KS4 Foundation Curriculum Map

YEAR 10	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content	**Basic Number** • Bidmas • Negative and positive numbers • Place value • Working with decimals **Factors and Multiples** • Factors • Multiples • Highest common factor • Lowest common multiple Primes **Basic Decimals** • Ordering decimals • Place value • Terminating recurring decimals	**Basic Algebra** • Algebraic notation • Expanding brackets • Simplifying expression, • Expanding brackets • Identify expressions, equations, identities **Equations** • Substitution • Solving equations **Indices** • Square, cubes, roots • Powers • Indices calculation	**Angles** • Angles in parallel lines • Angles in polygons • Angles in triangles • Angle facts **Properties of** • sum of angles in a polygon • Properties of quadrilateral **Scale diagrams, bearings** • Use of Maps • Scale factors • Bearing Calculation •	**Measures** • Imperial unit /Metric conversion • Use standards units, mass, capacity, time, money • Compound units eg density ,pressure • **Perimeter and Area** • Identify properties of shapes • Perimeter of 2d shapes and composite shapes • Surface area of shapes • Use formulas to find the area of shapes	**Solving quadratic equations** • Factorising • Factors of numbers • Graphical representation **Simultaneous equations** • Solving linear equations • Using two variable • Interpret solutions	**Inequalities** • Solve linear inequalities • Number line representation • Understand notation **Sequences** • Term to term rules • Nth term • Various types of sequences • Fibonacci sequence • Quadratic sequence recognition **Algebra:Quadratics and Rearranging formulae and identities** • Expanding binomials • Use

	Rounding ● Rounding to significant places ● Rounding to decimal places ● Truncating **Basic Fractions** ● Ordering fractions ● Adding, Subtracting, Multiplying, Dividing fractions ● Converting improper fractions **Basic Percentages** ● Percentage change ● Fraction decimal percentage conversion ● Percentage Quantity ● Comparing quantities **Calculating with percentages** ● Percentage problems ● Simple interest ● Reverse percentages	**Standard Form** ● **Calculator** and Non calculator conversions ● Interpretation of standard form	**Ratio and proportion** ● Fractions and ratios ● Simplifying ratios ● Dividing into ratios ● Real life application, mixing **Coordinates and Linear** graphs ● Quadrant identifications ● Using axes ● Plotting coordinates ● Equation of a line ● Gradient of a line **Real life graphs** ● Plot reciprocal graphs ● Speed distance time graphs ● Conversion graphs ● Gradient-rates of change	**Circumference and Area** ● Define parts of a circle ● Use pi to find circumference and area of circles ● Surface area of spheres, cones ● Arc length and area of sector **2D Representations of 3D Shapes** ● Plans and elevations **Volume** ● Using scale factors ● Using formulas to find volumes of shapes ● Using pi to find volume of composite shapes		algebraic formula ● Change the subject ● Recognise an identity ● Interpret expressions **Pythagoras Theorem** ● Know the formula for Pythagoras' Theorem `a^2 + b^2 = c^2` ● Apply it to find length in right angled triangles in two dimensional figures Trigonometry ● Know and use the trigonometric ratios ● Apply them to find angles and lengths in right-angled triangles in two dimensional

	• Financial application of percentages UNIT AWARD TEST					figures (Review of year 10 - 3 year route) • Know the exact values of • 0°, 30° 45°, 60° and 90° • Know the exact value of • 0°, 30°, 45° and 60° • Compare lengths using ratio notation (Review of Year 10 - 3 year route) • Make links to trigonometric ratios UNIT AWARD TEST
Skills	**Basic Number** • Apply the four operations, including formal written methods, to integers – both positive and negative • Understand and use place value (e.g. when working with very large or very	**Basic Algebra** • Use and interpret algebraic notation, including coefficients written as fractions rather than decimals • brackets • it is expected that	**Angles** • Use conventional terms and notations: points, lines, vertices, edges, planes, parallel lines, perpendicular lines, right	**Measures** • Apply and interpret limits of accuracy • • Use standard units of measure and related concepts	**Solving quadratic equations** • Solve quadratic equations algebraically by factorising • • Find approximate solutions using	**Inequalities** • Solve linear inequalities in one variable • Represent the solution set on a number line • know the conventions of an open circle

	small numbers, and when calculating with decimals) **Basic Factors/Multiples** ● Use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation ● including using product notation, and the unique factorisation theorem ● prime factor decomposition including product of prime factors written in index form **Basic Decimals** ● Order positive and negative decimals ● Apply the four operations, including formal written methods, to decimals – both positive and	answers are given in their simplest form without an explicit instruction given in the question ● Use conventional notation for priority of operations, including brackets, powers, roots and reciprocals ○ ● understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors ● this will be implicitly and explicitly assessed ○ ● Simplify and manipulate algebraic expressions by: ● collecting like terms ● multiplying a single term over a	angles, polygons, regular polygons and polygons with reflection and/or rotation symmetries ● Use the standard conventions for labelling and referring to the sides and angles of triangles ● Draw diagrams from written descriptions ● Apply the properties of: angles at a point angles at a point on a straight line vertically opposite angles ● Understand and use alternate and corresponding angles on parallel lines ● **Properties of polygons** ● Derive and use the sum of angles in a triangle (e.g. to deduce and use the angle sum in any polygon, and to derive properties	(length, area, volume / capacity, mass, time, money etc) ● Use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate ● know and use metric conversion factors for length, area, volume and capacity. Imperial / metric conversions will be given in the question ● Change freely between related standard units (e.g. time, length, area, volume / capacity, mass) and compound	a graph **Simultaneous equations** ● Solve two simultaneous equations in two variables (linear / linear) algebraically ● Find approximate solutions using a graph ● Translate simple situations or procedures into algebraic expressions or formulae ● Derive two simultaneous equations ● Solve the equations and interpret the solution	on a number line for a strict inequality and a closed circle for an included boundary **Sequences** ● Generate terms of a sequence from either a term-to-term or a position-to-term rule ● Recognise use of sequences of triangular, square and cube numbers ● simple arithmetic progression ● Fibonacci type sequences ● quadratic sequences and simple geometric progressions (`r^n` where `n` is an integer and `r` is a rational number > 0)

	negative ● Understand and use place value (e.g. when calculating with decimals) ● Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and or 0.375) **Rounding** ● Round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places or significant figures) ● Use inequality notation to specify simple error intervals due to truncation or rounding Basic Fractions ● Order positive and negative fractions ● Apply the four operations, including formal	bracket ● taking out common factors **Equations** ● Substitute numerical values into formulae and expressions, including scientific formulae ● Solve linear equations in one unknown algebraically including those with the unknown on both sides of the equation **Indices** ● Use positive integer powers and associated real roots (square, cube and higher) ● Recognise powers of 2, 3, 4, 5 ● Calculate with roots and with integer indices ● including square numbers up to	of regular polygons) ○ ● Derive and apply the properties and definitions of: ● special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite and rhombus ● and triangles and other plane figures using appropriate language **Scale Diagrams and Bearings** ● Use scale factors, scale diagrams and maps ● including geometrical problems ● Measure line segments and angles in geometric figures, including interpreting maps and scale drawings and use of bearings	units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts ● Use compound units such as speed, rates of pay, unit pricing, density and pressure **Perimeter and Area** ● Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres ● Calculate the perimeter of a 2D shapes and composite shapes ● Calculate the area of composite shapes ● Find the surface		**Algebra: quadratics, rearranging formulae and identities** ● Simplify and manipulate algebraic expressions (including those involving surds) by: ● expanding products of two binomials ● factorising quadratic expressions of the form `x^2 + bx + c` including the difference of two squares ● simplifying expressions involving sums, products and powers, including the laws of indices ● Understand and use standard mathematical formulae ● Rearrange

	written methods, to simple fractions (proper and improper) and mixed numbers - both positive and negative ● Calculate exactly with fractions **Basic Percentages** ● Define percentage as 'number of parts per hundred' ● Interpret percentages and percentage changes as a fraction or a decimal and interpret these multiplicatively ● Express one quantity as a percentage of another ● Compare two quantities using percentages ● Work with percentages greater than 100% **Calculating with percentages** ● Solve problems	15x15 know that `1000 = 10^3` and 1 million = `10^6` **Standard Form** ● Understand and use place value (e.g. when working with very large or very small numbers) ● Calculate with and interpret standard form where and `n` is an integer ● interpret calculator displays	**Ratio and Proportion** ● Identify and work with fractions in ratio problems ● Express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1 ● Use ratio notation, including reduction to simplest form ● Divide a given quantity into two parts in a given part:part or part:whole ratio ● Express the division of a quantity into two parts as a ratio ● Apply ratio to real contexts and problems (such as those involving conversion, comparison,	area of pyramids and composite solid ● Know and apply formulae to calculate area of: ● triangles ● parallelograms ● Trapezia **Circumference and Area** ● Identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment ● Know the formulae ● circumference of a circle `= 2 pi r = pi d` ● area of a circle `= pi r^2` ● Calculate: perimeters of 2D shapes, including circles		formulae to change the subject ● including use of formulae from other subjects in words and using symbols ● Know the difference between an equation and an identity ● Argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments ● Where appropriate, interpret simple expressions as functions with inputs and outputs

	involving percentage change, including: ● percentage increase / decrease problems ● original value problems ● simple interest, including in financial mathematics		scaling, mixing and concentrations) ● including better value or best buy problems ● Express a multiplicative relationship between two quantities as a ratio or a fraction ● Understand and use proportion as equality of ratios ● Relate ratios to fractions and to linear functions **Coordinates and Linear Graphs** ● Work with coordinates in all four quadrants ● Solve geometrical problems on coordinate axes ● Plot graphs of equations that correspond to straight line graphs in the coordinate	and composite shapes ● Calculate areas of circles and composite shapes ● Calculate surface area of spheres, cones and composite solids ● including frustums ● solutions in terms of `pi` may be asked for ● Calculate arc lengths, angles and areas of sectors of circles ● Calculate exactly with multiples of `pi` ● **2D Representations of 3D Shapes** ● Construct and interpret plans and elevations of 3D shapes **Volume**		

			plane ● Use the form to identify parallel lines ● Find the equation of the line through two given points, or through one point with a given gradient ● ● Identify and interpret gradients and intercepts of linear functions graphically and algebraically **Real life Graphs** ● Plot and interpret graphs (including reciprocal graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems	● Compare lengths, areas and volumes using ratio notation ● scale factors ● Make links to similarity ● Know and apply formula to calculate the volume of cuboids and other right prisms (including cylinders) ● Calculate the volume of spheres, pyramids, cones and composite solids ● Calculate exactly with ● multiples of `pi`		

			involving distance, speed and acceleration ● including problems requiring a graphical solution ● R14 ● Interpret the gradient of a straight-line graph as a rate of change			
Key Questions	Which are the most commonly used percentages? What fractions are they equivalent to? How can you convert any decimal to a	How do we find squares/cubes/roots on a calculator? What's the difference between "finding one half" and "raising to the power one half"?	What does the hat on ACD mean? What else does the notation ACD tell you? Are the angles ACD and $\angle ACD$	Is the diameter of a circle also a chord? Why or why not? What's the difference between a segment and a sector? How do you enter	Is it possible to have three or more terms inside a bracket? Why do we look for the HCF of all the terms when factorising?	What is the difference between an equation and an inequality? Are the solutions to inequalities integers only?

	fraction? What's the difference between decimal places and significant figures? **Key words** Fraction Decimal Percentage Numerator Denominator Express Degree of Accuracy Decimal place Round Approximate Significant Figure	How can you tell if a number is written in standard form or not? How can you convert a number greater than 1 /less than 1 to/from standard form? What numbers do you look at first when comparing numbers written in standard form **Key Words** Standard form Power Index/Indices Exponent Standard form Exponent	the same or different? Why is a scale drawing useful? Why are bearings always given as the clockwise angle? Is it possible to have a bearing of 400°? Why or why not? Should bearings be written to one decimal place? **Key Words** Enlarge Scale factor Ratio Protractor Convert Similar Three-figure North line Clockwise Bearing Bearing of … from Clockwise Parallel Alternate Corresponding Co-interior North line Ratio Share More/less than Part Whole	the calculation for the volume of a cylinder/cone into your calculator? What does the instruction 'leave your answers in terms of π' mean? How can Pythagoras' theorem help us to work out the perpendicular height of a cone? **Key Words** Radius Diameter Chord Centre Tangent Arc Sector Segment Arc Area Fraction Subtend Proportion Sector Surface Area Curved Surface Sphere In terms of π Radius Diameter	What happens when a single bracket is squared? Why do we often use fractions and not decimals when solving equations? **Key words** Formula Substitute Significant Factorise Expand Linear Variable Interpret	Which letter is the subject of the formula and how do we know? Why do we need to use inverse operations when changing the subject of the formula? Why is the nth term useful? **Key Words** Rearrange Subject Factorise Expand Collect terms Arithmetic Geometric Nth term Term to term

Assessment	Students sit an end of topic test at the end of each unit, these are marked in class and a full ReACT to the test is completed in lesson, teachers will use a visualiser to model the answers and identify marks and common misconceptions. Peer mentoring Mini Whiteboards AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be	There is an end of term assessment to ensure that students have been placed in the appropriate set. The scores are recorded on SIMS and are reviewed by HOD to inform of any intervention that may be necessary. Continued low stake questioning in class AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be	Students sit an end of topic test at the end of each unit, these are marked in class and a full ReACT to the test is completed in lesson, teachers will use a visualiser to model the answers and identify marks and common misconceptions. AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be	In addition to end of topic tests there is an end of term assessment to ensure that students have been placed in the appropriate set. The scores are recorded on SIMS and are reviewed by HOD to inform of any intervention that may be necessary. AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be	Students sit an end of topic test at the end of each unit, these are marked in class and a full ReACT to the test is completed in lesson, teachers will use a visualiser to model the answers and identify marks and common misconceptions. AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be	In addition to end of topic tests there is an end of term assessment to ensure that students have been placed in the appropriate set. The scores are recorded on SIMS and are reviewed by HOD to inform of any intervention that may be necessary. AFL whiteboards and encouragement **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be

	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use	able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use

	interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.
Literacy/numeracy/SMSC/ Character/ Oracy	Literacy:Key words as above, additional knowledge organisers provided to students at the beginning of a new topic , collins dictionary definitions shared https://www.collinsdictionary.com/word-lists/mathematics-mathematical-terms **Freya Model, defining mats**:(definition, facts, examples and non examples, including misconceptions). **VCOP support models** to aid students in using connectives and other language devices to explain a mathematical model or compare data.https://www.missbsresources.com/maths-resources/literacy-within-mathematics Numeracy:Key skills are outlined Character/SMSC/:https://www.bbc.co.uk/bitesize/tags/zrsg6v4/jobs-that-use-maths/1 links to jobs that relate to maths are relayed regularly in lessons Oracy: encourage teacher-led discussion with equal emphasis on speaking and listening. Group work/paired work. Teacher models correct mathematical processes. Opportunities for logical reasoning and dialogue e.g via Inquiry Maths and reasoning/proof tasks. No hands up questioning approached used					
Enrichment opportunities and futures	Intermediate maths challenge Revision sessions after school STEM club Statistics project -Real life application to collate and analyse data Unit award scheme-opportunity to achieve AQA Certificates on completion of block of learning					

	Maths buddies

YEAR 11	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Content	**Solving Quadratic Equations** ● Solve by factorising ● Solve by completing the square ● Solve graphically **Algebra and Graphs** ● Solving graphs graphically ● Solutions from the graphs ● Interpreting solutions **Quadratic Graphs** ● Sketching quadratics ● Identify roots **Sketching graphs**	**Probability** ● Experimental probability ● Theoretical probability ● Venn Diagrams ● Independent and dependent probability **Statistical measures** ● Distribution of data ● Averages ● Quartiles ● Identify outliers ● Primary and secondary data ● Types of sampling **Collecting and representing data** ● Interpret pie charts, pictograms etc	**Congruence and similarity** ● Criteria for congruence ● Use of angle facts to help determine congruence **Vectors** ● Addition of vectors ● Column vectors ● Scale factors in vectors **Construction and Loci** ● Perpendicular bisector ● Loci from a	**Transformations** ● Rotation ● Reflection ● Enlargement ● Translation ● Using Scale factors **Unit test-AQA**	**Mock Exams** **Revision** Exams/ Revision

	● Identify/sketch cubic ● Reciprocal graphs **Direct and Indirect proportion** ● Solve direct and indirect problems ● Recognise and interpret graphs **Growth and Decay** ● Problems involving compound interest ● Decay	● Understand continuous discrete and grouped data **Scatter graphs** ● Correlation ● Line of best fit ● Make assumptions based on graphs	point ● Problem solving **Unit test-AQA**		
Skills	**Solving Quadratic equations** ● Solve quadratic equations algebraically by factorising ● Find	**Probability** ● Apply ideas of randomness, fairness and equally likely	**Congruence and SImilarity** ● Use the basic congruence criteria for	**Transformations** ● Identify, describe and construct congruent and	Exams/ Revision

	approximate solutions using a graph **Algebra and Graphs** ● Solve linear equations in one unknown algebraically ● Including those with the unknown on both sides of the equation ● Find approximate solutions using a graph ● including use of brackets ● Translate simple situations or procedures into algebraic expressions or formulae ● derive an equation (or two simultaneous equations), solve the equation(s) and interpret the	events to calculate expected outcomes or multiple future experiments ● Relate relative expected frequencies to theoretical probability, using appropriate language and the 0 – 1 probability scale ● Understand that empirical unbiased samples tend towards theoretical probability distributions with increasing sample size ● Enumerate sets and combinations of sets systematically using tables, grids, Venn diagrams and tree diagrams ● Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying	triangles (SSS, SAS, ASA, RHS ● Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs ● Apply and use the concepts of congruence and similarity, including the relationships between lengths in similar figures **Vectors** ● Apply addition and subtraction of vectors, multiplication of	similar shapes, on co-ordinate axes, by considering rotation, reflection, translation and enlargement (including fractional scale factors) ● Describe translations as 2D vectors	Exams/ Revision

	solution **Quadratic Graphs** ● Recognise, sketch and interpret graphs of quadratic functions ● Identify and interpret roots, intercepts and turning points of quadratic functions graphically ● Deduce roots algebraically ● **Sketching Graphs** ● ● Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions and the reciprocal functions **Direct and inverse proportion**	assumptions ● know when to add and when to multiply two or more probabilities **Statistical measures** ● Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: ● appropriate measures of central tendency (median, mean, mode and modal class) ● spread (range, including consideration of outliers) ● students should know and understand the terms: primary data, secondary data, discrete data and continuous data ● Apply statistics to describe a population ● Infer properties of populations or	vectors by a scalar, and diagrammatic and column representation of vectors **Construction and Loci** ● Use the standard ruler and compass constructions: ● perpendicular bisector of a line segment ● constructing a perpendicular to a given line from / at a given point ● bisecting a given angle ● Know that the perpendicular distance from a point to a line is the shortest distance to the line ● Use these to construct given figures and solve loci problems		Exams/ Revision

	• Solve problems involving direct and inverse proportion, including graphical and algebraic representations • Understand that is inversely proportional to is equivalent to is proportional to • Interpret equations that describe direct and inverse proportion • Recognise and interpret graphs that illustrate direct and inverse proportion **Growth and Decay** • Set up, solve and interpret the answers in growth and decay problems, including	distributions from a sample, whilst knowing the limitations of sampling • Collecting and representing data • • Interpret and construct tables, charts and diagrams including, for categorical data: • frequency tables • bar charts • pie charts • pictograms • vertical line charts for ungrouped discrete numerical data • tables and line graphs for time series data • know their appropriate use • including choosing suitable statistical diagrams • S4 • Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through			Exams/ Revision

	compound interest	appropriate graphical representation involving discrete, continuous and grouped data **Collecting and representing data** **Scatter graphs** ● Use and interpret scatter graphs of bivariate data ● Recognise correlation and know that it does not indicate causation ● Draw estimated lines of best fit ● Make predictions ● Interpolate and extrapolate apparent trends whilst knowing the dangers of doing so			

Key Questions	Why do we write the y intercept as a coordinate? How do we locate the roots on a graph? Can a quadratic have no roots? Can you think of a real life model that can be modelled as an exponential graph? **<u>Key Words</u>** Coordinate Intercept Axis Exponential Reciprocal Compound interest Decay Roots	What types of number can we use to represent probabilities? Can we use a ratio? Why or why not? How do we know that for these events probabilities must add up to 1? Why can't they add up to more/less than 1? What does 'given' mean? Which part of the Venn diagram/two-way table does this refer to? **<u>Key Words</u>** Experimental Dependent Independent Distribution Outliers Secondary	If we know the length scale factor between two similar shapes, how can you find the area scale factor of the shapes? What about the other way round? If you know two shapes are congruent, what else do you know about the shapes? What is the minimum information needed for triangles to be congruent? **<u>Key Words</u>** Congruence Similarity Pythagoras Scalar	After a translation, is the image congruent to the object? Why do we measure from one vertex on the object to the corresponding vertex on the image? How do we know which direction to translate the object in? Why is it important to consider the scales of axes when giving a vector of translation? **<u>Key Words</u>** Coordinates Translations Rotation Reflection Enlargement	Exams/ Revision

	Proportion Function	Primary data Outliers Line of Best fit	Bisect Construct Loci Perpendicular			
Assessment	Students sit an end of topic test at the end of each unit, these are marked in class and a full ReACT to the test is completed in lesson, teachers will use a visualiser to model the answers and identify marks and common misconceptions. Peer mentoring Mini Whiteboards Continued low stakes questioning in class, to help develop rationale of answers. AFL whiteboards and encouragement/ praise **AO1:** Use and apply standard techniques Students should be able to:	End of term assessment to ensure that students have been placed in the appropriate set. The scores are recorded on SIMS and are reviewed by HOD to inform of any intervention that may be necessary. Continued low stakes questioning in class, to help develop rationale of answers. AFL whiteboards and encouragement /praise **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or	Students sit an end of topic test at the end of each unit, these are marked in class and a full ReACT to the test is completed in lesson, teachers will use a visualiser to model the answers and identify marks and common misconceptions. Peer mentoring Mini Whiteboards Continued low stakes questioning in class, to help develop rationale of answers. AFL whiteboards and encouragement/ praise **AO1:** Use and apply standard techniques Students should be able to:	End of term assessment to ensure that students have been placed in the appropriate set. The scores are recorded on SIMS and are reviewed by HOD to inform of any intervention that may be necessary. Continued low stakes questioning in class, to help develop rationale of answers. AFL whiteboards and encouragement/ praise **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret	Students complete exams papers in class, assessed regularly to develop and identify strong/weak topics Regular question level analysis shared with parents Revision sessions held after school Peer Mentoring sessions **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions.	Students complete exam papers in class, assessed regularly to develop and identify stronger/weaker topics Regular question level analysis shared with parents Revision sessions held after school Peer Mentoring sessions **AO1:** Use and apply standard techniques Students should be able to: accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring

	accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of	set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of	accurately recall facts, terminology and definitions use and interpret notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information.	notation correctly accurately carry out routine procedures or set tasks requiring multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts	**AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or	multi-step solutions. **AO2**: Reason, interpret and communicate mathematically Students should be able to: make deductions, inferences and draw conclusions from mathematical information construct chains of reasoning to achieve a given result interpret and communicate information accurately present arguments and proofs assess the validity of an argument and critically evaluate a given way of presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in

	presenting information. **AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	**AO3**: Solve problems within mathematics and in other contexts Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	Students should be able to: translate problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.	mathematical or non-mathematical contexts into a process or a series of mathematical processes make and use connections between different parts of mathematics interpret results in the context of the given problem evaluate methods used and results obtained evaluate solutions to identify how they may have been affected by assumptions made.
Literacy/numeracy/SMSC/	Literacy:Key word as above, additional knowledge organisers provided to students at the beginning of a new topic , collins dictionary definitions shared https://www.collinsdictionary.com/word-lists/mathematics-mathematical-terms **Freya Model, defining mats**:(definition, facts, examples and non examples, including misconceptions). **VCOP support models** to aid					

Character/ Oracy	students in using connectives and other language devices to explain a mathematical model or compare data.https://www.missbsresources.com/maths-resources/literacy-within-mathematics Numeracy:Key skills are outlined Character/SMSC/:https://www.bbc.co.uk/bitesize/tags/zrsg6v4/jobs-that-use-maths/1 links to jobs that relate to maths are relayed regularly in lessons Oracy: encourage teacher-led discussion with equal emphasis on speaking and listening. Group work/paired work. Teacher models correct mathematical processes. Opportunities for logical reasoning and dialogue e.g via Inquiry Maths and reasoning/proof tasks. No hands up questioning approached used
Enrichment opportunities and futures	Intermediate maths challenge Revision sessions after school STEM club Statistics project -Real life application to collate and analyse data Unit award scheme-opportunity to achieve AQA Certificates on completion of block of learning Maths buddies- opportunities to work with different ages groups and ability AQA unit award scheme https://www.aqa.org.uk/programmes/unit-award-scheme