Maths

Maths Faculty

Vision

Our aim is to be a Centre of Excellence for Mathematics, where we are a provider of choice for learners at any stage of their mathematical journey. Our curriculum focuses on fostering a love of the learning of maths, giving students the opportunity to see success across a subject that encompasses a wide variety of skills and topics.

Context

Our students have a wide variety of attainment levels and aspirations that have developed from their Key Stage 2 experiences. Through the use of team planning and curriculum development, alongside mixed attainment, cross-curricular work and enrichment opportunities, we look to foster a confidence in our learners and ultimately raise their aspirations and achievements.

Grove School: Curriculum

Disciplinary Knowledge

Students follow the National Curriculum through the White Rose Maths scheme of work at Key Stage 3, allowing for a smooth transition from our primary feeder schools. At Key Stage 4, students follow the AQA specification for both Foundation and Higher tier learning. At Key Stage 5, A Level Maths students use a bespoke scheme of learning, following the AQA Specification for A Level Maths and MEI OCR (B) Specification for Further Maths.

Supra Curriculum

Enrichment opportunities are provided within lessons and also through national competitions such as UKMT as well as clubs such as Future Mathematicians, STEM links, and further study through Level 2 Further Maths qualifications.

Students also have access to online learning platforms. In KS3 and 4 students use Hegarty Maths (hegartymaths.com) and at KS5 they additionally have Integral Maths (integralmaths.org.uk) tsupport and broaden their knowledge and understanding of mathematics.

Grove School: Curriculum

Key Stage 3
Maths

Year 7

This year will build on the foundations of maths knowledge and skills gained in Key Stage 2 as a continuation of the White Rose Maths scheme of learning that is followed by our feeder primary schools. All students will gain a secure grounding in the key concepts of number, algebra, geometry, ratio, and statistics, which underpin their future learning in Key Stage 4 and are crucial in building the more complex GCSE knowledge and concepts around.

Year 8

This year will build on the foundations of maths knowledge and skills gained in Key Stage 2 and Year 7 as a continuation of the White Rose Maths scheme of learning that is followed by our feeder primary schools. All students will gain a secure grounding in the key concepts of number, algebra, geometry, ratio, and statistics, which underpin their future learning in Key Stage 4 and are crucial in building the more complex GCSE knowledge and concepts around.

Year 9

This year will build on the foundations of maths knowledge and skills gained in Key Stage 2, Year 7 and Year 8 as a continuation of the White Rose Maths scheme of learning that is followed by our feeder primary schools. All students will gain a secure grounding in the key concepts of number, algebra, geometry, ratio, and statistics, which underpin their future learning in Key Stage 4 and are crucial in building the more complex GCSE knowledge and concepts around.

Grove School: Curriculum Narrative

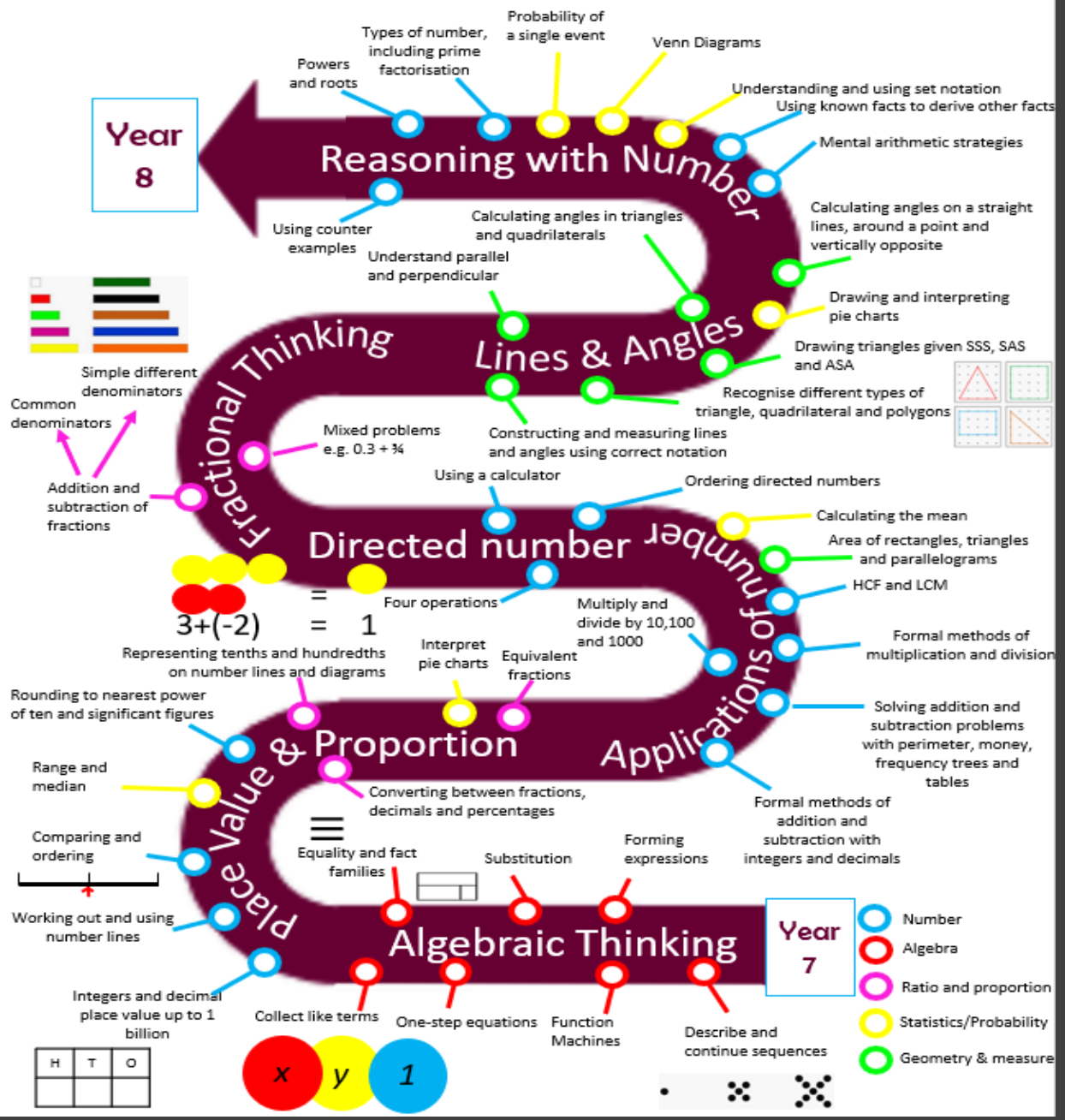
Knowledge from KS2 feeds into year 7

- Write and order numbers up to 10 million
- Use negative numbers in context
- Round any whole number to a required degree of accuracy
- Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000
- Perform mental calculations, including with mixed operations and large numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- Divide up to 4 digit numbers by up to 2 digit numbers and interpret remainders as whole number remainders or fractions

- Use equivalence to order, add and subtract fractions
- Multiply proper fractions and mixed numbers by whole numbers
- Divide a proper fraction by a whole number
- Identify the value of the digits up to 3 decimal places
- Multiply 1 digit numbers with up to 2 decimal places by whole numbers
- Solve problems involving decimals up to 3 decimal places
- Use written division in cases where the answer has up to 2 decimal places
- solve problems involving the calculation of percentages
- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- Convert between metric units
- Appreciate that shapes can have the same area but different perimeters
- Calculate volume of cubes and cuboids
- Calculate area and perimeter of shapes including parallelograms, triangles and rectangles.
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

YEAR 7 MATHS LEARNING JOURNEY



Scheme of Learning OVERVIEW

The Big Picture:

This year will build on the foundations of Maths knowledge and skills gained in KS2 as a continuation of the White Rose Maths scheme of learning followed by our feeder primaries. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio, and Statistics, which underpin future learning in KS4 and are crucial to building the more complex GCSE concepts.

Subject: Maths **Year Group: 7**

Intent

Topic	Skills/Knowledge	Prior knowledge	Future extensions	
Algebraic Thinking	Sequences Algebraic Notation Equality and Equivalence	Pictorial Representation of Sequences – Y6 Term-to-term Rule – Y6 Introduction to Algebraic Notation – Y6 Solving One and Two-Step Equations – Y6	Finding missing term – HA	Algebraic Techniques – Y8
Place Value and Proportion	Place Value Fractions, Decimals, and Percentages Equivalence	Place Value, Rounding and Comparing – Y6 Fractions – Y6	Standard Form - HA Negative Powers – HA Fractions, Decimals, and Percentages Above 1 – HA	Calculations with Fractions – Y8 Proportional Reasoning – Y8
Applications of Number	Solving Problems with Addition and Subtraction Solving Problems with Multiplication and Division Fractions and Percentages of Amounts	Addition, Subtraction, Multiplication, and Division – Y6 Divide Decimals by Integers – Y6 Fractions of Amounts – Y6	Adding and subtracting in Standard Form – HA Multiplication and Division of Algebraic Expressions – HA Fractions, Decimals, and Percentages Above 1 – HA Multiplicative change – HA	Multiplicative Change – Y8 Decimal Multipliers – Y8 Financial Maths – Y8
Directed Number and Fractional Thinking	Four Operations with Directed Numbers Addition and Subtraction of Fractions	Addition, Subtraction, Multiplication, and Division – Y6 Adding and Subtracting Fractions – Y6	Powers and Roots – HA Algebraic Fractions – HA	Probability – Y8
Lines and Angles	Constructing, Measuring, and Using Geometric Notation Developing Geometric Reasoning	Use of Protractor – Y6 Basic Angle Rules – Y6	Angles and Polygons - HA	Angles in Parallel Lines – Y8
Reasoning with Number	Developing Number Sense Sets and Probability Prime Numbers and Proof	Mental Arithmetic – Y6 Factors and Multiples – Y6	Using Venn Diagrams – HA	Probability from Tables – Y8

Intent for Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
Algebraic Thinking	*Autumn 1*	Mixed attainment Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing DIRT lessons following benchmarks and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Completion of DIRT process following a Benchmark.* *Literacy:- Use of keywords and emphasis on understanding key definitions for each lesson-see LOs. Literacy lessons at the beginning of each topic* *Numeracy: Ongoing throughout all topics*
Place Value and Proportion	*Autumn 2*		
Applications of Number	*Spring 1*		
Directed Number and Fractional Thinking	*Spring 2*		
Lines and Angles	*Summer 1*		
Reasoning with Number	*Summer 2*		

Autumn Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Spring Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Summer Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Impact

Over-arching theme:

To be confident with the skills above to form a strong foundation of knowledge for the more complex GCSE concepts. To be able to solve problems by applying the above skills in a variety of contexts including problem-solving and reasoning tasks, and "real world" examples.

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

Knowledge from year 7 feeds into year 8

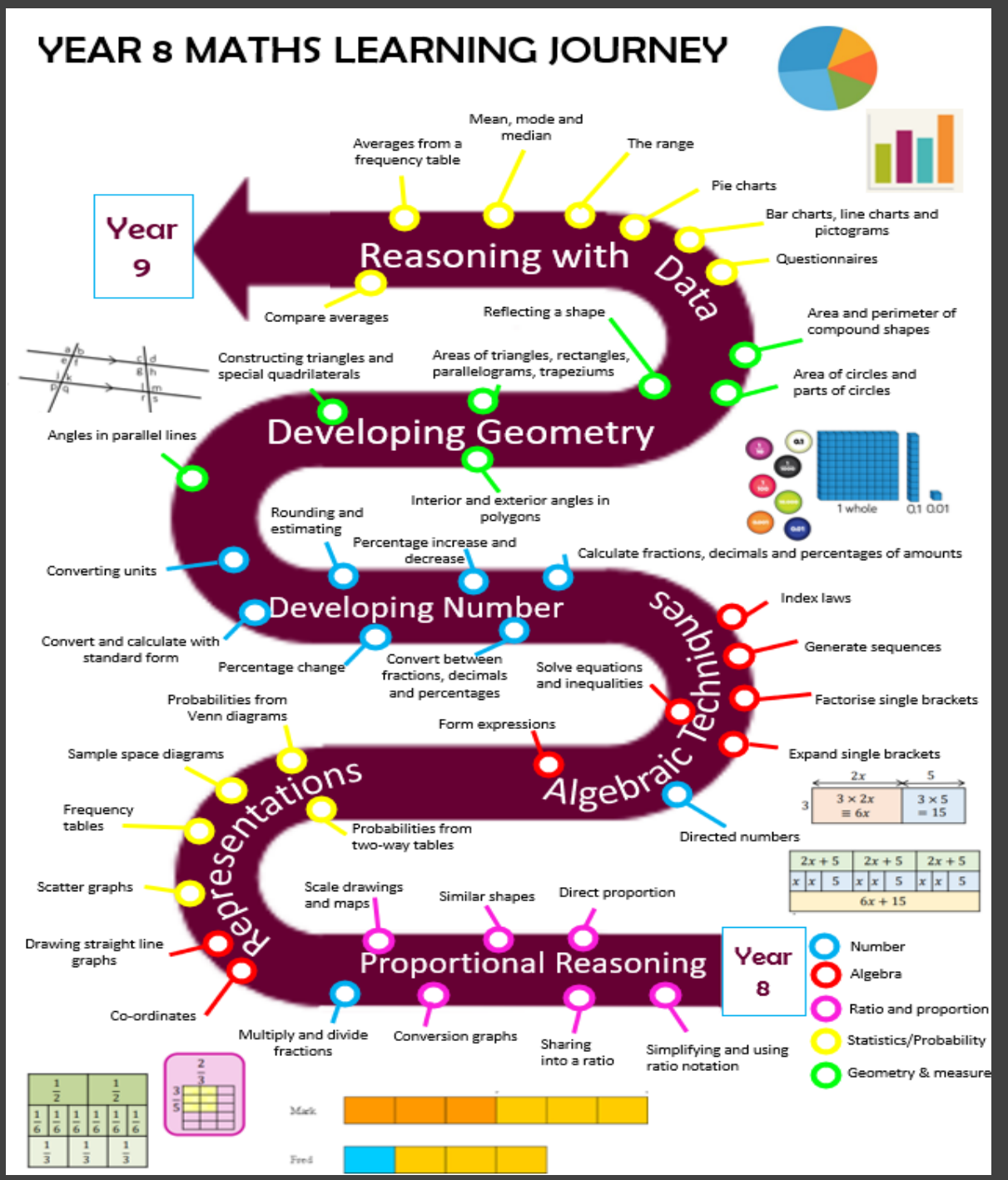
- Integers and place value up to one billion
- Place numbers on a number line
- Compare and order numbers
- Rounding to a power of 10 and significant figures
- Formal methods of addition, subtraction, multiplication and division
- HCF and LCM
- Directed numbers
- Prime factorisation
- Powers and roots
- Converting between fractions, decimals and percentages
- Representing fractions and decimals on a number line
- Equivalent fractions
- Addition an subtraction of fractions

- Describe and continue sequences
- Use function machines
- Form expressions
- Substitution
- Collect like terms
- Solve one step equations

- Range and median
- Mean
- Pie charts
- Set notation
- Venn diagrams
- Probability of a single event

- Area of rectangles, triangles and parallelograms
- Constructing and measuring lines and angles
- Calculating angles in triangles and quadrilaterals
- Calculating angles on a straight lines, around a point and vertically opposite
- Recognise different types of triangle, quadrilateral and polygons

YEAR 8 MATHS LEARNING JOURNEY



Scheme of Learning OVERVIEW

The Big Picture:

This year will build on the foundations of Maths knowledge and skills gained in KS2 and Y7 as a continuation of the White Rose Maths scheme of learning followed by our feeder primaries. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio, and Statistics, which underpin future learning in KS4 and are crucial to building the more complex GCSE concepts.

Subject: Maths **Year Group: 8**

Intent

Topic	Skills/Knowledge	Prior knowledge	Future extensions	
Proportional Reasoning	Ratio and Scale Multiplicative Change Multiplying and Dividing Fractions	Basic Ratio – Y6 Multiplying and Dividing Fractions – Y6	Direct Proportion Graphs – HA Tree Diagrams - HA	Exchange Rates – Y9 Similar Shapes – Y9
Representations	Working in the Cartesian Plane Representing Data Tables and Probability	Co-ordinates – Y6 Substitution - Y7 Algebraic Manipulation – Y7	Exploring Gradient – HA Linear Graphs – HA	Equation of a Straight Line – Y9 Calculate Probabilities from Tables – Y9
Algebraic Thinking	Brackets, Equations, and Inequalities Sequences Indices	Algebraic Manipulation – Y7 Term to Term Rule – Y7 Indices – Y7	Quadratic Graphs – Y9 Reciprocal Graphs – Y9	Solving Simultaneous Equations Graphically – Y9 Represent Inequalities - Y9
Developing Number	Fractions and Percentages Standard Index Form Number Sense	Fractions, Decimals, and Percentages equivalence – Y7 Mental Strategies with Four Operations – Y7 Factors, Multiples, and Primes – Y7	Error Intervals – HA	Working with Numbers, Fractions, and Decimals – Y9 Using Percentages – Y9 Standard Index Form – Y9
Developing Geometry	Angles in Parallel Lines and Polygons Area of Trapezia and Circles Lines of Symmetry and Reflection	Classify and Measure Angles – Y7 Names of Shapes – Y7 Construct Triangles and More Complex Polygons – Y7	3D Shapes – Y9 Measuring Angles – Y9 Constructions – Y9	Rotation and Translation – Y9 Enlargement and Similarity – Y9
Reasoning with Number	The Data Handling Cycles Measures of Location	Draw and Interpret Pie Charts – Y7 Venn Diagrams and Working with Sets – Y7	Mean from an Ungrouped Frequency Table - HA Mean from a Grouped Frequency Table – HA	Probability – Y9

Intent for Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
Proportional Reasoning	*Autumn 1*	Mixed attainment Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing DIRT lessons following benchmarks and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Completion of DIRT process following a Benchmark.* *Literacy:- Use of keywords and emphasis on understanding key definitions for each lesson-see LOs. Literacy lessons at the beginning of each topic* *Numeracy: Ongoing throughout all topics*
Representations	*Autumn 2*		
Algebraic Thinking	*Spring 1*		
Developing Number	*Spring 2*		
Developing Geometry	*Summer 1*		
Reasoning with Number	*Summer 2*		

Autumn Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Spring Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Summer Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Impact

Over-arching theme:

To be confident with the skills above to form a strong foundation of knowledge for the more complex GCSE concepts. To be able to solve problems by applying the above skills in a variety of contexts including problem-solving and reasoning tasks, and "real world" examples.

WRM – Year 8 Scheme of Learning

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	**Proportional Reasoning**						**Representations**					
	Ratio and scale		Multiplicative change		Multiplying and dividing fractions		Working in the Cartesian plane			Representing data		Tables & Probability
Spring	**Algebraic techniques**						**Developing Number**					
	Brackets, equations and inequalities				Sequences	Indices	Fractions and percentages			Standard index form		Number sense
Summer	**Developing Geometry**						**Reasoning with Data**					
	Angles in parallel lines and polygons			Area of trapezia and circles		Line symmetry and reflection	The data handling cycle				Measures of location	

Knowledge from year 8 feeds into year 9

- Multiply and divide fractions
- Directed numbers
- Calculate fractions, decimals and percentages of an amount
- Convert FDP
- Percentage increase and decrease
- Percentage change
- Reverse percentages
- Rounding ad estimating
- Standard form
- Converting units

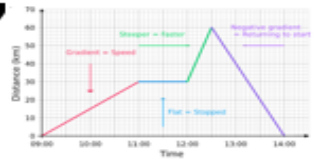
- Co-ordinates
- Straight line graphs
- Form expressions
- Expand brackets
- Factorise
- Solve equations and inequalities
- Generate sequences
- Index laws

- Simplify and use ratio notation
- Share into a ratio
- Direct proportion
- Similar shapes
- Conversion graphs
- Scale drawings and maps

- Scatter graphs
- Frequency tables
- Sample space diagrams
- Venn diagrams
- Two-way tables
- Probabilities
- Questionnaires
- Bar charts, line charts and pictograms
- Pie charts
- The range
- Mean, median and mode
- Averages from a frequency table

- Angles in parallel lines
- Constructing triangles and quadrilaterals
- Interior and exterior angles
- Areas of triangles, rectangles, parallelograms, trapeziums
- Reflection
- Area of circles and sectors
- Area and perimeter of compound shapes

YEAR 9 MATHS LEARNING JOURNEY



Year 10

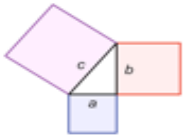
Draw and interpret graphs
Represent inequalities
Tree diagrams (H)
Single event probabilities
Convert compound units (H)
Flow problems
Density
Distance-time graphs
Speed, distance, time
Ratio and algebra problems (H)
Ratio and best buy problems
Inverse proportion (Graphs = H)
Direct proportion
Similar shapes and triangles
Enlargement (negative scale factor = H)

Representations
Reasoning with Proportion

Graphs of simultaneous equations (H)
Events and outcomes
Rotational symmetry
Translation
Series of transformations (H)
Conjectures with angles and shapes
Solving angle problems, including with algebra
Angles in parallel lines

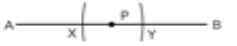
Reasoning with Geometry

Exchange rates
Simple and compound interest
Bills and bank statements
Repeated percentage change (H)
Reverse percentages
Rotation
Pythagoras' Theorem
Pythagoras in 3D (H)
Percentage increase, decrease and change
Standard form
HCF and LCM



Reasoning with Number

Surds (H)
Congruent triangles
Construct a triangle
Construct an angle bisector
Construct a perpendicular from a point and to a point
Construct a perpendicular bisector
Locus from points and lines
Scale drawings
FDP equivalence
Calculating with fractions



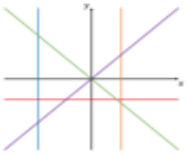
Constructing in 2 and 3 dimensions

Volume of prisms and cylinders
Surface area of prisms and cylinders
Plans and elevations
Nets of 3D shapes
Names of 2D and 3D shapes
Draw and measure angles

Reasoning with Algebra

Factors, multiples and primes
Perpendicular lines (H)
Real life graphs
Understand and use y = mx + c
Conjectures about algebra
Conjectures about number
Rearrange formulae
Solve equations/inequalities with the unknown on both sides
Solve one and two step equations and inequalities
Gradients and intercepts
Drawing graphs parallel to the axes

- $y = x$
- $y = -x$
- $y = 5$
- $y = -2$
- $x = 3$
- $x = -5$



Year 9

- Number
- Algebra
- Ratio and proportion
- Statistics/Probability
- Geometry & measure

Scheme of Learning OVERVIEW

The Big Picture:

This year will build on the foundations of Maths knowledge and skills gained in KS2, Y7, and Y8 as a continuation of the White Rose Maths scheme of learning followed by our feeder primaries. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio, and Statistics, which underpin future learning in KS4 and are crucial to building the more complex GCSE concepts.

Subject: Maths Year Group: 9

Intent

Topic	Skills/Knowledge	Prior knowledge	Future extensions	
Reasoning with Algebra	Straight Line Graphs Forming and Solving Equations Testing Conjectures	Plotting coordinates and plotting graphs in the form y=mx+ c (Y8) Solving equations with brackets (Y8) Solving inequalities (Y8)	Solve simultaneous equations graphically (HA) Explore perpendicular lines (HA) Expand 3 binomials (HA)	Using the equation of a line (Y10) Parallel and perpendicular lines (Y10) Solving quadratic equations (Y11)
Constructing in 2 and 3 Dimensions	3D Shapes Constructions and Congruency	Areas of 2D shapes (Y8) Ruler and compass constructions (Y8 higher)	Volume of cones and spheres (HA) Surface area of prisms (HA) Loci (HA)	Arcs and sectors (Y10) Volume of composite solids including frustrums (Y10)
Reasoning with Number	Number Using Percentages Maths and Money	Factors and multiples (Y7) Calculations with fractions (Y7 and 8) Calculating percentages, including increase and decrease (Y8) Reverse percentages (Y8 higher) Calculations with money (Y8)	Repeated percentage change (HA)	Original value problems (Y10)
Reasoning with Geometry	Deduction Rotation and Translation Pythagoras' Theorem	Basic angle rules (Y7) Angles in parallel lines (Y8) Reflection (Y8)	Explore ratios in right-angled triangles (HA)	Angles in polygons (Y10) Bearings (Y10) Trigonometry (Y11)
Reasoning with Proportion	Enlargement and Similarity Solving Ratio and Proportion Problems Rates	Ratio notation and dividing into ratio Conversion graphs (Y8)	Graphs of inverse relationships (HA) Negative scale factors (HA)	Congruence and similarity (Y10)
Representations and Revision	Probability Algebraic Representations Revision	Using venn diagrams (Y8) Sample space diagrams (Y8) Plotting linear graphs (Y8)	Using tree diagrams (HA) Graphs of simultaneous equations (HA)	Conditional probability (Y11)

Intent for Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
Reasoning with Algebra	*Autumn 1*	Mixed attainment Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing DIRT lessons following benchmarks and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Completion of DIRT process following a Benchmark.*
Constructing in 2 and 3 Dimensions	*Autumn 2*		
Reasoning with Number	*Spring 1*		
Reasoning with Geometry	*Spring 2*		
Reasoning with Proportion	*Summer 1*		
Representations and Revision	*Summer 2*		*Literacy:- Use of keywords and emphasis on understanding key definitions for each lesson-see LOs. Literacy lessons at the beginning of each topic* *Numeracy: Ongoing throughout all topics*

Autumn Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Spring Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Summer Term

Ongoing AFL through mini whiteboard work. Benchmarks with class PLC and DIRT sessions. Each topic has multiple Hegarty tasks with feedback.

Impact

Over-arching theme:
To be confident with the skills above to form a strong foundation of knowledge for the more complex GCSE concepts. To be able to solve problems by applying the above skills in a variety of contexts including problem-solving and reasoning tasks, and "real world" examples.

WRM – Year 9 Scheme of Learning

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Reasoning with Algebra						Constructing in 2 and 3 Dimensions					
	Straight line graphs		Forming and solving equations		Testing conjectures		Three-dimensional shapes			Constructions and congruency		
Spring	Reasoning with Number						Reasoning with Geometry					
	Numbers		Using percentages		Maths and money		Deduction		Rotation and translation		Pythagoras' Theorem	
Summer	Reasoning with Proportion						Representations and Revision					
	Enlargement and similarity		Solving ratio & proportion problems		Rates		Probability		Algebraic representation		Revision	

Key Stage 4
Maths

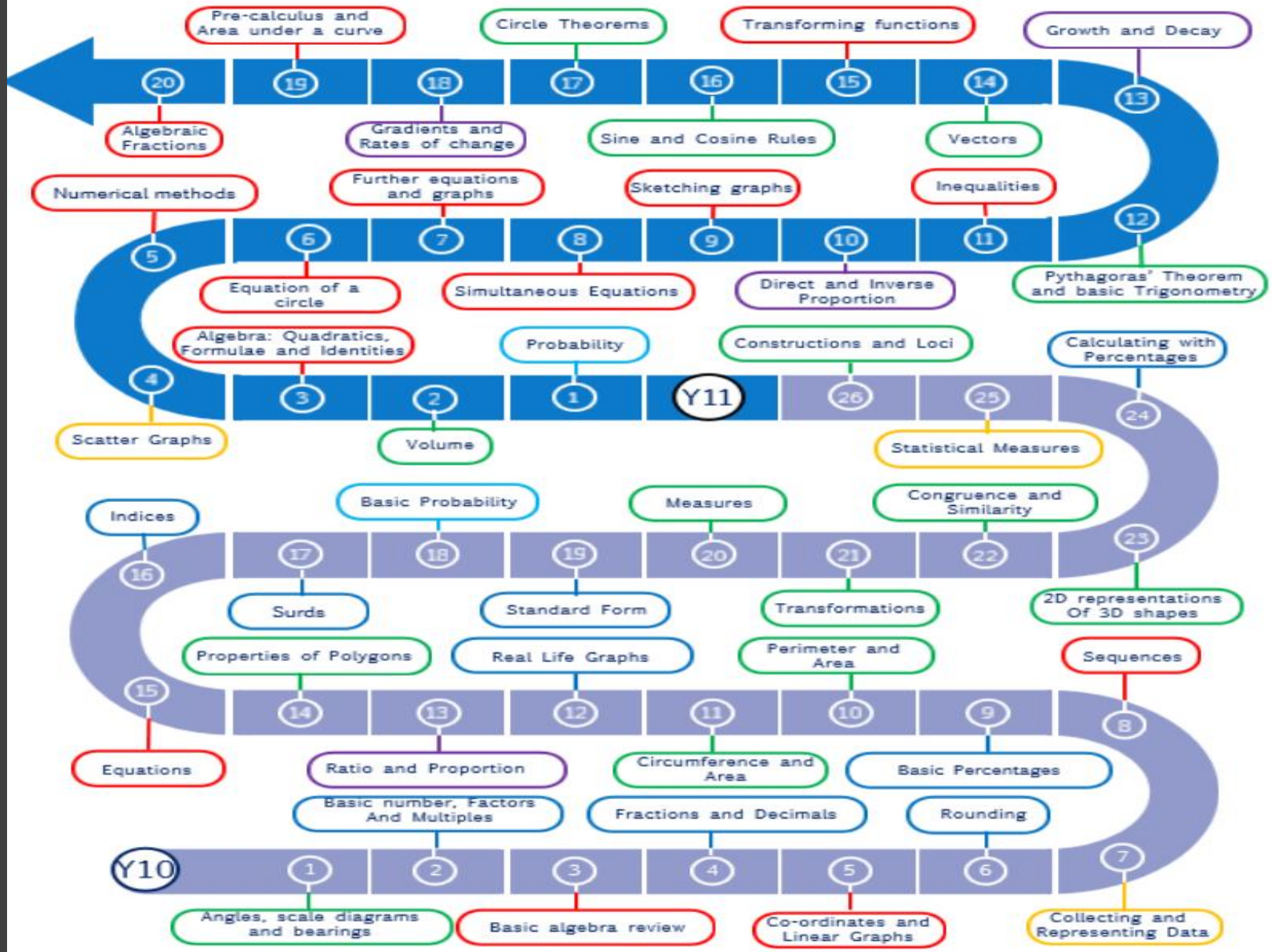
Year 10

This year will build on the foundations of Maths knowledge and skills gained in Key Stage 3. All students will get a secure grounding in the key concepts of number, algebra, geometry, ratio, and statistics which underpin the future learning in Year 11 and are crucial to building the more complex GCSE concepts.

Year 11

This year will build on the foundations of Maths knowledge and skills gained in Key Stage 3 and Year 10. All students will get a secure grounding in the key concepts of number, algebra, geometry, ratio, and statistics which underpin the future learning in Year 11 and are crucial to building the more complex GCSE concepts.

GCSE MATHS Higher LEARNING JOURNEY
YEAR 10 AND 11



Scheme of Learning OVERVIEW

The Big Picture:

This year will build on the foundations of Maths knowledge and skills gained in KS3. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio and Statistics which underpin the future learning in Year 11 and are crucial to build the more complex GCSE concepts around.

Subject: Maths Year Group: 10

Intent (Foundation)

Topic	Skills/Knowledge		Prior knowledge	Future extensions
Geometry and measures	Angles Scale Diagrams and Bearings Perimeter and Area Circumference and Area	Properties of Polygons Transformations Congruence and Similarity 2D Representations of 3D Shapes	3D Shapes – Y9 Constructions and Congruency – Y9 Deduction – Y9 Rotation and Translation – Y9 Enlargement and Similarity – Y9 Pythagoras' Theorem – Y9	Volume – Y11 Pythagoras' Theorem – Y11 Trigonometry – Y11 Vectors – Y11
Number	Basic Number Factors and Multiples Basic Fractions Basic Decimals Rounding	Basic Percentages Indices Standard Form Calculating with Percentages	Number – Y9 Using Percentages – Y9 Maths and Money – Y9	
Algebra	Basic Algebra Coordinates and Linear Graphs Sequences Real Life Graphs Equations		Straight Line Graphs – Y9 Forming and Solving Equations – Y9 Testing Conjectures – Y9 Algebraic Representations – Y9	Quadratics, Rearranging Formulae and Identities – Y11 Inequalities – Y11 Simultaneous Equations – Y11 Algebra and Graphs – Y11 Solving Quadratic Equations – Y11 Quadratic Graphs – Y11
Ratio and Proportion	Calculating with ratios and simplifying Applying multiplicative relationships		Solving Ratio and Proportion Problems – Y9 Rates – Y9	Direct and Inverse Proportion-Y11 Growth and Decay – Y11
Statistics and Probability	Collecting and Representing Data Basic Probability Statistical Measures		Probability – Y9	Further Probability– Y11 Scatter Graphs – Y11

Intent of Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
G&M – Angles; Scale Diagrams and Bearings	*Autumn*	Mixed attainment within Foundation classes Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC's and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.*
N – Number; Factors and Multiples; Fractions; Decimals; Rounding	*Autumn*		
A – Basic Algebra; Coordinates and Linear Graphs; Sequences	*Autumn*		
S&P – Collecting and Representing Data	*Autumn*		
G&M – Perimeter and Area; Circumference and Area; Properties of Polygons	*Spring*		
N – Percentages; Indices; Standard Form	*Spring*		*Literacy:- Use of key words and emphasis of understanding key definitions each lesson-see LO's*
A – Real Life Graphs; Equations	*Spring*		*Numeracy:- Ongoing throughout all units*
Ratio and Proportion	*Spring*		
G&M – Transformations; Congruence and Similarity; 2D Representations of 3D Shapes; Constructions and Loci; Measures	*Summer*		
N - Calculating with percentages	*Summer*		
S&P - Basic Probability; Statistical Measures	*Summer*		

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 2 with PLC and DIRT sessions.

Summer Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 2 with PLC and DIRT sessions.

Impact

Develop fluency in Number, Algebra, Statistics, Ratio, and Geometry and Measure
Define and use mathematical terminology and formulae including those from shape, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including substitution, rearranging, factorising and solving.
Identify and use links between equations, sequences and graphs.
Over-arching theme:
To be able to use reasoning and solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples

Scheme of Learning OVERVIEW

The Big Picture:

Subject: Maths Year Group: 11

This year will build on the foundations of Maths knowledge and skills gained in KS3 and Y10. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio, and Statistics which underpin future learning and are crucial to building the more complex GCSE concepts around.

Intent (Higher)

Topic	Skills/Knowledge		Prior Knowledge		Future Extensions
Geometry and measures	Volume Pythagoras' Theorem and Basic Trigonometry Vectors Sine and Cosine Rules Circle Theorems		Angles, Scale Diagrams, and Bearings – Y10 Perimeter and Area – Y10 Circumference and Area – Y10 Properties of Polygons – Y10 Measures – Y10	Transformations – Y10 Congruence and Similarity – Y10 2D Representations of 3D Shapes – Y10 Constructions and Loci – Y10	Vectors - A Level Trigonometry - A level
Number			Basic Number, Factors, and Multiples – Y10 Fractions and Decimals – Y10 Rounding – Y10 Basic Percentages – Y10	Indices – Y10 Surds – Y10 Standard Form – Y10 Calculating with Percentages – Y10	Algebraic Fractions – A Level Partial Fractions - A Level Exponentials and Logarithms - A Level
Algebra	Quadratics, Rearranging Formulae and Identities Numerical Methods Equation of a Circle Further Equations and Graphs Simultaneous Equations	Sketching Graphs Inequalities Transforming Graphs Pre-calculus and Area Under a Curve Algebraic Fractions	Basic Algebra Review – Y10 Coordinates and Linear Graphs – Y10 Sequences – Y10 Real Life Graphs – Y10 Equations – Y10		Quadratics and simultaneous equations - A Level Calculus - A Level Co-ordinate Geometry - A level
Ratio and Proportion			Calculating with Ratios and Simplifying – Y10 Applying Multiplicative Relationships – Y10		
Statistics and Probability	Probability Scatter Graphs		Collecting and Representing Data – Y10 Basic Probability – Y10 Statistical Measures – Y10		

Intent of Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
G&M – Volume	*Autumn*	Mixed attainment within Foundation classes Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC's and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.*
A – Quadratics, Rearranging Formulae and Identities; Numerical Methods; Equation of a Circle; Further Equations and Graphs; Simultaneous Equations	*Autumn*		
S & P – Probability; Scatter Graphs	*Autumn*		
G&M – Pythagoras' Theorem and Basic Trigonometry; Vectors; Sine and Cosine Rules; Circle Theorems	*Spring*		
A – Sketching Graphs; Inequalities; Transforming Functions	*Spring*		
R&P – Direct and Inverse Proportion; Growth and Decay	*Spring*		
A – Pre-calculus and Area Under a Curve; Algebraic Fractions	*Summer*		*Literacy:- Use of key words and emphasis of understanding key definitions each lesson-see LO's* *Numeracy:- Ongoing throughout all units*
R&P – Gradients and Rates of Change	*Summer*		

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 -3 (mocks) with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 -3 (mocks) with PLC and DIRT sessions.

Impact

Develop fluency in Number, Algebra, Statistics and Geometry and Measure
Define and use mathematical terminology and formulae including those from shape, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including substitution, rearranging, factorising and solving.
Identify and use links between equations, sequences and graphs.
Over-arching theme:
To be able to use reasoning and solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples

Year 10, 2022 - Higher 2 Year

September			October					
Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9
Angles, scale diagrams and bearings	Basic number, factors and multiples		Basic algebra review		Fractions and decimals	Coordinates and linear graphs	Holiday	Rounding

November			December					January
Wk 10	Wk 11	Wk 12	Wk 13	Wk 14	Wk 15	Wk 16	Wk 17	Wk 18
Collecting and representing data		Sequences	Basic percentages		Examinations and revision	Holiday		Perimeter and area

January			February					March
Wk 19	Wk 20	Wk 21	Wk 22	Wk 23	Wk 24	Wk 25	Wk 26	Wk 27
Perimeter and area	Circumference and area	Real life graphs	Ratio and proportion	Properties of polygons	Holiday	Equations	Indices	Surds

March			April					May
Wk 28	Wk 29	Wk 30	Wk 31	Wk 32	Wk 33	Wk 34	Wk 35	Wk 36
Basic probability	Standard form	Measures	Holiday		Transformations	Congruence and similarity		2D representations of 3D shapes

May		June					July	
Wk 37	Wk 38	Wk 39	Wk 40	Wk 41	Wk 42	Wk 43	Wk 44	Wk 45
Calculating with percentages	Holiday	Summer examinations and revision				Statistical measures	Constructions and loci	

July		
Wk 46	Wk 47	Wk 48
w/b 17/7 w/e 23/7	w/b 24/7 w/e 30/7	w/b 31/7 w/e 6/8

Year 11, 2023 - Higher 2 Year

September			October					
Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9
Probability		Volume	Algebra: quadratics, rearranging formulae and identities		Scatter graphs	Numerical methods	Holiday	Equation of a circle

November			December					January
Wk 10	Wk 11	Wk 12	Wk 13	Wk 14	Wk 15	Wk 16	Wk 17	Wk 18
Further equations and graphs		Simultaneous equations		Mock examination and revision		Holiday		Sketching graphs

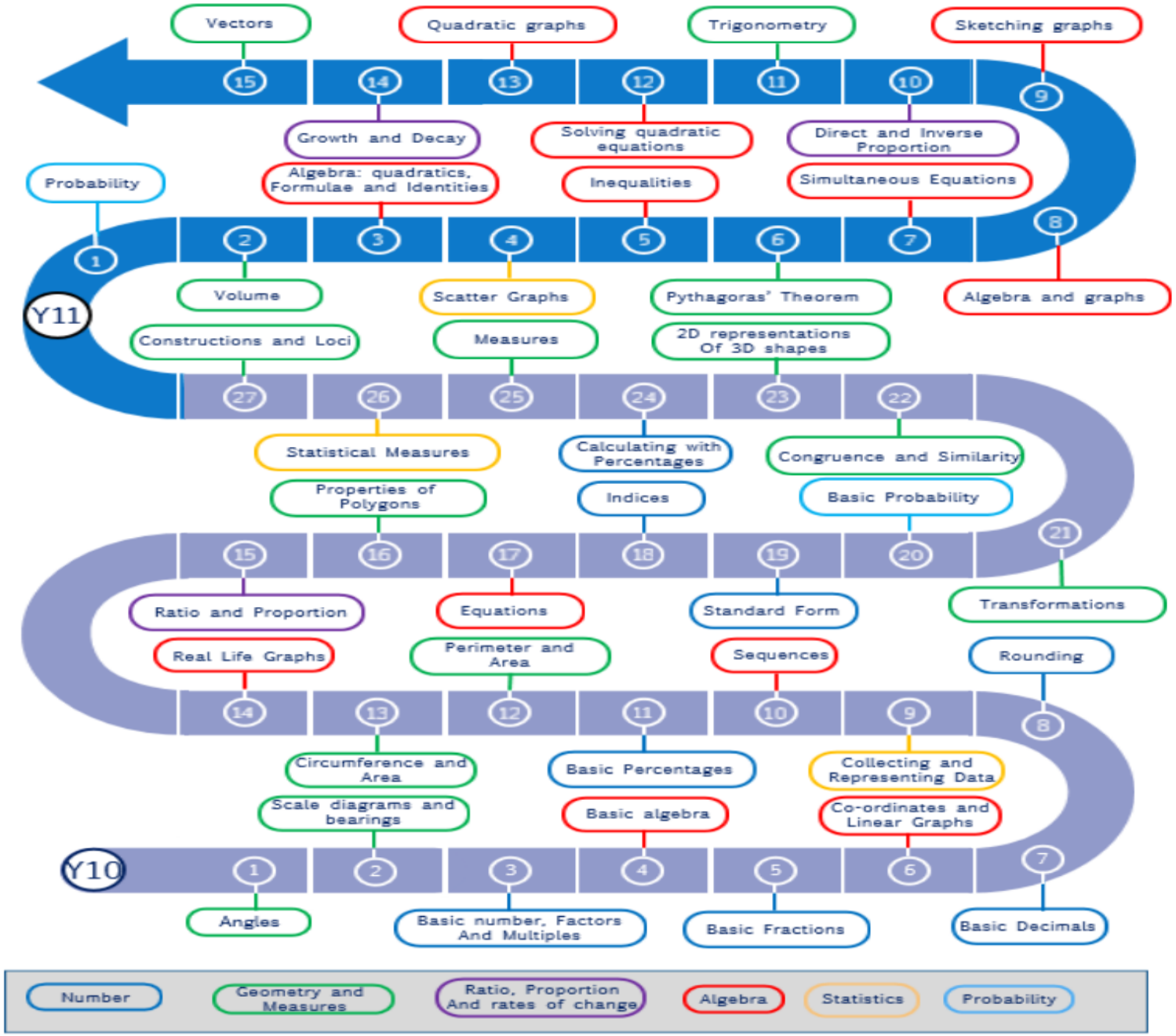
January			February					March
Wk 19	Wk 20	Wk 21	Wk 22	Wk 23	Wk 24	Wk 25	Wk 26	Wk 27
Direct and inverse proportion	Inequalities	Pythagoras theorem and basic trigonometry		Holiday	Growth and decay	Vectors	Transforming functions	Sine and cosine rules

March			April					May
Wk 28	Wk 29	Wk 30	Wk 31	Wk 32	Wk 33	Wk 34	Wk 35	Wk 36
Sine and cosine rules	Circle theorems	Holiday		Gradients and rate of change	Pre-calculus and area under a curve		Algebraic fractions	Revision and June Examinations

May		June				July		
Wk 37	Wk 38	Wk 39	Wk 40	Wk 41	Wk 42	Wk 43	Wk 44	Wk 45
Revision and June Examinations	Holiday	Revision and June Examinations				w/b 24/6 w/e 30/6	w/b 1/7 w/e 7/7	w/b 8/7 w/e 14/7

July		
Wk 46	Wk 47	Wk 48
w/b 15/7 w/e 21/7	w/b 22/7 w/e 28/7	w/b 29/7 w/e 4/8

GCSE MATHS Foundation LEARNING JOURNEY
YEAR 10 AND 11



Scheme of Learning OVERVIEW

The Big Picture:

Subject: Maths Year Group: 10

This year will build on the foundations of Maths knowledge and skills gained in KS3. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio and Statistics which underpin the future learning in Year 11 and are crucial to build the more complex GCSE concepts around.

Intent (Foundation)

Topic	Skills/Knowledge	Prior knowledge	Future extensions
Geometry and measures	Angles Scale Diagrams and Bearings Perimeter and Area Circumference and Area Properties of Polygons Transformations Congruence and Similarity 2D Representations of 3D Shapes	3D Shapes – Y9 Constructions and Congruency – Y9 Deduction – Y9 Rotation and Translation – Y9 Enlargement and Similarity – Y9 Pythagoras' Theorem – Y9	Volume – Y11 Pythagoras' Theorem – Y11 Trigonometry – Y11 Vectors – Y11
Number	Basic Number Factors and Multiples Basic Fractions Basic Decimals Rounding Basic Percentages Indices Standard Form Calculating with Percentages	Number – Y9 Using Percentages – Y9 Maths and Money – Y9	
Algebra	Basic Algebra Coordinates and Linear Graphs Sequences Real Life Graphs Equations	Straight Line Graphs – Y9 Forming and Solving Equations – Y9 Testing Conjectures – Y9 Algebraic Representations – Y9	Quadratics, Rearranging Formulae and Identities – Y11 Inequalities – Y11 Simultaneous Equations – Y11 Algebra and Graphs – Y11 Solving Quadratic Equations – Y11 Quadratic Graphs – Y11
Ratio and Proportion	Calculating with ratios and simplifying Applying multiplicative relationships	Solving Ratio and Proportion Problems – Y9 Rates – Y9	Direct and Inverse Proportion-Y11 Growth and Decay – Y11
Statistics and Probability	Collecting and Representing Data Basic Probability Statistical Measures	Probability – Y9	Further Probability – Y11 Scatter Graphs – Y11

Intent of Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
G&M – Angles; Scale Diagrams and Bearings	*Autumn*	Mixed attainment within Foundation classes Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC's and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.*
N – Number; Factors and Multiples; Fractions; Decimals; Rounding	*Autumn*		
A – Basic Algebra; Coordinates and Linear Graphs; Sequences	*Autumn*		
S&P – Collecting and Representing Data	*Autumn*		
G&M – Perimeter and Area; Circumference and Area; Properties of Polygons	*Spring*		
N – Percentages; Indices; Standard Form	*Spring*		*Literacy:- Use of key words and emphasis of understanding key definitions each lesson-see LO's*
A – Real Life Graphs; Equations	*Spring*		*Numeracy:- Ongoing throughout all units*
Ratio and Proportion	*Spring*		
G&M – Transformations; Congruence and Similarity; 2D Representations of 3D Shapes; Constructions and Loci; Measures	*Summer*		
N - Calculating with percentages	*Summer*		
S&P - Basic Probability; Statistical Measures	*Summer*		

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 2 with PLC and DIRT sessions.

Summer Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 2 with PLC and DIRT sessions.

Impact

Develop fluency in Number, Algebra, Statistics, Ratio, and Geometry and Measure
Define and use mathematical terminology and formulae including those from shape, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including substitution, rearranging, factorising and solving.
Identify and use links between equations, sequences and graphs.
Over-arching theme:
To be able to use reasoning and solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples

Scheme of Learning OVERVIEW

The Big Picture:

This year will build on the foundations of Maths knowledge and skills gained in KS3 and Y10. All students will get a secure grounding in the key concepts of Number, Algebra, Geometry, Ratio, and Statistics which underpin the future learning and are crucial to building the more complex GCSE concepts around.

Subject: Maths **Year Group: 11**

Intent (Foundation)

Topic	Skills/Knowledge	Prior Knowledge	Future extensions
Geometry and measures	Volume Pythagoras' Theorem Trigonometry Vectors	Angles – Y10 Scale Diagrams and Bearings – Y10 Perimeter and Area – Y10 Circumference and Area – Y10 Properties of Polygons – Y10 Transformations – Y10 Congruence and Similarity – Y10 2D Representations of 3D Shapes – Y10	Vectors-A Level
Algebra	Quadratics, Rearranging Formulae and Identities Inequalities Simultaneous Equations Algebra and Graphs Sketching Graphs Solving Quadratic Equations Quadratics Graphs	Basic Algebra – Y10 Coordinates and Linear Graphs – Y10 Sequences – Y10 Real Life Graphs – Y10 Equations – Y10	Gradients (Graphs)-Y11 Linear graphs-A Level
Ratio and Proportion	Direct and Inverse Proportion Growth and Decay	Calculating with ratios and simplifying – Y10 Applying multiplicative relationships – Y10	Quadratics and simultaneous equations-Y11 Higher/ A Level
Statistics and Probability	Probability Scatter Graphs	Collecting and Representing Data – Y10 Basic Probability – Y10 Statistical Measures – Y10	

Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
G&M-Circumference and Area	*Autumn*	Mixed attainment within Foundation classes Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC's and taking responsibility for closing gaps in their own knowledge.	✓ *Hegarty homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.* *Literacy:- Use of key words and emphasis of understanding key definitions each lesson-see LO's*
N-Recap (FDP and calculations)	*Autumn*		
A-Quadratic equations and graphs, simultaneous equations, linear graphs	*Autumn*		
G&M-Cylinders, Cones and Spheres. Congruence and Similarity	*Spring*		
N-Fractions and Reciprocals	*Spring*		
A-Algebra recap	*Spring*		
G&M-Vectors	*Summer*		

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 -3 (mocks) with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. GCSE Paper 1 -3 (mocks) with PLC and DIRT sessions.

Summer Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Hegarty tasks with feedback. Past papers with PLC and DIRT sessions. GCSE Paper 1 -3 (Final Exams).

Impact

Develop fluency in Number, Algebra, Statistics and Geometry and Measure
Define and use mathematical terminology and formulae including those from shape, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including substitution, rearranging, factorising and solving.
Identify and use links between equations, sequences and graphs.
Over-arching theme:
To be able to use reasoning and solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples

Year 10, 2022 - Foundation 2 Year

September					October			
Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9
Angles	Scale diagrams and bearings	Basic number	Factors and multiples	Basic algebra	Basic fractions	Coordinates and linear graphs	Holiday	Basic decimals

November			December					January
Wk 10	Wk 11	Wk 12	Wk 13	Wk 14	Wk 15	Wk 16	Wk 17	Wk 18
Rounding	Collecting and representing data		Sequences	Examinations and Revision		Holiday		Basic percentages

January			February					March
Wk 19	Wk 20	Wk 21	Wk 22	Wk 23	Wk 24	Wk 25	Wk 26	Wk 27
Perimeter and area		Circumference and area		Real life graphs	Holiday	Ratio and proportion	Properties of polygons	Equations

March			April				May	
Wk 28	Wk 29	Wk 30	Wk 31	Wk 32	Wk 33	Wk 34	Wk 35	Wk 36
Equations	Indices	Standard form	Holiday		Basic probability	Transformations		Congruence and similarity

May		June					July	
Wk 37	Wk 38	Wk 39	Wk 40	Wk 41	Wk 42	Wk 43	Wk 44	Wk 45
2D representations of 3D shapes	Holiday	Calculating with percentages	Measures	Summer Examinations and Revision		Statistical measures	Constructions and loci	

July		
Wk 46	Wk 47	Wk 48
w/b 17/7 w/e 23/7	w/b 24/7 w/e 30/7	w/b 31/7 w/e 6/8

Year 11, 2023 - Foundation 2 Year

September				October				
Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9
Probability		Volume		Algebra: quadratics, rearranging formulae and identities		Scatter graphs	Holiday	Inequalities

November			December					January
Wk 10	Wk 11	Wk 12	Wk 13	Wk 14	Wk 15	Wk 16	Wk 17	Wk 18
Pythagoras' theorem	Simultaneous equations		Algebra and graphs (1)	Mock Examinations and Revision		Holiday		Algebra and graphs (2)

January			February					March
Wk 19	Wk 20	Wk 21	Wk 22	Wk 23	Wk 24	Wk 25	Wk 26	Wk 27
Algebra and graphs (2)	Sketching graphs		Direct and inverse proportion	Holiday		Trigonometry		Solving quadratic equations

March			April				May	
Wk 28	Wk 29	Wk 30	Wk 31	Wk 32	Wk 33	Wk 34	Wk 35	Wk 36
Solving quadratic equations	Quadratic graphs		Holiday	Growth and decay		Vectors	Revision and June Examinations	

May		June					July	
Wk 37	Wk 38	Wk 39	Wk 40	Wk 41	Wk 42	Wk 43	Wk 44	Wk 45
Revision and June Examinations	Holiday	Revision and June Examinations				w/b 24/6 w/e 30/6	w/b 1/7 w/e 7/7	w/b 8/7 w/e 14/7

July		
Wk 46	Wk 47	Wk 48
w/b 15/7 w/e 21/7	w/b 22/7 w/e 28/7	w/b 29/7 w/e 4/8

Key Stage 5
Maths

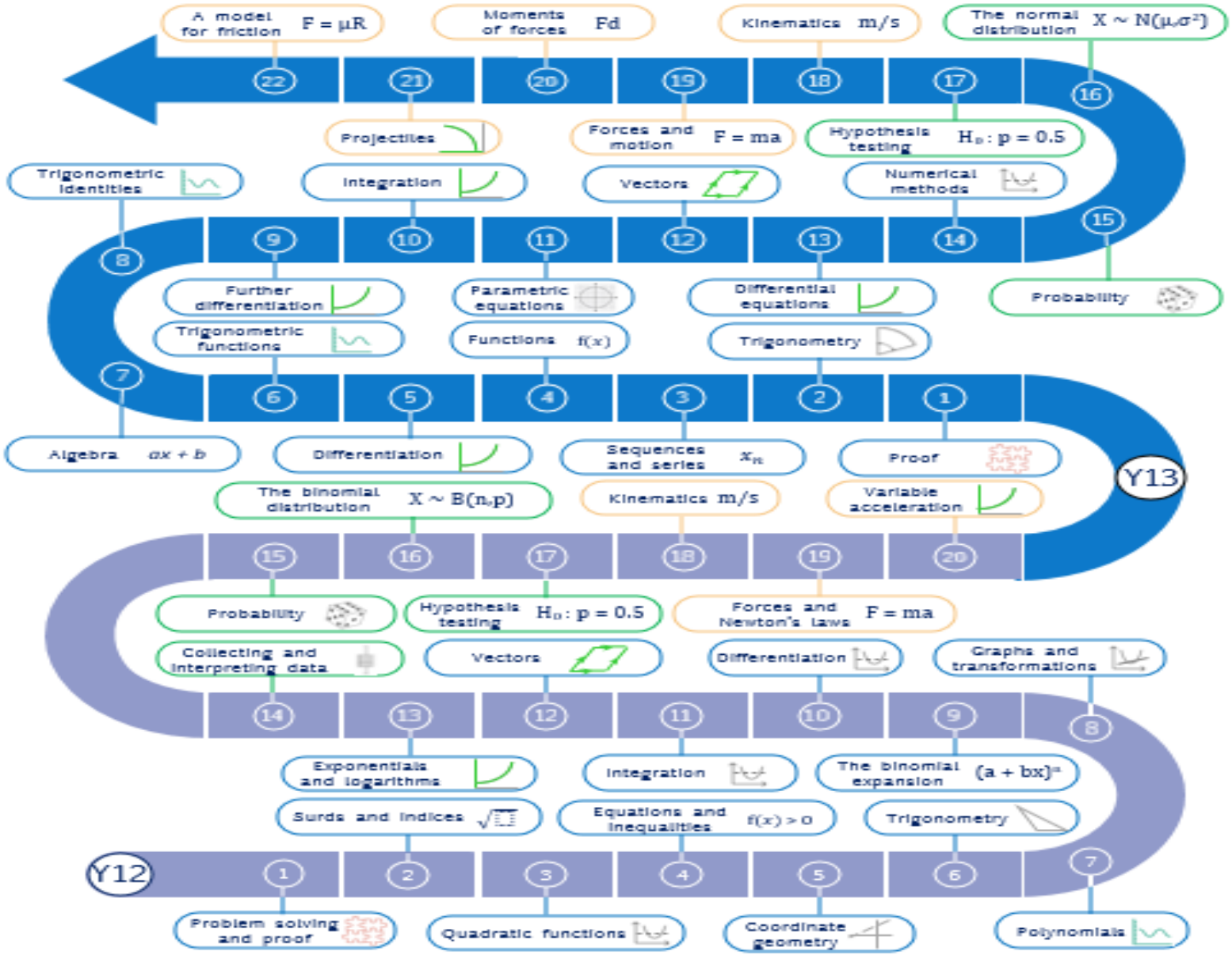
Year 12

This year will build on the foundations of maths knowledge and skills gained in Key Stage 4. All students will gain a secure grounding in the key concepts of Pure Maths, Statistics, and Mechanics which underpin their future learning in Year 13 and are crucial to building the more complex concepts around.

Year 13

This year will build on the foundations of Maths knowledge and skills gained throughout Key Stage 4 and in Year 12. All students will consolidate and develop knowledge and understanding of the additional key concepts of Pure Maths, Statistics, and Mechanics which underpin the application of Maths at A Level and are crucial to building the complex concepts that are being examined around, whilst preparing students for higher-level and undergraduate study.

A LEVEL MATHS LEARNING JOURNEY
YEAR 12 AND 13



Scheme of Learning OVERVIEW

The Big Picture:

Subject: Maths Year Group: 12

This year will build on the foundations of Maths knowledge and skills gained in KS4. All students will get a secure grounding in the key concepts of Pure Maths, Statistics, and Mechanics which underpin the future learning in Year 13 and are crucial to build the more complex concepts around.

Intent

Topic	Skills	Knowledge	Prior knowledge	Future extensions
Pure Maths-Trigonometry, Graphs, Vectors, Calculus, Polynomials, Equations and inequalities, Co-ordinate geometry, Binomial expansion, Exponentials and Logarithms	Manipulating indices, surds, quadratics, and polynomials Applying general formulae for linear graphs and circles to identify features Solving trigonometric equations Transforming graphs Applying differentiation and integration processes Calculating with vectors Using Laws of Logs	How to calculate roots and relate roots and other features of equations to their graphs and apply formulae and calculator work for binomial expansion How to deduce features of graphs such as intersections, centres of circles and parallel and perpendicular lines Trigonometric ratios and identities Identifying different graph transformations such as translation and stretch Linking differentiation to graph features and deducing from first principles How to find exact integrals and link to graphs Finding features of vectors including links with forces Using logs and exponentials as graphs	Algebra-GCSE	Pure Maths-Year 13
Mechanics-Kinematics, Forces and Newton's Laws Variable Acceleration	Derive formulae and select appropriate values Calculate forces and create force diagrams Use calculus for kinematics in a straight line	Know and use the SUVAT equations Know and use Newton's Laws of Motion Recall and use "PVA" to calculate with variable acceleration	Algebraic manipulation-GCSE Vectors-GCSE and A Level	Mechanics-Year 13
Statistics-Data collection, processing, presentation and interpretation, Probability, Binomial distribution, Hypothesis testing	Calculating features of data such as central tendency and variation Selecting and critiquing sampling techniques Calculate probabilities including probabilities Conducting a statistical hypothesis test	How to apply formulae such as for standard deviation and variance Know the common sampling techniques Know and use probability notation and calculator features (including tables) Know the process of a hypothesis test	Statistics-GCSE	Statistics-Year 13

Intent of Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
Pure-Polynomials, Trig, Graphs, Vectors	*Autumn*	Mixed attainment Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC and taking responsibility for closing gaps in their own knowledge.	✓ *Integral online section tests homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.*
Mechanics-Kinematics and Newton's Laws	*Autumn*		
Statistics-Data collection and processing	*Autumn*		
Prue-Calculus, Binomial, Exponentials and Logs	*Spring*		
Mechanics-Variable acceleration	*Spring*		
Statistics-Probability, Binomial, Hypothesis	*Spring*		*Literacy:- Use of key words and emphasis of understanding key definitions each lesson-see LO's and objective sheets. Reading and interpretation*
AS Review-DIRT	*Summer*		*Numeracy:- Ongoing throughout all units*
Intro to Y13-Seq. and Functions	*Summer*		

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. AS Paper 1 with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. AS Paper 2 with PLC and DIRT sessions.

Summer Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. Full set of AS Papers with PLC and DIRT sessions.

Impact

Be able to apply a variety of formulae, including those not provided in the formulae booklet
Define and use mathematical terminology including those from mechanics, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including for trigonometry.
Identify and use links between equations, shapes and graphs.
Gain fluency with statistical processes

Over-arching theme:
To be able to solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples

Scheme of Learning OVERVIEW

The Big Picture:

Subject: Maths Year Group: 13

This year will build on the foundations of Maths knowledge and skills gained in KS4 and Y12. All students will get a secure grounding in the additional key concepts of Pure Maths, Statistics, and Mechanics which underpin the application of Maths in A level and are crucial to build the more complex concepts around.

Intent

Topic	Skills	Knowledge	Prior knowledge	Future extensions
Pure Maths-Sequences and Series, Functions, Calculus, Trigonometry, Vectors, Parametric equations, Proof, Numerical methods	Solving trigonometric equations Selecting and applying differentiation and integration methods Calculating with vectors Create proofs Create and sketch parametric equations Apply the numerical methods processes	Trigonometric ratios and identities Linking differentiation and integrals to graphs Finding features of vectors including links with forces Know and use different types of proof Know the format of parametric equations Know and use the processes for 3 numerical methods to find roots	Algebra-GCSE and A Level	Pure Maths-Year 13
Mechanics-Kinematics, Projectiles, Forces, Moments	Derive formulae and select appropriate values Resolve forces and create force diagrams including calculating moments Use calculus for kinematics in 2 dimensions Apply trigonometry to calculate kinematics with projectiles	Know and use the SUVAT equations Know and use Newton's Laws of Motion Recall and use "PVA" to calculate with variable acceleration Recall types of forces to create diagrams Know and use the formula for the coefficient of friction	Algebraic manipulation-GCSE and A Level Vectors-GCSE and A Level Mechanics-A Level	Mechanics-Year 13
Statistics-Probability, Probability Distributions, Hypothesis Testing	Modelling with probabilities Represent probabilities with diagrams Calculate probabilities including conditional probabilities and binomial and normal distributions Conducting a statistical hypothesis test	How to apply formulae such as for standard deviation and variance Know the common sampling techniques Know and use probability notation and calculator features (including tables) Know the process of a hypothesis test	Statistics-GCSE and A Level	Statistics-Year 13

Intent of Implementation

Unit	*Term*	*SMSC*	*Homework/Revision*
Pure-Sequences, Functions, Trig, Vectors, Differentiation	*Autumn*	Mixed attainment Working as part of a group Sharing of views and opinions with others and resolving any differences maturely. Showing respect for people Collaborating positively to complete tasks Completing PLC and taking responsibility for closing gaps in their own knowledge.	✓ *Integral online section tests homework set weekly* ✓ *Last lesson/week/month starter questions* ✓ *Exam questions within lessons and topic tests* ✓ *Completion of DIRT process following an assessment.*
Mechanics-Kinematics and Projectiles	*Autumn*		
Statistics-Probability	*Autumn*		
Pure-Integration, Algebra, Parametric equations, Proof, Numerical methods, Differential Equations	*Spring*		
Mechanics- Force, Friction, Moments	*Spring*		
Statistics-Distributions and Hypothesis testing	*Spring*		*Literacy:- Use of key words and emphasis on understanding key definitions for each lesson-see LO's and objective sheets. Reading and interpretation*
AS Review-DIRT	*Summer*		*Numeracy:- Ongoing throughout all units*

Autumn Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. A Level Paper 1 with PLC and DIRT sessions.

Spring Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. Full set of A Level papers with PLC and DIRT sessions.

Summer Term

Ongoing AFL through mini whiteboard work. End of unit tests. Each topic has multiple Integral Maths tasks with feedback. Final exams

Impact

Be able to apply a variety of formulae, including those not provided in the formulae booklet
Define and use mathematical terminology including those from mechanics, statistics and algebra.
Recall and develop a variety of algebraic manipulation skills including for trigonometry.
Identify and use links between equations, shapes and graphs and use modelling to create diagrams and equations
Gain fluency with statistical processes

Over-arching theme:
To be able to solve problems by applying the above skills in a variety of contexts including exam questions and "real world" examples. Proof and the use of technology

Year 12

Week	Teacher A	Teacher B
1	Problem Solving (AS)	Surds and indices (AS)
2	Kinematics (AS)	
3		Quadratic functions (AS)
4		
5	Trigonometry (AS)	
6		Equations and inequalities (AS)
7		Polynomials (AS)
8		
9	Graphs and transformations (AS)	Coordinate geometry (AS)
10		
11	Vectors (AS)	
12		
13	Forces and Newton's laws of motion (AS)	Data collection (AS)
14		Data processing, presentation and interpretation (AS)
15		
16		
17		Probability (AS)
18	Differentiation (AS)	The binomial expansion (AS)
19		The binomial distribution (AS)
20		
21		Statistical hypothesis testing using the binomial distribution (AS)
22		
23		Exponentials and logarithms (AS)
24	Integration (AS)	
25		
26		
27	Variable acceleration (AS)	

Year 13

Week	Teacher A	Teacher B
1	Sequences and series	Functions
2		
3		
4		
5	Differentiation	Trigonometry
6		
7	Vectors	Trigonometric functions
8	Kinematics	
9		Trigonometric identities
10	Projectiles	
11		
12	Further differentiation	
13		Probability
14		
15		Algebra
16		
17	Integration	
18		
19		Probability distributions
20		
21		
22		
23		
24		Parametric equations
25	Force and motion	
26		Proof
27		
28	Friction	Hypothesis testing
29		
30	Differential equations	
31		
32	Moments	Numerical methods
33		