Subject Area:	*Mathematics*

Year	**Term 1A** Knowledge, skills and key concepts	**Term 1B** Knowledge, skills and key concepts	**Terms 2A** Knowledge, skills and key concepts	**Term 2B** Knowledge, skills and key concepts	**Term 3A** Knowledge, skills and key concepts	**Term 3B** Knowledge, skills and key concepts
7	**At the end of this scheme of learning, students will know / understand / be able to:** • Use number lines • Integer place value • Decimal place value • Order negative numbers • Round integers • Round decimals • Add integers • Add decimals • Subtract integers • Subtract decimals • Multiply and divide by 10, 100, and 1000 • Multiply using place value • Use written method to multiply integers • Use written method to multiply decimals • Divide numbers into equal groups • Use written method to divide integers • Divide with remainders • Use written method to divide by integer to get a decimal answer	**At the end of this scheme of learning, students will know / understand / be able to:** • Use algebraic notation and terminology • Simplify expressions containing a single variable • Simplify expressions containing multiple variables • Simplify expressions containing non-linear terms • Substituting into expressions with one operation • Substituting into expressions with multiple operations • Substituting into algebraic formulae • Substituting into real-life formulae • Solving equations with one step • Solving equations of the form $ax+b=c$ ax+b=c • Solving equations of the	**At the end of this scheme of learning, students will know / understand / be able to:** • Line properties • Shape properties • Symmetry • Finding perimeters using grids • Finding the perimeter of rectangles and simple shapes • Finding the perimeter of compound shapes • Finding areas using grids • Finding the area of rectangles • Finding the area of compound shapes • Finding the area of triangles • Finding the area of compound shapes containing triangles • Reading and plotting coordinates • Solving shape problems involving coordinates	**At the end of this scheme of learning, students will know / understand / be able to:** • Finding the lowest common multiple • Finding factors and using divisibility tests • Finding the highest common factor • Finding prime numbers • Prime factor decomposition • Finding fractions of shapes • Constructing fractions • Finding equivalent fractions • Simplifying fractions • Ordering fractions • Converting between mixed numbers and improper fractions • Adding and subtracting fractions • Adding and subtracting mixed numbers • Using the distributive law • Expanding single brackets	**At the end of this scheme of learning, students will know / understand / be able to:** • Types of angles • Estimating angles • Measuring angles • Drawing angles • Angles on a line and about a point • Vertically opposite angles • Angles in triangles • Calculating the range • Calculating the median • Finding the mode • Calculating the mean • Interpreting frequency tables and two-way tables • Drawing and interpreting tally charts • Drawing and interpreting pictograms • Drawing bar charts • Interpreting bar charts	**At the end of this scheme of learning, students will know / understand / be able to:** • Reciprocals • Multiplying fractions • Dividing fractions • Multiplying with mixed numbers • Dividing with mixed numbers • Fractions of amounts without a calculator • Fractions of amounts with a calculator • Converting between fractions and decimals • Converting between fractions, decimals and percentages • Ordering fractions, decimals and percentages • Writing numbers as percentages of other numbers • Using probability phrases • Writing probabilities as fractions • Writing probabilities as fractions,

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	- Use written method to divide by decimals - Add and subtract with negative numbers - Multiply and divide with negative numbers - Calculate roots and powers - Use correct order of operations - Use the commutative laws - Use the associative laws	form $x/a+b=c$ - Converting units of time - Using clocks - Calculating with time - Using timetables - Using calendars - Estimating and measuring length, mass and capacity - Converting units of length, mass and capacity - Using appropriate units		- Expanding single brackets and simplifying expressions - Factorising into one bracket	- Collecting and recording data using tables - Finding averages from frequency tables - Choosing suitable averages and solving problems - Solving proportion problems	decimals and percentages - Probabilities of mutually exclusive events - Sample space diagrams
8	**At the end of this scheme of learning, students will know / understand / be able to:** - Finding percentages of amounts without a calculator - Finding percentages of amounts with a calculator - Percentage change without a calculator - Percentage change with a calculator - Value for money - Index rules with positive indices - Index rules with negative indices	**At the end of this scheme of learning, students will know / understand / be able to:** - Term-to-term rules for numerical sequences - Term-to-term rules for sequences of patterns - Substituting into position-to-term rules - Position-to-term rules for arithmetic sequences - Position-to-term rules for sequences of patterns	**At the end of this scheme of learning, students will know / understand / be able to:** - Rounding integers using significant figures - Rounding decimals using significant figures - Estimating calculations - Calculating midpoints - Mixed problems: Coordinates and midpoints - Finding the area of parallelograms	**At the end of this scheme of learning, students will know / understand / be able to:** - Venn diagrams - Probabilities from Venn diagrams - Finding the HCF and LCM using prime factor decomposition - Properties of 3D shapes - Nets of 3D shapes - Finding the surface area from a net - Finding the surface area of cubes and cuboids	**At the end of this scheme of learning, students will know / understand / be able to:** - Plotting horizontal, vertical and diagonal lines - Plotting straight line graphs - Finding equations of straight line graphs - Translation - Reflection - Angles in quadrilaterals - Combining angle facts - Angles on parallel lines	**At the end of this scheme of learning, students will know / understand / be able to:** - Reading and drawing linear inequalities on number lines - Solving single inequalities - Expanding double brackets - Calculating with fractions - Calculating with mixed numbers - Simplifying algebraic fractions by factorising

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	- Simplifying expressions using index laws - Simplifying algebraic fractions by cancelling common factors - Solving equations of the form $(x+a)/b=c$ (x+a)/b=c - Solving linear equations involving brackets - Solving equations with the unknown in the denominator - Solving equations with the unknown on both sides - Constructing and solving equations - Solving equations of the form $(x+a)/b=c$ (x+a)/b=c - Solving linear equations involving brackets - Solving equations with the unknown in the denominator - Solving equations with the unknown on both sides - Constructing and solving equations	- Writing and simplifying ratios - Writing ratios in the form $1:n$ 1:n - Converting between ratios, fractions and percentages - Using equivalent ratios to find unknown amounts - Sharing amounts in a given ratio - Drawing and interpreting scale diagrams	- Finding the area of trapeziums - Converting units of area - Identifying parts of circles - Finding the circumference of circles - Finding the area of circles - Using standard form with positive indices - Using standard form with negative indices	- Finding the surface area of prisms - Finding the volume of cubes and cuboids - Finding the volume of prisms - Converting units of volume	- Using quadrilateral properties to find angles - Angles in polygons - Drawing pie charts - Interpreting pie charts - Drawing line graphs - Interpreting line graphs - Drawing stem-and-leaf diagrams - Interpreting stem-and-leaf diagrams - Finding averages from diagrams	- Adding and subtracting algebraic fractions - Using recurring decimal notation - Converting fractions to recurring decimals

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9	**At the end of this scheme of learning, students will know / understand / be able to:** • Converting between fractions, decimals and percentages • Ordering fractions, decimals and percentages • Finding fractions of amounts without a calculator • Finding fractions of amounts with a calculator • Finding percentages of amounts without a calculator • Finding percentages of amounts with a calculator • Percentage change without a calculator • Percentage change with a calculator • Finding original values in percentage calculations • Finding the percentage an amount has been changed by • Simple interest calculations • Expected results from repeated experiment	**At the end of this scheme of learning, students will know / understand / be able to:** • Factorising quadratic equations of the form x^2+bx+c • Factorising the difference of two squares • Factorising to solve quadratic equations of the form $x^2+bx+c=0$ • Constructing bisectors of angles • Constructing perpendicular bisectors and lines • Finding the arc length of sectors • Finding the area of sectors • Finding the surface area of cylinders • Finding the volume of cylinders	**At the end of this scheme of learning, students will know / understand / be able to:** • Finding error intervals • Truncating decimals • Finding error intervals for truncated numbers • Plans and elevations • Using Pythagoras' theorem in 2D • Applying Pythagoras' theorem in 2D • Writing and simplifying ratios • Sharing amounts in a given ratio • Solving direct proportion word problems • Solving inverse proportion word problems • Currency conversion	**At the end of this scheme of learning, students will know / understand / be able to:** • Plotting straight line graphs • Finding equations of straight-line graphs • Interpreting equations of straight-line graphs • Calculating with speed • Calculating with rates • Plotting distance-time graphs • Interpreting distance-time graphs • Calculating speed from distance-time graphs • Plotting distance-time graphs using speeds	**At the end of this scheme of learning, students will know / understand / be able to:** • Plotting graphs of quadratic functions • Interpreting graphs of quadratic functions • Solving quadratic equations graphically • Combining angle facts • Angles on parallel lines • Using quadrilateral properties to find angles • Angles in polygons • Measuring and drawing bearings • Calculating bearings • Translation • Reflection • Rotation • Enlargement by a positive scale facto • Mixed transformations • Understanding similarity • Finding unknown sides in similar shapes • Understanding congruence	**At the end of this scheme of learning, students will know / understand / be able to:** • Types of data • Presenting data and making conclusions • Comparing populations using diagrams • Choosing suitable averages and solving problems • Plotting scatter graph • Interpreting scatter graphs • Using lines of best fi • Interpreting frequency tables with grouped data • Finding averages from grouped data • Drawing and interpreting frequency polygons • Understanding column vectors • Adding and subtracting column vectors • Multiplying column vectors by a scalar • Identifying parallel vectors

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	• Calculating experimental probabilities • Frequency trees • Multiplying and dividing numbers in standard form • Adding and subtracting numbers in standard form • Standard form with a calculator • Solving inequalities with the unknown on both sides • Solving double inequalities • Constructing and solving inequalities				• Congruent triangle • Constructing triangles	
10	At the end of this scheme of learning, students will know / understand / be able to: • Compound interest calculations • Growth and decay • Finding the surface area of pyramids • Finding the surface area of cones • Finding the surface area of spheres • Finding the surface area of frustums	At the end of this scheme of learning, students will know / understand / be able to: • Changing the subjects of formulae with two or more steps • Changing the subject when the subject appears more than once • Understanding sin, cos and tan • Finding unknown sides in right-angled triangles	At the end of this scheme of learning, students will know / understand / be able to: • Finding the equation of a straight line from its gradient and a point • Finding the equation of a straight line from two points on the line • Equations of parallel lines • Equations of parallel and perpendicular lines	At the end of this scheme of learning, students will know / understand / be able to: • Calculating with density • Calculating with pressure • Combining ratios • Calculating with ratios and algebra • Changing ratios • Plotting velocity-time graphs • Calculating acceleration from velocity-time graphs	At the end of this scheme of learning, students will know / understand / be able to: • Position-to-term rules for arithmetic sequences • Position-to-term rules for sequences of patterns • Position-to-term rules for geometric sequences • Sampling and bias • Capture-recapture • Interpreting direct proportion equations	At the end of this scheme of learning, students will know / understand / be able to: • Converting fractions to recurring decimals • Converting recurring decimals to fractions • Expanding double brackets • Factorising quadratic expressions of the form x^2+bx+c x^2+bx+c • Factorising the difference of two squares

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	• Finding the surface area of composite shapes • Finding the volume of pyramids • Finding the volume of cones • Finding the volume of spheres • Finding the volume of frustums • Solving simultaneous equations using elimination • Solving simultaneous equations using substitution • Solving simultaneous equations graphically • Constructing and solving simultaneous equations	• Finding unknown angles in right-angled triangles • Using the exact values of trigonometric ratios • Angles of elevation and depression • Calculating with trigonometry and bearings • Constructing loci	• Plotting linear real-life graphs • Using and interpreting linear real-life graphs • Finding equations of linear real-life graphs • Sketch graphs of water flows • Venn diagrams with set notation • Using set notation • Tree diagrams for independent events • Tree diagrams for dependent events	• Plotting velocity-time graphs • Calculating acceleration from velocity-time graphs • Graphs of cubic functions • Graphs of reciprocal functions • Graphs of exponential functions	• Interpreting inverse proportion equations • Graphs of direct and inverse proportion • Constructing direct proportion equations • Constructing inverse proportion equation • Enlargement by a positive or negative scale factor • Combining transformations • Finding error intervals • Finding error intervals for truncated numbers • Finding bounds for calculations • Index rules with positive indices • Index rules with negative indices • Simplifying expressions using index laws • Estimating roots and powers • Indices of the form 1/a 1/a • Indices of the form a/b a/b	• Factorising to solve quadratic equations of the form $x^2+bx+c=0$ x²+bx+c=0 • Interpreting frequency tables with grouped data • Finding averages from grouped data • Drawing stem-and-leaf diagrams • Interpreting stem-and-leaf diagram • Drawing line graphs • Interpreting line graphs • Drawing and interpreting frequency polygons • Drawing cumulative frequency graph • Interpreting cumulative frequency graphs • Drawing box plots • Interpreting box plots • Comparing populations using box plots and cumulative frequency graphs

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11 F	**At the end of this scheme of learning, students will know / understand / be able to:** • Probability of an event happening with listing outcomes • Event not happening • Probability scale • Sample Space Diagrams • Two Way Tables with probability questions • Relative Frequency and Experimental probability • Venn Diagrams – no terminology needed • Frequency trees • Tree Diagrams • Recognise 3D shape and their properties using FEV • Drawing Plans and Elevations and sketching when given P and E • Make accurate drawings of triangles using ruler, protractor and compasses • Constructions – around a point, perpendicular, angle	**At the end of this scheme of learning, students will know / understand / be able to:** • Multiply double brackets – including negatives, higher coefficients, and squaring brackets • Factorise quadratic expressions – x^2 • Factorise - Difference of 2 squares • Solving Quadratics and understand the relationship with roots on a graph • Plot graphs of quadratic functions and use quadratic graphs to solve problems • Circumference/Perimeter of circles and sectors including in terms of pi • Area of circles and sectors including in terms of pi • SA of Cylinders - and in terms of pi • Volume of a cylinder - and in terms of pi • Work out the volume and SA of a pyramid • Work out the volume and SA of a cone	**At the end of this scheme of learning, students will know / understand / be able to:** • Laws of indices – Revision • Large numbers in SF and convert numbers from SF into ordinary numbers • Small numbers in SF and convert numbers from SF into ordinary numbers • To add and subtract numbers in standard form – non calc • To multiply and divide numbers in standard form – non calc • Calculations with SF and calculator in context	**At the end of this scheme of learning, students will know / understand / be able to:** • Introduce and Solve Simultaneous Equations • Graph Simultaneous Equations • Algebraic Proof • Draw Cubic and reciprocal graphs with a table • Recognise all graphs		

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	bisector and from a point • Loci and regions • Bearings – Measure, draw and use maps and scales • Bearings – Calculate angles using angle rules	• Work out the volume and SA of a sphere				
11 H	**At the end of this scheme of learning, students will know / understand / be able to:** • Probability of an event not happening • Two-way table with probability…Include Ratio and % questions • Sample Space diagrams • Listing Combinations and Probability • Experimental probability and Relative Frequency • Frequency Trees • Tree Diagrams-Independent and Conditional • And/Or Rule (not tree diagrams) • Venn Diagrams • Understand the idea of Similarity and Congruence • Proving Congruence	**At the end of this scheme of learning, students will know / understand / be able to:** • Sine Rule • Cos Rule • Area of a Triangle • Combination of Sine and Cos Rule • Sampling and Stratified Sampling • UQ LQ and IQR from a list of numbers and why this is useful • Cumulative Frequency • Boxplot • Comparing Data – CF/Boxplot/S&L • Drawing and Interpret Histograms	**At the end of this scheme of learning, students will know / understand / be able to:** • Graph of a Circle • Sim Equations with Lines meeting Quadratics and Circles • Graphing Inequalities • Multiplying Cubic Brackets and Understanding Roots • Iteration • Circle Theorems with Problem Solve • Circle Problems with Tangents and y = mx + c • Algebraic Fractions – Factorise • Algebraic Fractions – Add/Subtract • Algebraic Fractions – Mult/Divide	**At the end of this scheme of learning, students will know / understand / be able to:** • Algebraic Fractions – Solving Equations • Simplify Surds • Surds – Add/Subtract • Surds – Multiplying Brackets • Surds – Rationalise Denominator • Functions OCR Style Questions • Functions and Sequences • Algebraic Proof • Vector Geometry – Introduction and Drawing • Vector Geometry – Arithmetic • Vector Geometry – Problem Solve	**At the end of this scheme of learning, students will know / understand / be able to:** • Direct and Inverse Proportion Graphs • Direct and Inverse Proportion - Formula • Exponential Functions • Introduce Trig Graphs • Transform Trig Graphs • Transforming Functions	

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	• Similar Shapes with problem solve • Similar Shapes – Area and Volume					