Mathematics

Curriculum Principles

Our uniting 'sentence' is: "The mathematics department at Dixons Unity ensured that all students left school as resilient and inquisitive problem solvers who possess the skills needed to understand the mathematics needed in everyday life".

By the end of their education, a student of mathematics at Dixons Unity Academy will:

- Know fundamental mathematics skills and understand how to use them in future learning and employment. These include money management; reading timetables; discovering and understanding patterns in data and being able to solve problems.

- Recognise the links between different areas of mathematics and mathematical methods; be analytical thinkers and have a thirst for mathematical reasoning. Students will have developed fluency in procedures and be strong problem solvers.

To achieve a true understanding of mathematics, topics have been intelligently sequenced based on the following rationale:

- The overall aim of the mathematics curriculum is to provide students with the knowledge they need to increase their cultural capital and be successful in their lives beyond the academy. With this in mind, the schemes of work sequence topics in a spiral curriculum, in which students revisit and extend their knowledge and understanding of topics several times throughout their time at Dixons Unity Academy. This sequence of learning promotes a deeper understanding of the mathematical concepts being taught.

- Within the classroom, teachers introduce new learning in small chunks, which allows students to develop their understanding of mathematical concepts without experiencing cognitive overload. Teachers introduce new concepts using clear modelling, linking the new learning to prior learning and in almost all cases, ensuring students understand how and why the mathematical concept works. When learning a new concept, students develop strong fluency before using and applying their new learning in different contexts.

- The concept of interrupting the forgetting process permeates the mathematics long term plan (LTP) and schemes of work (SOW). Interleaving and spaced learning are utilised in several ways. Across each year, new learning is split into units of work arranged in a spiral curriculum which means that students revisit and develop concepts that they have previously learned. Every lesson begins with a 'Learn Now', which promotes recall of integral knowledge from topics previously learned. Students also complete mini-tests at the end of each topic. The mini-test is completed the week after completing a topic to check understanding and recall of that knowledge after a short gap. Students receive whole class feedback on these mini-tests and teachers re-teach whole class next steps through 'DIRT lessons'. There are additional opportunities for spaced learning during morning meetings and homework – during morning meetings, students complete retrieval practice and brain dumps based on the key knowledge from previous topics and, for homework, students complete Sparx maths where topics are based on learning from the previous half term. The multiple opportunities for spaced practice and retrieval supports students in truly mastering the curriculum.

The Mathematics curriculum will address social disadvantage by addressing gaps in students' knowledge and skills":

- The spiral nature of the mathematics curriculum is designed with the most vulnerable student in mind, assuming a basic mathematical understanding from previous learning, each unit of work builds the students' knowledge. Key Stage 3 in particular is used to ensure fluency in fundamental mathematics by closing any knowledge gaps evidenced in assessment, whilst also providing suitable extension.

- Students with additional needs are often supported in the E band group which benefits from an additional lesson each week to support students to catch up or stay ahead of their peers. All students access the same curriculum in years 7, 8 and 9 and we have the highest expectations of all. This allows all students to achieve and experience the very best of what has been thought and said in mathematics.

We fully believe that mathematics can contribute to the personal development of students at Dixons Unity Academy:

- Students will be encouraged to develop socially in mathematics lessons through the celebration of making mistakes and setting high expectations helps students to develop listening and speaking skills. Taking part in 'The Maths Challenge' and 'Dixons Group Cup' events also encourages teamwork in problem solving. Self-awareness is developed through self-assessment, which enables students to have an accurate understanding of their strengths and weaknesses, to accept them and the understand how to learn from them

- Developing morality is evident in much of the mathematics curriculum where there is reference to real life contexts and students are encouraged to make decisions thus developing an understanding that certain choices may have different consequences and outcomes. One example where this applies is in percentages where comparing interest rates occurs and the role of 'loan sharks' can be discussed.

- Encouraging students to question how mathematics impacts the way the world works promotes the spiritual growth of our students. Referring to 'big issues' such as the gender pay gap, birth and death rates, gambling through probability and global warming within contextual questions allows students to have a concrete understanding of where mathematics fits into the bigger picture. Teaching a variety of strategies that allow creativity to blossom (i.e. construction and symmetry) and incorporating enrichment tasks during Maths Week such as money management and sport investigations allow students to develop more than just their problem-solving skills in this subject

Our belief is that homework should be interleaved revision of powerful knowledge that has been modelled and taught in lessons. This knowledge is recalled and applied through a range of low stakes quizzing and practice.

Opportunities are built in to make links to the world of work to enhance the careers, advice, and guidance that students are exposed to:

- The mathematics curriculum provides students with opportunities to consider the world of work and how mathematics leads to successful careers. Teachers take every opportunity to link learning to specific careers or a future life context. For example, when teaching constructions, reference can be made to any form of design work or navigational career.

- Students have the opportunity to engage in enrichment opportunities and take part in competitions, such as those offered by the local AMSP. In lessons, KS3 students have the opportunity to take part in application lessons, where they are required to solve a problem or complete a challenge which requires the skills that they have recently learnt. Map and scale reading skills developed as part of the Duke of Edinburgh Award, which students are able to participate in, further develops mathematical skill.

A true love of Mathematics involves learning about various cultural domains. We teach beyond the specification requirements, but do ensure students are well prepared to be successful in GCSE examinations:

- Being a universal language, and having phenomena developed all over the world, lends mathematics to promoting cultural capital. Discussion when introducing many topics, such as place value, time, Fibonacci sequences, Pythagoras and Trigonometry to name a few, allows cultural influences to be explored.

Curriculum Overview

All children are entitled to a curriculum and to the powerful knowledge which will open doors and maximise their life chances. Below is a high-level overview of the critical knowledge children will learn in this subject, at each key stage from Year 7 through to Year 11, to equip students with the cultural capital they need to succeed in life. Our powerful, knowledge-rich curriculum teaches both **substantive knowledge** (facts; knowing that something is the case; what we think about) and **procedural knowledge** (skills and processes; knowing how to do something; what we think with). There are no skills without bodies of knowledge to underpin them. The curriculum is planned vertically and horizontally giving thought to the optimum knowledge sequence for building secure schema.

<table>
<tr>
<th colspan="2"></th>
<th>Cycle 1</th>
<th>Cycle 2</th>
<th>Cycle 3</th>
</tr>
<tr>
<td rowspan="3">YEAR 7</td>
<td>New learning</td>
<td>Unit 1: Algebra
Order of operations, algebraic notation, simplifying including expanding and factorising single brackets, negative numbers, substituting, forming expressions, solving 1, 2 and 3-step equations, common sequences, nth term

Unit 2: Number
Place value, inequalities, comparing numbers, +/- methods, decimals, money calculations</td>
<td>Unit 2: Number (continued)
Factors & multiples, HCF & LCM, product of prime factors, x/÷ methods, decimals, estimation, rounding, perimeter and area including compound shapes, time

Unit 3: Geometry
Reading scales, powers of 10, unit conversions, identify, draw & measure angles, properties of 2D shapes, angle facts, tessellation</td>
<td>Unit 4: Fractions
Fractions of amounts, converting improper fractions and mixed numbers, simplifying including algebraic fractions, equivalent fractions, four operations including algebraic fractions, comparing, ordering

Unit 5: Percentages
Fraction/decimal/% conversions, ordering fractions/decimals/%, % of (calculator and non-calculator), expressing %, % increase and decrease</td>
</tr>
<tr>
<td>Revisited learning</td>
<td>Basic algebra (KS2)
4-operations (KS2)
Place value (KS2)
Inequalities (KS2)</td>
<td>Factors and multiples (KS2)
Area + Perimeter (KS2)
Rounding (KS2)
Converting units (KS2)
Angles (KS2)
Fractions (KS2)</td>
<td>Fractions, decimals and percentages (KS2)
Fractions (Cycle 2)</td>
</tr>
<tr>
<td>Additional information</td>
<td>Careers in animation (Unit 1: linear sequences) and interior design (Unit 2: perimeter)</td>
<td>Careers in astronomy (Unit 3: angles)</td>
<td>Careers in catering (Unit 4: fractions of amounts) and accountancy (Unit 5: % increase/decrease)</td>
</tr>
<tr>
<td rowspan="1">YEAR 8</td>
<td>New learning</td>
<td>Unit 6: Probability and Statistics
Averages, probability scale, sample space and listing outcomes, single event probability, probability 'not', frequency trees, pictograms, bar graphs, line graphs, pie charts

Unit 7: Number
Index laws, powers and roots, Pythagoras' theorem, standard form, prime factorisation for HCF and LCM, set notation, Venn diagrams including problem solving</td>
<td>Unit 8 Algebra
Inequalities, complex simplifying including algebraic fractions, formulae, transposing formulae, solving equations involving brackets and with variables on both sides, forming and solving from worded and geometric problems, expanding brackets, factorising quadratics, fractional sequences, problem solving with linear sequences, plotting linear functions from a table

Unit 9: 2D Geometry
Constructions including triangles, angle facts involving parallel lines, conversions of units including squared and cubed units, composite shapes, area of specific quadrilaterals, circumference and area of circles and part circles</td>
<td>Unit 10: Proportional Reasoning
% increase/decrease, percentage change, repeated percentage change, simple and compound interest, reverse percentage, rates and ratio, speed/distance/time, density/mass/volume, pressure/force/area</td>
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		Cycle 1	Cycle 2	Cycle 3
YEAR 9	**Revisited learning**	Averages (KS2) Prime factors (Y7)	Expanding brackets (Y7) Sequences (Y7) Angles (Y7) Converting units (KS2)	Percentages (Y7)
	Additional information	Careers in medicine (Unit 6: statistical diagrams) and ecology (Unit 7: index laws)	Careers in cryptoanalysis (Unit 8: forming and solving) and fashion design (Unit 9: area)	Careers in space travel (Unit 10: speed, distance, time)
	New learning	**Unit 11: 3D Geometry** Properties of 3D shapes, nets, plans and elevations, volume of prisms, pyramids and cones, surface area **Unit 12: Statistics** Representing data, comparing data sets, scatter graphs, time series and moving averages, MMMR from tables, frequency diagrams including polygons and simple histograms, identifying errors from statistical diagrams	**Unit 13: Graphs and Proportion** Coordinates, mid-points, linear graphs, equation of a straight line, direct/inverse proportion, scales and scale drawing **Unit 14: Algebraic Expressions** Arithmetic and geometric sequences nth term, algebraic fractions, transposing formulae involving factorisation, binomials, polynomials, factorising quadratics to solve them, difference of two squares, form and solve inequalities	**Unit 15: 2D Geometry** Perpendicular and angle bisectors, loci problems, mixed angle fact problems, angles in polygons, congruence and similarity, similar shapes lengths/areas/volumes, arc lengths, sector areas, geometric proof **Unit 16: Algebra - Graphs** Solve linear functions graphically, form and solve inequalities graphically, simultaneous equations, simultaneous equations graphically, quadratic/cubic/reciprocal/ exponential graphs
	CEAIG	Careers in architecture (Unit 11 : plans and elevations) and data analysis (Unit 12 : MMMR from tables)	Careers in land surveyance (Unit 13: scales) and computer game design (Unit 14: sequences)	Careers in network coverage (Unit 15: loci) and meteorology (Unit 16: construct and solve inequalities)
YEAR 10F	**New learning**	**Unit 17: Geometry – Triangles and Transformations** Pythagoras, 3D Pythagoras, trigonometry introduction, trigonometric functions, trigonometric graphs, transformations including enlargement by negative and fractional scale factors **Unit 18: Statistics** Averages from raw and grouped data, comparing data sets, stem and leaf diagrams, pictograms, bar charts, comparing graphs, frequency polygons, pie charts, scatter graphs	Unit 19: Algebra - Graphs Mid-points, plotting linear graphs, finding gradient and y-intercept given a graph or coordinates, equation of parallel lines, sketching quadratic graphs Unit 20: Limits and 3D Geometry Estimate complex calculations including roots and in context, error intervals, congruency, similar shapes, 3D properties and nets, plans and elevations, converting metric units, area of 2D shape, area of compound 2D shapes, circumference and arc length, area of circles and sectors, surface are of 3D shapes, volume of 3D shapes, converting area and volume measures	Unit 21: Probability Sampling, listing outcomes, product rule, single events, not happening, theoretical/experimental probabilities and expected frequency, bias, independent events, probability of combined events, AND/OR rules in probability Unit 22: Number Working with money, four operations (integers and decimals), index laws, standard form, factors, multiples, prime factorisation, FDP equivalence, four operations with fractions

		Cycle 1	**Cycle 2**	**Cycle 3**
YEAR 10H	**CIEAG**	Careers in surveyance and cartography (Unit 17: Pythagoras) and medicine (Unit 18: probability)	Careers in financial analyst (Unit 19: linear graphs) and graphic design (Unit 20: 3D shapes)	Careers in market research (Unit 21: sampling) and banking (Unit 22: working with money)
	New learning	**Unit 17: Geometry – Triangles and Transformations** Pythagoras, 3D Pythagoras, trigonometry introduction, trigonometric functions, trigonometric graphs, transformations including enlargement by negative and fractional scale factors **Unit 18: Probability and Statistics** Probability of combined events, AND/OR rules in probability, theoretical/experimental probabilities and expected frequency. grouped data, compare data sets, compound measures, SDT graphs	**Unit 19: Algebra - Graphs** Lengths of line segments, equation of a straight line not from a graph, parallel/perpendicular lines, sketching quadratic functions, area under curves, gradient of curves **Unit 20: Limits and 3D Geometry** Estimate complex calculations including roots and in context, error intervals, plans and elevations, 3D shapes surface area and volume, cones and spheres, limits of accuracy, upper/lower bounds, percentage error	**Unit 21: Statistics and Probability** Product rule for counting, sampling methods, capture re-capture, bias, probability from Venn diagrams, combined and conditional probability, cumulative frequency, interquartile range, box plots **Unit 22: Number** Complex index laws including equations, calculating with standard form, simple and compound interest, growth/decay, estimating roots, surds, ratio problems, converting recurring decimals and fractions
	CEAIG	Careers in surveyance and cartography (Unit 17: Pythagoras) and medicine (Unit 18: probability)	Careers in politics (Unit 19: algebraic argument) and graphic design (Unit 20: 3D shapes)	Careers in and market research (Unit 21: sampling) and banking (Unit 22: growth and decay)
YEAR 11		Year 11 classes follow a bespoke LTP based on the needs of each class and informed by ongoing assessment.		

Year 7 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	Induction	**Unit 1 Algebra** Algebraic notation	**Unit 1 Algebra** Substitution	**Unit 1 Algebra** Substitution	**Unit 1 Algebra** Simplifying	**Unit 1 Algebra** Simplifying	**Unit 1 Algebra** Solving	**Unit 1 Algebra** Solving	**Unit 1 Algebra** Sequences	**Unit 1 Algebra** Sequences	**Unit 2 Number** Place value, inequalities, and ordering	**Unit 2 Number** Four operations inc. decimals	**Unit 2 Number** Four operations inc. decimals
							Assessment Weeks						
C2	Intervention Week	**Unit 2 Number** Factors and multiples	**Unit 2 Number** Factors and multiples	**Unit 2 Number** Rounding and estimation	**Unit 2 Number** Rounding and estimation	**Unit 2 Number** Application	**Unit 3 Geometry** Unit conversion	**Unit 3 Geometry** Angle types, estimating, draw and measure.	**Unit 3 Geometry** Angle types, estimating, draw and measure.	**Unit 3 Geometry** Angle facts	**Unit 3 Geometry** Mixed angle facts	**Unit 3 Geometry** Mixed angle facts	**Unit 4 Fractions** Fractions of amounts
								Assessment Weeks					
C3	**Unit 4 Fractions** Fraction equivalence	**Unit 4 Fractions** Four operations with fractions	**Unit 4 Fractions** Four operations with fractions	**Unit 4 Fractions** Compare and order fractions	**Unit 4 Fractions** Worded fraction problems	**Unit 5 Percentages** FDP conversions and Ordering FDP	**Unit 5 Percentages** FDP conversions and Ordering FDP	**Revision and Assessments**	**Revision and Assessments**	**Unit 5 Percentages** Percentages of amounts non-calculator	**Unit 5 Percentages** Percentage increase and decrease non-calculator	**Unit 5 Percentages** Percentage increase and decrease non-calculator	Intervention Week

Year 8 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
Cyle 1	Induction	**Unit 6 Probability and Statistics** Probability NOT and from listing outcomes and frequency trees	**Unit 6 Probability and Statistics** Calculating MMMR	**Unit 6 Probability and Statistics** Simple statistical diagrams	**Unit 6 Probability and Statistics** Pie charts **Assessments**	**Unit 7 Number** Index laws **Assessments**	**Unit 7 Number** Calculating with powers and roots, inc. Pythagoras	**Unit 7 Number** Calculating with powers and roots, inc. Pythagoras	**Unit 7 Number** Standard form	**Unit 7 Number** Prime factorisation, HCF and LCM	**Unit 7 Number** Prime factorisation, HCF and LCM	**Unit 7 Number** Sets and Venn diagrams	Intervention Week
Cycle 2	**Unit 8 Algebra** Inequalities	**Unit 8 Algebra** Complex manipulation	**Unit 8 Algebra** Complex manipulation	**Unit 8 Algebra** Forming and Solving	**Unit 8 Algebra** Forming and Solving	**Unit 8 Algebra** Expanding and factorising binomials	**Unit 8 Algebra** Expanding and factorising binomials	**Unit 8 Algebra** Sequences	**Unit 9 2D Geometry** Constructions	**Unit 9 2D Geometry** Angles in parallel lines	**Unit 9 2D Geometry** Unit conversions	**Unit 9 2D Geometry** Area of trapezia and compound shapes	**Unit 9 2D Geometry** Area of trapezia and compound shapes
Cycle 3	**Unit 9 2D Geometry** Circles	**Unit 9 2D Geometry** Circles	**Unit 10 Proportional Reasoning** Percentage of amounts non calc and calc	**Unit 10 Proportional Reasoning** Percentage increase/decrease calc	**Unit 10 Proportional Reasoning** Percentage increase/decrease non calc	**Unit 10 Proportional Reasoning** Reverse percentages	**Unit 10 Proportional Reasoning** Compound interest	**Revision and Assessments**	**Revision and Assessments**	**Unit 10 Proportional Reasoning** Ratio	**Unit 10 Proportional Reasoning** Ratio	**Unit 10 Proportional Reasoning** Compound measures	Intervention Week

Assessment Weeks appears spanning Weeks 6–8 (Cycle 1), Weeks 7–9 (Cycle 2), and Weeks 8–11 (Cycle 3).

Year 9 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	**Induction**						**Assessment Weeks**						
	Unit 11 3D Geometry Solids' properties, nets, plans, elevations	**Unit 11 3D Geometry** Surface area	**Unit 11 3D Geometry** Surface area	**Unit 11 3D Geometry** Volume of prisms	**Unit 11 3D Geometry** Volume of cylinders, cones and pyramids	**Unit 11 3D Geometry** Volume of cylinders, cones and pyramids	**Unit 12 Statistics** Collecting and organising data	**Unit 12 Statistics** Interpret and compare statistical representations	**Unit 12 Statistics** MMMR from a frequency table	**Unit 12 Statistics** MMMR from a frequency table	**Unit 12 Statistics** Frequency diagrams	**Unit 12 Statistics** Identifying errors and misconceptions in statistical diagrams	**Unit 13 Graphs and Proportion** Linear functions
C2							**Assessment Weeks**						
	Unit 13 Graphs and Proportion Direct proportion	**Unit 13 Graphs and Proportion** Inverse proportion	**Unit 13 Graphs and Proportion** Scale	**Unit 14 Algebraic Expressions** Sequences	**Unit 14 Algebraic Expressions** Expanding	**Unit 14 Algebraic Expressions** Factorising	**Unit 14 Algebraic Expressions** Factorising	**Unit 14 Algebraic Expressions** Solving	**Unit 14 Algebraic Expressions** Solving	**Unit 14 Algebraic Expressions** Transposing Formulae	**Unit 14 Algebraic Expressions** Transposing Formulae	**Unit 15 2D Geometry** Constructions and Loci	Intervention Week
C3								**Assessment Weeks**					
	Unit 15 2D Geometry Angles in polygons	**Unit 15 2D Geometry** Congruency and Similarity	**Unit 15 2D Geometry** Arcs and sectors	**Unit 15 2D Geometry** Arcs and sectors	**Unit 16 Algebra Graphs** Form and solve inequalities	**Unit 16 Algebra Graphs** Graphing inequalities and identifying regions	**Unit 16 Algebra Graphs** Simultaneous equations	**Revision and Assessments**	**Revision and Assessments**	**Unit 16 Algebra Graphs** Simultaneous equations	**Unit 16 Algebra Graphs** Quadratic graphs	**Unit 16 Algebra Graphs** Other algebraic graphs	Intervention Week

Year 10 Higher Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	Induction	**Bridging Unit 1:** Quadratic Expressions and Equations	**Bridging Unit 1:** Quadratic Expressions and Equations	**Bridging Unit 1:** Sequences	**Bridging Unit 2:** Area and Volume	**Bridging Unit 2:** Area and Volume	**Bridging Unit 2:** Area and Volume *(Assessment Weeks)*	**Unit 17 Triangles and Transformations** Pythagoras' theorem inc. 3D	**Unit 17 Triangles and Transformations** Pythagoras' theorem inc. 3D	**Unit 17 Triangles and Transformations** Pythagoras' theorem inc. 3D	**Unit 17 Triangles and Transformations** Trigonometry	**Unit 17 Triangles and Transformations** Trigonometry (inc. graphs)	**Unit 17 Triangles and Transformations** Reflection, translation, and rotation
C2	**Unit 17 Triangles and Transformations** Enlargement, inc. negative and fractional	**Unit 17 Triangles and Transformations** Mixed transformation	**Unit 19 Algebra Graphs** Line segments	**Unit 19 Algebra Graphs** Equation of a line from coordinates	**Unit 19 Algebra Graphs** Parallel and perpendicular lines	**Unit 19 Algebra Graphs** Sketching quadratics Gradient of and area under curves	**Unit 19 Algebra Graphs** Gradient of and area under curves *(Assessment Weeks)*	**Unit 20 Limits and 3D Geometry** Estimation	**Unit 20 Limits and 3D Geometry** Bounds of accuracy	**Unit 20 Limits and 3D Geometry** Volume and S.A	**Unit 20 Limits and 3D Geometry** Volume and S.A	**Unit 20 Limits and 3D Geometry** Plans and Elevations	**Unit 20 Limits and 3D Geometry** 3D Geometry Applications
C3	**Unit 21 Probability** Outcomes inc. product rule and sample space	**Unit 21 Probability** Understanding and using sampling	**Unit 21 Probability** Venn diagrams	**Unit 21 Probability** Probability of combined events	**Unit 21 Probability** Conditional probability	**Unit 22 Number** Index laws inc. equations, fractional and negative	**Unit 22 Number** Standard form calculations	**Unit 22 Number** Standard form calculations *(Assessment Weeks)*	**Revision and Assessments**	**Unit 22 Number** Interest inc. growth and decay	**Unit 22 Number** Surds	**Unit 22 Number** Surds	**Unit 22 Number** Ratio

Year 10 Foundation Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	Induction	Unit 17 Triangles and Transformations Pythagoras' theorem	Unit 17 Triangles and Transformations Pythagoras' theorem inc. 3D	Unit 17 Triangles and Transformations Trigonometry	Unit 17 Triangles and Transformations Trigonometry	Unit 17 Triangles and Transformations Reflection, rotation, translation,	Unit 17 Triangles and Transformations Enlargement (inc. negative and fractional)	Unit 17 Triangles and Transformations Mixed transformations and describing	Unit 18 Statistics MMMR from raw and grouped data, compare data sets	Unit 18 Statistics Stem & Leaf (include calc averages), pictograms, bar charts (composite), line graphs	Unit 18 Statistics Comparing graphs, Frequency polygons,	Unit 18 Statistics Pie charts	Unit 18 Statistics Scatter graphs
							Assessment Weeks						
C2	Unit 19 Algebra Graphs Co-ordinates, mid-point, and end points, plot linear	Unit 19 Algebra Graphs Line segments, state the gradient, and y-intercept and calculate given a graph.	Unit 19 Algebra Graphs Gradient, and y-intercept and calculate given a graph and given co-ordinates	Unit 19 Algebra Graphs Parallel lines and quadratic graphs	Unit 20 Limits and 3D Geometry Rounding and estimating	Unit 20 Limits and 3D Geometry Estimating complex calculations and error intervals	Unit 20 Limits and 3D Geometry Congruency, similar shapes, 3D properties and nets	Unit 20 Limits and 3D Geometry Plans and elevations, converting metric units, area of 2D shapes	Unit 20 Limits and 3D Geometry Area of compound 2D shapes	Unit 20 Limits and 3D Geometry Circumference and arc length	Unit 20 Limits and 3D Geometry Area of circles and sectors	Unit 20 Limits and 3D Geometry Surface Area of 3D shapes	Intervention Week
							Assessment Weeks						
C3	Unit 20 Limits and 3D Geometry Volume of 3D shapes, converting area and volume measures	Unit 21 Probability Sampling, List outcomes, product rule, scales, single events, not happening	Unit 21 Probability Theoretical / experimental, expected frequency, bias	Unit 21 Probability Independent events, probability of combined events {frequency trees, two-way tables, and sample space)	Unit 21 Probability Probability of combined events including conditional Venn Diagrams	Unit 22 Number Working with money. Four operations (integers and decimals)	Unit 22 Number Indices and index laws (multiply, divide, brackets, basic negative)	Revision and Assessments	Revision and Assessments	Unit 22 Number Standard Form	Unit 22 Number Factors, multiples, HCF and LCM, Prime factorisation (include HCF and LCM)	Unit 22 Number FDP equivalence (inc ordering) Four operations with fractions	Intervention Week

DIXONS UNITY ACADEMY

11/Ma1 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	Induction	1.Rationalising surds (with quick recap) 2.Simplifying Algebraic fractions 3.x and / algebraic fractions 4. + / - algebraic fractions (solving)	1. Solving quad equations with algebraic fractions 2. change the subject (include inverse functions) 3. proof 4. proof 2	1. functions recap 2. composite functions 3. inverse functions 4. Mixed transformations	1. vector notation + drawing 2. scalar multiples 3. adding and subtracting vectors 4. length of vectors	1. Geometric vectors 2. geometric vectors 2 3.parallel vectors 4. colinear vectors	1. revision – standard form 2. revision – ratio % fraction problems 3. revision – reading estimates off graphs etc. 4. revision – density where you need to work out volume and compare	1.revision - mean from a table grouped/ungrouped 2.revision-proportion (including combining) 3. revision – indices including negative/fractional/roots 4. revision – right angle triangles mix	Revision	Y11 MOCKS	Y11 MOCKS	1. revision - right angle triangles mix 2 2.revision - forming equations e.g., finding ages 3. revision – forming expressions using algebra (compound shapes) showing that area = expression 4. revision – speed combining	1.revision - gradient of a line from a graph 2. revision - gradient of a line from co-ordinates 3. revision- gradient parallel /perpendicular 4. revision -gradient involving tangents to circles
C2	1. revision - reverse % including compound 2. revision -bounds - + - x / 3. revision - Histograms reading and drawing 4. revision - Histograms 2 – splitting into parts	1. revision - 3d Pythagoras and trig 2. revision - Probability - conditional 3. revision - Iteration – wordy exam style 4. revision - simultaneous equations in context e.g., points of intersection of 2 graphs (not drawn)	1. Quadratic formulae 2. Factorising harder quadratics 3. Complete the square	1. Quadratic Nth term 2. Circle theorems x3	1. Similar shapes area and volume x2 2. Enlargement inc. negative scale factors x2	1. Cumulative frequency 2. Box plots 3. Inequalities on graphs x2	1. Direct proportion x1 2. Inverse proportion x1 3. Recurring decimals to fractions	1. Sine rule 2. Cosine rule 3. Area of any triangle	Y11 MOCKS	Y11 MOCKS	1. Linear and quadratic inequalities 2. Exact trig values	**QLA GAPS to be updated after February Mocks**	**QLA GAPS to be updated after February Mocks**
C3	**QLA GAPS to be updated after February Mocks**	**QLA GAPS to be updated after February Mocks**	**QLA GAPS to be updated after February Mocks**	**EXAM PRACTICE/ predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					

11/Ma2 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	**Induction**	1. Estimate area under a graph 2. Calculate and interpret gradient of a graph.	1. Interpret gradient of real life graphs 2. Instantaneous rate of change 3. Construct graph of a circle using $x^2+y^2 = r^2$	1. Finding the gradient of the radius that meets the circle at that point 2. finding the gradient of the tangent perpendicular to it 3. Find the equation of a tangent and radius	1. Solving equations with brackets and unknowns on both sides. 2. Solving inequalities. 3. Form and solve equations and inequalities.	1. Area and circumference of circles 2. Arc length 3. Sector area	1. Interior angles of polygons 2. Exterior angles of polygons 3. Angles in parallel lines	1. Mixed angle facts and problem solving. 2. Volume of prisms 3. Surface area	**Revision**	**Y11 MOCKS**	**Y11 MOCKS**	1. Simultaneous equations (substitution) 2. Simultaneous equations (no scaling) 3. Simultaneous equations (scaling)	1. Similar shapes – lengths 2. Similar shapes – area and volume 3. Pythagoras 4. 3D Pythagoras
C2	1. Trigonometry – finding side lengths 2. Trigonometry – finding angles 3. Combined trigonometry and Pythagoras	1. expand double and triple brackets 2. Simplifying surds 3. Expand with surds 4. Rationalise denominator	1. Factorise quadratics inc. difference of 2 squares 2. Solve quadratic equations by factorising 3. Draw quadratic graphs 4. Solve quadratic equations graphically	1. laws of indices 2.negative fractional indices + problem solve indices 3. Algebraic fractions x2	1. change the subject 2. Nth term linear 3. Quadratic nth term 4. Mean from a table	1. Inverse mean 2. Cumulative frequency 3. Box plots 4. Draw and interpret histograms x2	1. scatter graphs 2. 4 ops with fractions 3. Recurring decimals to fractions	1. Product rule 2. HCF and LCM using Venn and set notation 3. Writing in standard form 4. 4 operations with standard form	**Y11 MOCKS**	**Y11 MOCKS**	1. Direct and inverse proportion worded 2. Algebraic proportion x2 3. Plot any algebraic graphs and recognize based on shape	1. find the equation of a line 2. find equation given a point and two points 3. Parallel and perpendicular lines x2	1. iteration x 2 2. Reverse percentage 3. Compound and simple interest
C3	1. Conditional probability x2 2. Vectors x2	1. Averages from grouped and non-grouped tables x2 2. Transformations x2	**QLA GAPS to be updated after February Mocks**	**EXAM PRACTICE/ predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					

11/Ma3 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C 1	Induction	1. Standard Form – large numbers 2. Standard Form – small numbers 3. Standard Form multiply & divide 4. Standard From add & subtract	1. Standard Form add & subtract 2 2. Similar Triangles 3. Similar Polygons 4. Similar Shapes - Area	1. Similar Shapes - Volume 2. Congruency 3. Vector Notation 4. Scalar multiples	1. Adding and subtracting vectors 2. Length of a vector 3. Geometric vector 4. Changing the subject 1	1. Speed, Distance, Time 2. Speed Distance Time 3. Distance time Graphs 4. Distance time graphs	1. LCM HCF (with or without Venn) 2. LCM HCF worded exam questions 3. Expand single and expand and simplify 4. Form algebraic expressions	1. Solve 1/2 step 2. Laws of indices 3. Negative indices 4. Factorise single	Revision	Y11 MOCKS	Y11 MOCKS	1. Factorise quadratics 2. Substitute positive and negative (including suvat) x2 3. Volume of sphere/cone (substitution)	1. Ratio – simplify 1:n x1 2. Sharing into ratio 3. Ratio exam questions 4. Solve and represent inequalities
C 2	1. Solve simultaneous equations (no scaling) x2 2. Solve simultaneous (with scaling) x2	1. Plot coordinates and find midpoints 2. Draw vertical and horizontal graphs 3. Plot linear graphs	1. Simple and compound interest x2 2. Reverse percentages	1. Basic angle facts 2. Angles in triangles and quadrilaterals 3. Angles in parallel lines x2	1. Mixed angle facts and exam practice 2. Angles in polygons x2 3. Plans and elevations	1. Area (simple and compound) x2 2. Volume of cubes, cuboids, triangular prisms, and cylinders x2	1. Algebraic area 2. Perimeter of simple and compound shapes 3. Pythagoras x2	1. Bearings x2 2. Circumference and area of circles (inc. label parts of a circle) x2	Y11 MOCKS	Y11 MOCKS	1. Recipes 2. Basic proportion 3. Arc length and sector area x2	1 Transformations x4	1. Surface area x2 2. Right angle trigonometry x2
C 3	1. Frequency polygons x1 2. Listing outcomes 3. Tree diagrams x2	1. Averages 2. Venn diagrams – interpret and draw 3. Averages from a table 4. Averages from a grouped table	1. Two-way tables 2. Pie charts x2 3. Stem and leaf	**EXAM PRACTICE/ predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					

DIXONS UNITY ACADEMY

11/Ma4 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C1	**Induction**	1. Multiplication 2. Short division 3. Expand single brackets 4. Factorising expressions	1. Expand double brackets 2. Factorising quadratics 3. Solving quadratics by factorising. (2)	1. Linear graphs and solving simultaneous equations. 2. Quadratic graphs 3. Area of shapes 4. Parts of a circle, area of circle including in terms of pi	1. Circumference of a circle and perimeter of a sector. 2. SA Cuboid 3. SA Triangular prism -- Volume of all prisms 4. SA cylinder	1. Volume of a cylinder 2. Add and subtract mixed fractions 3. Multiply and divide including mixed fractions. 4. Multiply and divide including mixed fractions.	1. Index laws power 0 and 1 2. Index Laws (multiplication, division) 3. Index laws brackets 4. Mixed index laws	1. Fractional negative indices. 2. Writing large numbers in Standard form 3. Writing small numbers in Standard form 4. Add and subtract standard form	**Revision**	**Y11 MOCKS**	**Y11 MOCKS**	1. Multiply and divide standard form 2. Similar triangles 3.Similar polygons 4.Similar shapes area	1.Similar shapes volume 2. Congruence 3. Vector notation 4. Scalar multiples
C2	1. Add and subtract vectors 2.Geometric vectors 3. Rearranging formulae	1. Solve simultaneous equations (no scaling) x2 2. Solve simultaneous (with scaling) x2	1. Plot coordinates and find midpoints 2. Draw vertical and horizontal graphs 3. Plot linear graphs	1. Simple and compound interest x2 2. Reverse percentages	1. Basic angle facts 2. Angles in triangles and quadrilaterals 3. Angles in parallel lines x2	1. Mixed angle facts and exam practice 2. Angles in polygons x2 3. Plans and elevations	1. Revise area and perimeter. 2. Algebraic area 3. Pythagoras	1. Right angle trigonometry 2. Mixed Pythagoras and Trigonometry	**Y11 MOCKS**	**Y11 MOCKS**	1. Bearings x2 1. Recipes 2. Basic proportion	1. Transformations x4	1. Frequency polygons x1 2. Listing outcomes 3. Tree diagrams x2
C3	1. Averages 2. Venn diagrams – interpret and draw 3. Averages from a table 4. Averages from a grouped table	1. Substitution 2. Solving equations 3. Collect like terms	1. LCM HCF (with or without Venn) 2. LCM HCF worded exam questions	**EXAM PRACTICE/ predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					

11/Ma5 Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
C 1	**Induction**	1.Index laws (neg, 0 and 1) 2.Index Laws Multiplication 3.Index Laws Division 4.Index Laws Brackets	1. Standard Form Converting 2. Standard Form Add/Subtract 3.Standard Form Multiply/Divide	1. Place Value Exam questions 2. Multiplying Fractions 3. Dividing Fractions 4. Fraction of amount	1. Add/subtract Fractions (2. Multiplying Fractions 3. Dividing Fractions 4. Fraction of amount	1. Prime Numbers 2. Product of Prime 3. Mixed Multiples/Factors/Primes Exam Questions 4. Converting Basic F.D.P.	1. Percentage of amount (Basic) 2. Percentage of amount (Calc) 3. Reflection 4. Bar charts (Drawing and Interpreting) Exam Questions 5. Interpreting stem and leaf	1.Drawing Stem and Leaf 2. Mode/Median 3. Range/Mean 4. Mixed Averages Exam Questions 5. Converting Units of Length	**Revision**	**Y11 MOCKS**	**Y11 MOCKS**	1. Converting Units of Mass 2. Converting Units of Capacity 3. Mixed Units questions 4. Recipes 5. Money Problems Basic	1. Money problems (giving change) 2. Money Problems (Monthly Payments) 3. Money Problems (Complex) 4. Money Problems (Price per Unit) 5. Best Buys
C 2	1. Similar Triangles 2. Similar Polygons 3. Congruency 4. Writing and Drawing Vectors	1. Nth term of linear sequences 2. Use nth term to generate sequences	1. Expand single brackets 2. Factorise single brackets 3. Simplify algebra – multiplication and division 4. Collect like terms	1. Solve 2 step equations 2. Expand and solve 3. Basic angle facts 4. Angles in triangles and quadrilaterals	1. Expand double 2. Factorise into double brackets 3. Substitution into expressions and formulae inc. volume of sphere/cone	1. Simple interest 2. Compound interest 3. Mixed percentage problems	1. Plot coordinates and find midpoints 2. Plot linear graphs x2 3. Area (simple and compound) x2	1. Area and circumference x2 2. Arc length and sector area x2 3. Volume of prisms x2	**Y11 MOCKS**	**Y11 MOCKS**	1. Volume of cylinders 2.Volume of other 3D solids x2 3. Perimeter of simple and compound shapes x2	1. Application problems involving shape and algebra 2. Pythagoras – find c 3. Pythagoras – find a or b 4. Pythagoras – mixed exam practice	1. Similar Triangles 2. Similar Polygons 3. Congruency 4. Writing and Drawing Vectors
C 3	1. Plans and Elevations 2. Averages from a list x2 3. Averages from a table – mode and range	1. Mean from a table – grouped and no grouped x2 2. Frequency trees 3. Two-way tables	**QLA GAPS to be updated after February Mocks**	**EXAM PRACTICE/ predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					

11/MaE Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
		1. Multiplication and division 2. Addition and subtraction 3. Place value	1. Metric units x2 2. Algebraic notation and terminology 3. Collecting like terms 4. Multiplying terms	1. Expanding brackets 2. Factorising into single brackets 3. Simplify fractions 4. FDP conversion 5. FDP ordering	1. Negative numbers x2 2. Highest common factor 3. Lowest common multiple 4. Prime factorisation	1. Rounding 2. Significant figures 3. Index Laws x2 4. Finding linear nth term	1. Simplify ratio 2. Share into ratio 3. Ratio – given part 4. Ratio exam problems 5. Recipes	1. Reflection 2. Rotation 3. Translation 4. Enlargement 5. Mixed transformations practice	**Revision**	**Y11 MOCKS**	**Y11 MOCKS**	1. Fraction of an amount x2 2. Add/subtract fractions 3. Multiply/divide fractions 4. Fractions exam problems	1. Bar charts 2. Pictograms 3. Stem and Leaf 4. Mixed data representations and interpret x2
C 2	1. Percentage of an amount x2 2. Percentage increase/decrease x2 3. Simple interest	1. Compound interest x2 2. Mixed simple and compound interest 3. Mixed percentage problems x2	1. Standard form – converting x2 2. Standard form – 4 operations x2 3. SDT calculations	1. Solve two step equations 2. Expand and solve 3. Basic angle facts 4. Angles in triangles and quadrilaterals	1. Plot coordinates and find midpoints 2. Plot linear graphs x2 3. Area (simple and compound) x2	1. Area and circumference x2 2. Arc length and sector area x2 3. Volume of prisms x2	1. Volume of cylinders 2.Volume of other 3D solids x2 3. Perimeter of simple and compound shapes x2	1. Application problems involving shape and algebra 2. Pythagoras – find c 3. Pythagoras – find a or b 4. Pythagoras – mixed exam practice	**Y11 MOCKS**	**Y11 MOCKS**	1. Plans and Elevations 2. Similar shapes x2 3. Averages from a list x2	1. Averages from a table – mode and range 2. Mean from a table – grouped and no grouped x2 3. Frequency trees 4. Two-way tables	1. Frequency polygons 2. Scatter graphs – draw and interpret 3. Line of best fit 4. Probability from statistical representations
C 3	1. Vectors x2	**QLA GAPS to be updated after February Mocks**	**QLA GAPS to be updated after February Mocks**	**EXAM PRACTICE/predicted papers**	Thu 16th – Paper 1	**Paper 2/3 prep**	Mon 3rd – Paper 2	Mon 10th–Paper 3					