SAPIENTIA ET DOCTRINA – WISDOM AND LEARNING

Mathematics curriculum map

"Mathematics is not about numbers, equations, computations, or algorithms: It is about UNDERSTANDING" – William Paul Thurston

"Except Decision"- Mr D Roberts

Yr	Intent	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7	• Secure and extend understanding and confidence in the number system: make connections between number relationships and their algebraic and graphical representation. • Make and test conjectures about patterns and relationships; look for proofs or counterexamples	**7R1-4, 7P1-4** Number and the number system- types of number Calculating with integers and decimals **7R5, 7P5** Calculations with integers 1	**7R1-4, 7P1-4** Rounding and estimating Converting fractions, decimals, percentage Symmetry, constructing triangles **7R5, 7P5** Constructions Multiplication and division Perimeter and area	**7R1-4, 7P1-4** Properties of shapes Operations with directed number Algebraic skills with expressions **7R5, 7P5** Place value and decimals Coordinates and transformations	**7R1-4, 7P1-4** Fractions and percentages Simplifying and dividing in a ratio Generate or continue a sequence **7R5, 7P5** Calculations with integers 2 Order of operations Algebraic notation and function machines	**7R1-4, 7P1-4** Converting metric units Operations using fractions Simple percentages Solving equations **7R5, 7P5** Factors and multiples Equivalence of fractions	**7R1-4, 7P1-4** Surface area and volumes of 3D shapes Transformations **7R5, 7P5** Representing data
8	• Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically • Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]	**8R1-4, 8P1-4** Representing data Averages from frequency tables Product of prime factors Standard form **8R5, 8P5** Calculations with integers 2. Calculations with ratio.	**8R1-4, 8P1-4** 3D shapes, plans and elevations Probability Laws of indices Expanding brackets Converting fractions, decimals, percentages **8R5, 8P5** Nets and surface area of 3D shapes. Algebraic skills. Probability.	**8R1-4, 8P1-4** Ratio and proportion Calculating the nth term of a sequence Angles in parallel lines **8R5, 8P5** Rounding and estimation. Calculations with fractions.	**8R1-4, 8P1-4** Calculator percentages Solving harder linear equations Area and volme of 3D shapes **8R5, 8P5** Transformations. Algebraic skills.	**8R1-4, 8P1-4** Equations of line Frequency trees and Venn diagrams Scatter graphs and simple histograms **8R5, 8P5** Working with integers 3. Directed number.	**8R1-4, 8P1-4** Averages from grouped frequency tables **8R5, 8P5** Calculations with data.
9	• Use mathematical knowledge to solve problems within and outside mathematics, including financial mathematics and mechanics; particularly problems that are unfamiliar in presentation and context, and that embed mathematical ideas which have not yet been fully taught	**9R1-3, 9P1-2** Calculating in standard form Mathematical constructions, loci and plans. **9R-5, 9P4** Calculating with decimals and fractions. Constructions and Loci. Calculations in standard form. **9P5** Sharing in a ratio. Calculating percentages. Surface area and volumes of 3D shapes.	**9R1-3, 9P1-2** Expanding and factorising algebraic expressions. Direct and inverse proportion. Continuing sequences. **9R-5, 9P4** Simplifying algebraic expressions. Direct proportion, similarity. Expanding and factorising algebraic expressions. **9P5** Simplifying algebraic expressions. Probability. Rounding and estimation.	**9R1-3, 9P1-2** Solving inequalities. Sectors, Pythagoras' theorem and 3D shapes. Congruence. **9R-5, 9P4** Solving equations and inequalities. Area and volume of 3D shapes. **9P5** Averages and spread. Transformations.	**9R1-3, 9P1-2** Equations of straight lines. Plotting Quadratics. Simultaneous equations. **9R-5, 9P4** Pythagoras' theorem. Calculations with percentages. **9P5** Function machines. Solving equations. Problem solving with ratio.	**9R1-3, 9P1-2** Tree diagrams. Presentation of data **9R-5, 9P4** Tree diagrams. Presentation of data. **9P5** Calculations with indices. Sequences.	**9R1-3, 9P1-2** Revision. Reflection and improvements. **9R-5, 9P4** Revision. Reflection and improvements. Transformations. **9P5** Revision. Reflection and improvements. Presentation of data.
10	•Increase learners use of multiple representations where appropriate •model realistic situations mathematically within a given range of functions; express the results of their investigations using a range of formal mathematical representations • work with linear and quadratic expressions and graphs, applying appropriate reasoning strategies to solve increasingly complex problems	**10R1-2, 10P1** Properties of shape- Pythagoras' theorem and trigonometry. Surds. Simultaneous equations and numerical methods. **10R3** Calculations and standard form. Area and perimeter. Rounding, estimation and bound calculations.	**10R1-2, 10P1** Cumulative frequency and box plots. Direct and inverse proportion algebraically. Continuous data and histograms. More than two binomials, algebraic fractions and algebraic skills. **10R3** Calculations with fractions, Calculations with ratio. Calculations with percentages, Probability.	**10R1-2, 10P1** Volumes of more complex 3D shapes. Recurring decimals to fractions. **10R3** Solving inequalities. Pythagoras theorem and 3D shapes. Transformations.	**10R1-2, 10P1** Transformations. Rationalising the denominator. Vector arithmetic. **10R3** Constructions. Angles in parallel lines. Sequences and patterns.	**10R1-2, 10P1** Non right angle trigonometry. Quadratic sequences. Function notation algebraically. **10R3** Trigonometry. Simultaneous equations.	**10R1-2, 10P1** Revision. Reflection and improvements. Probability and Venn diagrams. **10R3** Probability diagrams. Graphs and equations. Revision. Reflection and improvements.

		Expanding and factorising expressions. **10R4, 10P2-3** Calculations with directed number and decimals. Area and perimeter. Standard form, rounding and estimation. **10R5, 10P4** Calculations with integers and decimals. Area and perimeter.	**10R4, 10P2-3** Indices. Expanding and simplifying. Probability. Constructions. **10R5, 10P4** Rounding and estimation. Laws of indices. Simplifying expressions. Probability.	**10R4, 10P2-3** Prime factors, highest common factor and lowest common multiple. Factorising expressions. Calculations with fractions. **10R5, 10P4** Prime factors, highest common factor and lowest common multiple. Operations with fractions. Constructing triangles.	**10R4, 10P2-3** Ratio. Calculations with percentages. Solving equations and inequalities. **10R5, 10P4** Calculations with ratio. Calculations with percentages. Algebraic skills.	**10R4, 10P2-3** Angles. Sequences. Plotting quadratics and equations of lines. **10R5, 10P4** Solving inequalities. Angles. Sequences.	**10R4, 10P2-3** Pythagoras' theorem and 3D shapes. Direct and inverse proportion. **10R5, 10P4** Area and circumference. 3D shapes.
11	• Work fluently and accurately with fractions, surds, and symbolic expressions, simplifying appropriately •Identify and express variables and relations algebraically and graphically and begin to use a range of functions in their reasoning •Select and use other forms of reasoning as appropriate; algebraic, geometric, statistical, probabilistic and logical, and know when to express their arguments informally or formally, including working directly from definitions	**11R1, 11P1** Circle theorems. Graphing inequalities. Solving harder quadratic equations. **11R2** Surds Proportional reasoning. Analysing statistics. **11R3-4, 11P2-3** Transformations. Compound measures. Trigonometry. **11R4, 11P4** Transformations. Pythagoras' theorem. Compound measures.	**11R1, 11P1** Graphing non-linear functions Equations of circles. Quadratic equations and functions. **11R2** Quadratics. Non- right angle trigonometry. Averages from tables. **11R3-4, 11P2-3** Simultaneous equations. Presentation and calculations on data. **11R4, 11P4** Indices and standard form. Direct and inverse proportion.	**11R1, 11P1** Quadratic inequalities. Graphing trigonometric functions. Graph transformations. **11R2** Volume and surface area. Recurring decimals. Function notation. **11R3-4, 11P2-3** Averages from a table. Bearings and scale drawings. Vector arithmetic. **11R4, 11P4** Presentation of data. Algebraic skills.	**11R1, 11P1** Geometric proof using vectors. **11R2** Algebraic fractions. Probability. Transformations. **11R3-4, 11P2-3** Probability and Venn diagrams. Rearranging equations. **11R4, 11P4** Vector arithmetic. Probability/. Trigonometry.	GCSE preparation.	
12	• AO1: Use and apply standard techniques. Learners should be able to: select and correctly carry out routine procedures, accurately recall facts, terminology and definitions. • AO2: Reason, interpret and communicate mathematically. Learners should be able to: construct rigorous mathematical arguments (including proofs); • AO3: Solve problems within mathematics and in other contexts. Learners should be able to: translate problems in mathematical and non-mathematical contexts into mathematical processes;	-Transition Support - Algebraic tinkering - Solving equations and inequalities -Curve sketching, algebraic division and Binomial Expansion	- Differentiation first principles, rates of change, tangents, normal, turning points - Trigonometry; Sine and Cosine rule and area of triangle -Vectors -Statistical Sampling	- Integration and area under a curve - Kinematics -Data; presentation and interpretation	-Exponentials and logarithms, curve fitting - Forces - Probability and DRV's	-Differentiation including chain rule, product rule and quotient rule -Forces, Newton's Laws and Hypothesis testing	- Exam preparation, application of knowledge and links to Year 13 content
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The national curriculum frame work for mathematics is fully covered by the SRPA curriculum provision.