAT (value added tax). • Calculate a percentage profit or loss. • Find the original amount given the final amount after a percentage increase or decrease • Find an amount after repeated percentage changes. Solve growth and decay problems.

	Assessment opportunities: Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes
Year 8	**Key Content:** **Number** [N2, N3, N4, N6] • Calculations • Divisibility and division • Calculating with negative integers • Powers and roots • Powers, roots and brackets **Area and Volume [G12, G13, G14, G16]** • Area of a triangle • Area of parallelogram and trapeziums • Volume of cube and cuboids • 2D representations of 3D solids • Surface area of cubes and cuboids • Measures	**Key Content:** **Statistics: Graphs and Charts** [S2, S4, S5, S6] • Pie charts • Stem and leaf diagrams • Scatter graphs • Two way tables • Misleading graphs • Comparing data using averages and range **Expressions and Equations** [A1, A2, A3, A4, A5, A6, A7, A17] • Algebraic powers • Expressions and brackets • Factorising expressions • 1-step equations • 2-step equations • Solving equations using the balancing method	**Key Content:** **Statistics: Graphs and Charts** [A10, A14] • Conversion graphs • Distance- time graphs • Line graphs • Real-life graphs • Curved graphs **Decimals and Ratio** [N1, N2, N15, R5] • Ordering decimals and rounding • Place value calculations • Calculations with decimals • Ratio and proportion with decimals	**Key Content:** **Lines and Angles** [G3, G4] • Quadrilaterals Alternate angles and proof • Angles in parallel lines • Exterior and interior angles • Solving geometric problems **Calculating with fractions** [N2, N8] • Ordering fractions • Adding and subtracting fractions • Multiplying fractions • Dividing fractions • Calculating with mixed numbers	**Key Content:** **Straight Line Graphs** [A9, A10, R10, R11, R14] • Line graphs • Constructing graphs • Direct proportion on graphs • Gradients • Equations of straight lines • Plot co-ordinates on a set of axes	**Key Content:** **Percentages, decimals and fractions** [N1, N10, N12, R9] • Fractions and decimals • Equivalent proportions • Writing percentages • Percentages of amounts • Ordering fractions • Adding and subtracting fractions • Multiplying fractions • Dividing fractions • Calculating with mixed numbers
	Key Skills: • Use written methods to add and subtract more than two numbers (including decimals). • Use mental calculation for multiplication. • Estimate answers to calculations. • Know and use divisibility rules. • Add, subtract, multiply and divide positive and negative numbers, including larger numbers and decimals. • Calculate using squares, square	**Key Skills:** **Statistics Graphs and Charts** • Interpret pie charts. • Calculate angles and draw pie charts. • Use two-way tables. • Calculate the mean from a frequency table. • Use tables for grouped data, find modal class and estimate range. • Draw and interpret stem and leaf diagrams with different stem values. • Find mode, median and range from stem and leaf diagrams. • Compare two sets of data using averages and range. • Compare two sets of data using the shape of a line graph or pie charts.	**Key Skills:** **Real Life Graphs** • Use, interpret and plot conversion graphs. • Interpret and plot distance-time graphs. • Draw and use graphs to solve distance-time problems. • Plot line graphs from tables of data. • Interpret line graphs. • Draw and interpret line graphs and identify trends.	**Key Skills:** **Lines and Angles** • Classify quadrilaterals by their geometric properties. • Solve geometric problems using side and angle properties of special quadrilaterals. • Identify alternate angles on a diagram • Understand proofs of angle facts. • Identify corresponding angles. • Solve problems using properties of angles	**Key Skills:** **Straight Line Graphs** • Recognise when values are in direct proportion with or without a graph. • Plot graphs and reading values to solve problems. • Plot a straight-line graph and work out its gradient. • Plot the graphs of linear functions.	Key Skills: • Recall equivalent fractions and decimals. • Recognise recurring and terminating decimals. • Order fractions by converting them to decimals or equivalent fractions. • Change time to decimal hours. • Recall equivalent fractions, decimals and percentages. • Use different methods to find equivalent fractions, decimals and percentages. • Use the equivalence of fractions, decimals and percentages to compare two proportions. • Express one number as a percentage of another when the units are different.

	roots, cubes and cube roots. • Give integers that a square root lies between. • Calculate combinations of squares, square roots, cubes, cube roots and brackets. • Use a calculator to check answers.. • Write a number as a product of its prime factors. • Use prime factor decomposition to find the HCF and LCM.	• Draw line graphs to compare two sets of data. • Choose the most appropriate average to use. • Draw scatter graphs. • Describe types of correlation. • Draw a line of best fit on a scatter graph. • Interpret graphs and charts. • Explain why a graph or chart could be misleading. **Equations** • Understand and simplify algebraic powers. • Write and use expressions involving powers. • Expand brackets. • Write and simplify algebraic expressions and formulae using brackets and division. • Factorise expressions. • Find the inverse of a simple function. • Write and solve one-step equations using function machines. • Solve two-step equations using function machines. • Solve problems using equations. • Solve equations using the balancing method.	• Draw and interpret non-linear graphs from a range of sources. • Draw and interpret curved graphs from a range of sources. **Decimals and ratio** • Rounding to 2dp, 3dp and a given number of significant figures. • Order decimals of any size, including positive and negative decimals. • Multiply decimals with up to and including two decimal places. • Multiply and divide any number by 0.1 and 0.01. • Multiply and divide by decimals. • Solve problems involving decimals and all four operations. • Divide a quantity into three or more parts in a given ratio. • Use ratios involving decimals. • Solve ratio and proportion problems involving decimals.	in parallel and intersecting lines. • Calculate the sum of the interior and exterior angles of a polygon. • Work out the sizes of interior and exterior angles of a polygon. • Solve geometrical problems showing reasoning. • Solve problems involving angles by setting up equations.	• Write the equations of straight line graphs in the form y = mx + c.	• Work out an amount increased or decreased by a percentage. • Use mental strategies to solve percentage problems. • Use a multiplier to calculate amounts increased or decreased by a percentage. • Use the unitary method to solve percentage problems.

			• Use unit ratios.			
	Assessment opportunities: Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes	**Assessment opportunities:** Formative Summative Flipped learning Quizzes
Year 7	**Key Content:** 1) Number Skills [N2] 2) Working with negative numbers [N1, N2] 3) BIDMAS, Multiples and factors [N1, N2, N3, N4, A24]	**Key Content:** 1) Analysing and displaying data [S1,S2,S4] 2) Presentation and interpretation [S2,S4] 3) Averages (Mean, Median, Mode) [G14,S2,S4,S5] 4) Expression, function and equations [A7]	**Key Content:** 1) Lines and Angles [G3,G4] 2) Rotational and Line of Symmetry [G1,G2] 3) Angles in different shapes, around the point & ON lines [G3,G4]	**Key Content:** 1) Plotting points and straight-line graphs [ ] 2) Coordinates and mid-points [ ] 3) Translation and combined transformations [ ] 4) Area of triangles and quadrilaterals [ ]	**Key Content:** 1) Sequences and patterns [N8,N9,A23,A24,A25] 2) HCF and LCM with prime factor decomposition [N2,N3,N4,N5] 3) Working with fractions [N2,N3,N8]	**Key Content:** 1) Ratio, Proportions and fractions [N11,N12,R1,R2,R3,R4,R6,R8,R12,R10] 2) Proportions and percentages [R10] 3) Probability Language and calculations [P1] 4) Experimental probability [P1,P2,P3,P4,P5,P6,P7]
	Key Skills: • Place value systems including base ten and other bases • Commutativity, associativity and distributivity • Factors, primes and multiples • Square and cube numbers • Representing the structure of number • Establishing the order of operations • Factors, primes and multiples • Square and cube numbers • Representing the structure of number • Establishing the order of operations • Negative numbers in context Using negative numbers with all four operations	**Key Skills:** • Averages • Mean, Mode and median in a list • Mean, mode and median • Two-way table • Bar Chart • Line Chart • Composite bar chart • Pictogram • Writing expressions • Recognising equivalent expressions • Forming equations	**Key Skills:** • Measuring and drawing angles • Angles on a straight line and around a point • Angles in parallel lines • Creating expressions from angle facts • Classifying polygons according to their properties • Rotational and line symmetry • Internal angle sum of triangles and quadrilaterals • Using a ruler, compass and protractor to construct 2D shapes	**Key Skills:** • Plotting points in all four quadrants • Horizontal and vertical lines • Midpoints of line segments • Problem solving on a coordinate grid • Formula and solving equations • Area of triangles and quadrilaterals • Translation, rotation and reflection of an object on a Cartesian plane • Enlargement by a positive scale factor	**Key Skills:** • Sequences • Prime factor decomposition • LCM and HCF • Square and cube roots • Equivalent fractions • Converting between fractions • Multiply and divide fractions • Fractions of amounts • Mixed numbers and improper fractions • Addition and subtraction of fractions	**Key Skills:** • Ratio notation • Understand the relationship between ratio and fractions • Working with ratio and quantities • Equivalence to fractions and decimal fractions • • Percentage of an amount • Percentage increase and decrease • Finding the original amount • Using percentages, fractions and decimals in different contexts including probability

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