

St Martin's School

Curriculum Maps 2021/2022



Key Stage Three 2021 - 2022
Maths Curriculum Plans

St Martin's School

Curriculum Maps 2021/2022



Year 7

Maths Curriculum Plans

Year 7 Curriculum Plans – Autumn Term 2021

Year 7 Mathematics

Higher Sets

- **Place Value and Numerical Methods**: Round to a given number of significant figures; Truncating numbers; Multiply and divide whole numbers and decimals; Simple inequalities
- **Properties of Number**: Order of Operations (including squares and cubes)
- **Lines and Angles**: Angle properties of triangles and quadrilaterals; Recognise and solve corresponding angles, alternate angles, co-interior angles
- **Powers and Roots**: Use index notation for integer powers; Use simple rules of indices applied to positive and negative numbers ; Use the terms square, positive and negative square root, cube and cube root
- **Expressions, Equations and Formula**: Solve equations involving brackets; Solve equations with unknown on both sides; Rearrange simple formula
- **Fractions**: Write a quantity as a fraction of another quantity; Add, subtract, multiply divide fractions with different denominators and simple mixed numbers; Applications of fractions
- **Collecting & Analysing Data**: Find the mode, mean, median and range for any set of discrete data; solve more complex problems relating to these averages; Record discrete data using a frequency table; Calculate mode, mean, median and range from a frequency table; Compare and comment on two frequency distributions
- **Factors, Multiples and Primes**: Find the prime factor of a number and express as a product of prime factors using index notation; Find HCF and LCM using prime factors
- **Properties of Shape (2D)**: Solve problems based on shape properties (e.g. Missing angles, missing lengths); Understand that congruent shapes have the same lengths and angles

Intermediate Sets

- **Place Value and Numerical Methods**: Round whole numbers to the nearest 10, 100, 1000 and to 1 significant figure; Round to the nearest whole number and 1 or 2 decimal places; Multiply & divide decimal numbers by 10, 100 and 1000; Multiply & divide whole numbers & decimals
- **Directed Numbers**: Order, add and subtract negative numbers in context; Multiply and Divide with negative numbers; Add, subtract, multiply and divide negative numbers in context
- **Lines and Angles**: Understand parallel & perpendicular lines; Solve problems involving angles at a point, angles on a straight line, vertically opposite angles
- **Powers and Roots**: Square numbers, square roots (up to 12); Cube numbers, cube roots (up to 10); Use index notation for whole numbers (including squaring and cubing)
- **Expressions, Equations and Formula**: Solve 1 - 3 step equations; Write simple formulas/equations/expressions algebraically; Rearrange simple formula; Substitution of positive and negative integers; Expand single brackets
- **Fractions**: Order fractions; Write a quantity as a fraction of another quantity; Multiply/divide fractions (understand reciprocal); Add/subtract fractions (different denominators)
- **Collecting & Analysing Data**: Find the mode, mean, median and range for any set of discrete data; Compare two distributions using the range and one average
- **Factors, Multiples and Primes**: Find LCM and HCF of two or more numbers by listing; Problem solving e.g. train times; Sorting numbers into Venn diagrams (multiples / primes etc.)

Foundation Sets

- **Place Value and Numerical Methods**: Read and write numbers in figures and words; Round to the nearest 10, 100 and 1000; Secure written methods for whole number addition and subtraction; Use understanding of place value to multiply and divide by 10,100 and 1000; Secure written methods for whole number multiplication and division
- **Directed Numbers**: Order positive/negative numbers on a number line; Add/subtract negative integers; Add/subtract negative numbers in context (e.g. Temperature)
- **Lines and Angles**: Recognise and estimate the three types of angle; Measure and construct an angle to the nearest degree; Eight points of a compass
- **Powers and Roots**: Recall the square numbers up to 12×12 ; Practice methods of multiplication to calculate squares and cubes; Efficient use of a calculator to find squares and roots
- **Expressions, Equations and Formula**: Expressions and equations; Simplify expressions; Use simple formulas written in words; Substitute positive numbers into a simple formula
- **Fractions**: Find equivalent fractions; Order fractions with the same denominator; Simplify Fractions; Add and subtract fractions with the same denominator; Change an improper fraction to a mixed number; Change a mixed number to an improper fraction; Find a fraction of a whole
- **Factors, Multiples and Primes**: Understand definition of multiple, factor and prime factors. Find multiples of a number; Find a factor pair of a number; List common multiples; Test to see if a number is prime

Year 7 Curriculum Plans – Spring Term 2022

Year 7 Mathematics

Higher Sets

- Perimeter and Area: Calculate the perimeter and area of compound shapes; calculate area of Parallelograms and Trapeziums; calculate circumference and area of circles (no composite shapes)
- Number Patterns and Sequences: Generate a sequence from an nth term expression; Calculate a specific term in a sequence using an nth term expression; Find the nth term of more complex arithmetic sequences
- Fractions, Percentages & Decimals: Turn a fraction into a decimal by division; Ordering a mixture of fractions, decimals, percentages; Solve problems involving comparing fractions/percentages of a quantity; Compare fractions/decimals/percentages using inequality symbols
- Units, Measure and Estimating: Converting time to decimals (more complex); Solve problems involving the conversion of units in a range of contexts (metrics and imperial)
- Probability: Work out the probability of an event not happening; Draw and use a sample space diagram (two way table); Identify between mutually exclusive and independent events; Solve problems involving mutually exclusive events; Use the AND OR rules for probability; Finding probabilities from simple completed Venn diagrams; Frequency trees

Intermediate Sets

- Properties of Shape (2D): Classify and define special triangles and quadrilaterals based on angle properties, line properties and all; lines of symmetry; Recognise and calculate order of rotational symmetry
- Fractions, Percentages & Decimals: Convert between fractions, decimals, percentages
- Percentages: Calculate percentages of a quantity by finding multiples/parts of 10%; Compare fractions and percentages of a quantity
- Number Patterns and Sequences: Generate and describe sequences involving negatives or fractions; Use basic iterative formulas to generate simple term to term sequences; Find the nth term of simple sequences
- Probability: Use the appropriate vocabulary associated with probability, Use a probability scale from 0 to 1; Estimate the probability found from experiments; Compare experimental and theoretical probabilities
- Perimeter and Area: Calculate perimeter and area of compound shapes that can be split into rectangles; Use the formula for calculating area of triangle
- Units, Measure and Estimating: Read a timetable and calculate differences in time; Convert from one metric unit to another; Simple conversion of time to decimals e.g. 0.5hours = 30mins
- Coordinate Geometry: Complete a table of values for equations such as $y = 2x + 3$ and plot the line; Name and draw lines parallel to the x and y axis

Foundation Sets

- Fractions, Percentages & Decimals: Convert decimals to fractions (cancel down as extension); Understand that a percentage is a fraction out of 100; Write a simple fraction as a percentage and vice versa; Find fractions, percentages, decimals that are the same; Simple comparison of fractions, decimals and percentages
- Properties of Shape (2D): Draw, recognise and name special triangles and quadrilaterals; Recognise diagonal lines of symmetry
- Number Patterns and Sequences: Generate simple integer sequences; Describe in words simple sequences; Write the term to term rule of a sequence involving positive numbers; Generate a simple sequence given a rule; Recognise and continue common number patterns such as multiples, squares, triangle numbers, Fibonacci
- Collecting & Analysing Data: Construct a frequency chart (using a tally); draw and interpret pictograms; draw and interpret line graphs; draw and interpret bar chart from a frequency chart; Find the mode and range of a set of data; Find the mean from a set of data; Find the median from an odd set of data
- Percentages: Non calculator method for finding simple percentages of a quantity (10%, 25%, 50%, 75%); Finding percentages using a Calculator

St Martin's School

Curriculum Maps 2021/2022



Year 8

Maths Curriculum Plans

Year 8 Curriculum Plans – Autumn Term 2021

Year 8 Mathematics

Higher Sets

- Place Value and Numerical Methods: Divide by a decimal; multiply/divide by a number between 0 and 1; Estimation with suitable rounding; Order of operations (more complex)
- Lines and Angles: Draw, measure, find missing bearings; Proof that angles in triangles sum to 180; Interior/exterior angles in polygons; angle in polygons problems
- Expressions, Equations and Formula: Solve equations involving fractions; Find a solution to a problem by forming an equation and solving it; Solving simple linear inequalities; Factorise expressions (single brackets); Expand and simplify double brackets; More complex rearranging formula involving fractions, powers (not factorising)
- Powers and Roots: Apply positive integer powers to fractions; Use index laws for multiplication and division of positive integer powers using numbers or variables
- Fractions: Divide an integer by a fraction; Calculations with mixed numbers involving the four operations
- Collecting & Analysing Data: Understand the difference between discrete and continuous data; Find the median and modal class from grouped data; Calculate an estimate of the mean from grouped data; Find averages from a stem and leaf diagram
- Factors, Multiples and Primes: Finding HCF and LCM of two or more numbers using the most appropriate method; Solve worded problems based on HCF and LCM
- Properties of Shape (2D): Recognise similar shapes and calculate the scale factor from the ratio of two equivalent lengths; Calculate unknown lengths of sides of similar shapes (simple, disconnected shapes. Not parallel line angle etc.); Identify congruent triangles using the conditions SSS, SAS, ASA, RHS

Intermediate Sets

- Place Value and Numerical Methods: Round to a given number of significant figures; Truncating numbers; Multiply/divide whole numbers and decimals; Simple inequalities
- Properties of Number: Order of Operations (including squares and cubes)
- Lines and Angles: Angle properties of triangles and quadrilaterals; Recognise and solve corresponding angles, alternate angles, co-interior angles
- Powers and Roots: Use index notation for integer powers; Use simple rules of indices; Use the terms square, positive and negative square root, cube and cube root
- Expressions, Equations and Formula: Solve equations involving brackets; Solve equations with unknown on both sides; Rearrange simple formula
- Fractions: Write a quantity as a fraction of another quantity; Add, subtract, multiply divide fractions with different denominators and simple mixed numbers; Applications of fractions
- Collecting & Analysing Data: Find the mode, mean, median and range for any set of discrete data and solve more complex problems relating to these averages; Record discrete data using a frequency table; Calculate mode, mean, median and range from a frequency table; Compare and comment on two frequency distributions
- Factors, Multiples and Primes: Find the prime factor of a number and express as a product of prime factors using index notation; Find HCF and LCM using prime factors
- Properties of Shape (2D): Solve problems based on shape properties (e.g. Missing angles, missing lengths); Understand that congruent shapes have the same lengths and angles

Foundation Sets

- Place Value and Numerical Methods: Round whole numbers to the nearest 10, 100, 1000 and to 1 significant figure; Round to the nearest whole number and 1/2 decimal places; Multiply/divide decimal numbers by 10, 100 and 1000; Multiply/Divide whole numbers and decimals
- Directed Numbers: Order, add and subtract negative numbers in context; Multiply & Divide with negative numbers; Add, subtract, multiply and divide negative numbers in context
- Lines and Angles: Understand parallel and perpendicular lines; Solve problems involving angles at a point, angles on a straight line, vertically opposite angles
- Powers and Roots: Square numbers, square roots (up to 12); Cube numbers, cube roots (up to 10); Use index notation for whole numbers (including squaring and cubing)
- Expressions, Equations and Formula: Solve 3 step equations; Write simple formulas/equations/expressions algebraically; Rearrange simple formula; Substitution of positive/negative integers; Expand single brackets
- Fractions: Order fractions; Write a quantity as a fraction of another quantity; Multiply/divide fractions (understand reciprocal); Add/subtract fractions (different denominators)
- Collecting & Analysing Data: Find the mode, mean, median and range for any set of discrete data; Compare two distributions using the range and one average
- Factors, Multiples and Primes: Find LCM and HCF of two or more numbers by listing; Problem solving e.g. train times; Sorting numbers into Venn diagrams (multiples / primes etc.)

Year 8 Curriculum Plans – Spring Term 2022

Year 8 Mathematics

Higher Sets

- **Perimeter and Area**: Form algebraic expressions for perimeter and area and solve simple linear equations based on these; Calculate the arc length of a circle (semi-circles and quadrants); Calculate the area of a sector (semi-circles and quadrants); Calculate the area and perimeter of composite shapes involving circle sectors; Pythagoras Theorem - calculate length of hypotenuse and the length of a side
- **Number Patterns and Sequences**: Explain why a number does not appear in an arithmetic sequence (algebraic proof or otherwise); Find the next term of a quadratic sequence; Derive an expression for the nth term of a quadratic sequence; Understanding of simple geometric and Fibonacci style sequences
- **Fractions, Percentages & Decimals**: Solve problems that involve calculating and comparing fractions and percentages of a quantity; Solve problems involving ratios with fractions and percentages
- **Units, Measure and Estimating**: Finding upper and lower bounds; Understanding of error intervals for rounded or truncated values; Metric area and volume conversions
- **Probability**: Calculate relative frequency and expected frequency; Complete Tree Diagrams (with and without replacement); Use Tree Diagrams to calculate probabilities; Simple Venn diagram notation ($A \cap B$, $A \cup B$, A')

Intermediate Sets

- **Perimeter and Area**: Calculate the perimeter and area of compound shapes; calculate area of Parallelograms and Trapeziums; calculate circumference and area of circles (no composite shapes)
- **Number Patterns and Sequences**: Generate a sequence from an nth term expression; Calculate a specific term in a sequence using an nth term expression; Find the nth term of more complex arithmetic sequences
- **Fractions, Percentages & Decimals**: Turn a fraction into a decimal by division; Ordering a mixture of fractions, decimals, percentages; Solve problems involving comparing fractions/percentages of a quantity; Compare fractions/decimals/percentages using inequality symbols
- **Units, Measure and Estimating**: Converting time to decimals (more complex); Solve problems involving the conversion of units in a range of contexts (metrics and imperial)
- **Probability**: Work out the probability of an event not happening; Draw and use a sample space diagram (two way table); Identify between mutually exclusive and independent events; Solve problems involving mutually exclusive events; Use the AND OR rules for probability; Finding probabilities from simple completed Venn diagrams; Frequency trees

Foundation Sets

- **Properties of Shape (2D)**: Classify and define special triangles and quadrilaterals based on angle properties, line properties and all; lines of symmetry; Recognise and calculate order of rotational symmetry
- **Fractions, Percentages & Decimals**: Convert between fractions, decimals, percentages
- **Percentages**: Calculate percentages of a quantity by finding multiples/parts of 10%; Compare fractions and percentages of a quantity
- **Number Patterns and Sequences**: Generate and describe sequences involving negatives or fractions; Use basic iterative formulas to generate simple term to term sequences; Find the nth term of simple sequences
- **Probability**: Use the appropriate vocabulary associated with probability, Use a probability scale from 0 to 1; Estimate the probability found from experiments; Compare experimental and theoretical probabilities
- **Perimeter and Area**: Calculate perimeter and area of compound shapes that can be split into rectangles; Use the formula for calculating area of triangle
- **Units, Measure and Estimating**: Read a timetable and calculate differences in time; Convert from one metric unit to another; Simple conversion of time to decimals e.g. 0.5hours = 30mins
- **Coordinate Geometry**: Complete a table of values for equations such as $y = 2x + 3$ and plot the line; Name and draw lines parallel to the x and y axis

St Martin's School

Curriculum Maps 2021/2022



Year 9

Maths Curriculum Plans

Year 9 Curriculum Plans – Autumn Term 2021

Year 9 Mathematics

Higher Sets	<u>Expressions, Equations and Formula</u> : Solve simultaneous linear equations; factorise quadratic expressions; solve quadratics by factorising; linear inequalities; know the shapes of quadratic and cubic graphs.
	<u>Powers and Roots</u> : Fractional and negative powers; simplifying surds; expand single brackets with surds; convert numbers to and from standard form
	<u>Fractions, Decimals and Percentages</u> : Algebraic fractions involving four operations; changing a recurring decimal to a fraction; calculate simple and compound interest; calculate reverse percentages; finding the term of investment
	<u>Collecting and Analysing Data</u> : Find quartiles and IQR from discrete and stem and leaf diagrams; find the mean given two other means
	<u>Lines and Angles</u> : Circle theorems; Alternate segment theorem
	<u>Number Patterns and Sequences</u> : Fibonacci and geometric sequences; find nth term of complex and quadratic sequences
Intermediate Sets	<u>Place Value and Numerical Methods</u> : Divide a whole number or decimal by a decimal; understand effect of multiplying and dividing by number from 0 to 1; estimation by rounding; order of operations involving roots
	<u>Lines and Angles</u> : Introduction to bearings; proof that angles in a triangle sum to 180; interior and exterior angles in polygons; multistep angle problems in polygons
	<u>Expressions, Equations and Formula</u> : Solve equations involving fractions; linear inequalities; factorise expressions; expand double brackets
	<u>Powers and Roots</u> : Apply positive powers to fractions; use index laws
	<u>Fractions</u> : Divide an integer by a fraction; calculations with mixed numbers
	<u>Collecting and Analysing Data</u> : Discrete and continuous data; averages from grouped data; averages from stem and leaf diagram
	<u>Factors, Multiples and Primes</u> : Find HCF and LCM of two or more numbers; worded problems on HCF and LCM
	<u>Properties of 2D Shapes</u> : Recognise similar shapes and scale factor; calculate unknown lengths of similar shapes; congruent triangles
Foundation Sets	<u>Place Value and Numerical Methods</u> : Round whole numbers and decimals to significant figures; truncating; written method to multiply/divide whole numbers and decimals; simple inequalities; order of operations
	<u>Lines and Angles</u> : Understanding of geometric notation and correct mathematical definitions. E.g. angle AOB, line CD; apply angle properties of triangles and quadrilaterals; corresponding, alternate and co-interior angles
	<u>Powers and Roots</u> : Index notation for powers; indices rules
	<u>Expressions, Equations and Formula</u> : Solve equations involving brackets and unknowns on both sides; rearrange formula
	<u>Fractions</u> : Write quantity as a fraction of another quantity; four operations of fractions with different denominators and mixed numbers
	<u>Collecting and Analysing Data</u> : Averages of discrete data; frequency tables; compare frequency distributions.
	<u>Factors, Multiples and Primes</u> : Prime factor of a number; HCF and LCM using prime factors
	<u>Properties of 2D Shapes</u> : Solve problems on shape properties; understand congruent shapes

Year 9 Curriculum Plans – Spring Term 2022

Year 9 Mathematics

Higher Sets	<u>Properties of Shape (2D)</u> : Missing lengths in similar triangles using parallel line rules; Area and volume scale factors
	<u>Probability</u> : Problems with/without replacement; Venn diagrams
	<u>Coordinate Geometry</u> : $Y=MX+C$, Equation of a line through point and gradient; Equation of a line given two points; Parallel and perpendicular lines
	<u>Perimeter and Area</u> : Sector area and arc length; Pythagoras problems; SOHCAHTOA; Exact trig. values
	<u>Units, Measure, Estimating</u> : Calculating using upper/lower bounds with perimeter/area; Find approximate value using bounds
	<u>Representing Data</u> : Cumulative frequency graph; Box Plot; Quartiles and compare data on both
Intermediate Sets	<u>Perimeter and Area</u> : Algebra and perimeter/area; Arc length; Area of sector; Composite shapes; Pythagoras Theorem
	<u>Number Patterns and Sequences</u> : Explain why a number doesn't appear in a sequence; Next term in quadratic sequence; Nth term of a quadratic sequence; Simple geometric and Fibonacci sequences
	<u>Fractions, Percentages, Decimals</u> : Comparing fractions and percentage problems; Ratio with fractions and percentages
	<u>Units, Measure, Estimating</u> : Upper/Lower bounds; Error intervals; Metric area and volume conversions
	<u>Probability</u> : Relative and expected frequency; Tree diagrams; Venn Diagram notation
	<u>Percentages</u> : Percentage change; Using multipliers for increase/decrease
	<u>Perimeter and Area</u> : Algebra and perimeter/area; Arc length; Area of sector; Composite shapes; Pythagoras Theorem
	<u>Number Patterns and Sequences</u> : Explain why a number doesn't appear in a sequence; Next term in quadratic sequence; Nth term of a quadratic sequence; Simple geometric and Fibonacci sequences
Foundation Sets	<u>Perimeter and Area</u> : Compound shapes; Area of parallelograms and trapezium; Circumference and area of circles
	<u>Number Patterns and Sequences</u> : Generate sequence from nth term; calculate specific term in a sequence; Find nth term
	<u>Fractions, Percentages, Decimals</u> : Fraction to Decimal by division; Order FDP; Problems comparing fractions and percentages of quantity; FDP inequalities
	<u>Units, Measure, Estimating</u> : Converting time to decimals; Problems involving conversion of units
	<u>Probability</u> : Sample space diagrams; mutually exclusive and independent events; AND/OR rules; Venn diagrams; frequency trees
	<u>Percentages</u> : Increase/Decrease; Calculate one as a percentage of another
	<u>Perimeter and Area</u> : Compound shapes; Area of parallelograms and trapezium; Circumference and area of circles
	<u>Number Patterns and Sequences</u> : Generate sequence from nth term; calculate specific term in a sequence; Find nth term