Goldwyn Ashford - Maths

Subject Statement and Long Term Plan

Maths – Statement of Intent

"Do not worry about your difficulties in mathematics. I can assure you mine are still greater." - Albert Einstein

Mathematics is a fundamental creative discipline that helps us to understand and change the world. We want all pupils at Goldwyn School to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject with a clear understanding.

At Goldwyn Ashford we foster positive 'can do' attitudes and we promote the fact that 'We can all do maths!' We believe that, if given the appropriate learning experiences within and beyond the classroom, every child can achieve in mathematics. Our intention is to prepare students to become confident, numerate individuals who are able to deal with all aspects of mathematics in their chosen career and in all aspects of their adult life.

Our Aims are for student to:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **Reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Be able to **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The maths curriculum has been developed so that it incorporates our school vision, which aims to empower all students to flourish and become the very best version of themselves, regardless of background, ability and additional needs. Research shows that by incorporating a curriculum which 'builds confidence and nurtures fluency', vital building blocks are laid which will help with student's success and enjoyment of maths. The students will develop a key understanding of the different strands of Mathematics, using a mixture of interactive materials offered by *Pearson ActiveLearn* and *MyMaths*, as well as manipulatives and written tasks.

In Key Stage 3 students will follow a bespoke programme of study. We have sequenced concepts and methods so that previously learnt ideas can be connected to new learning, supporting students in understanding the coherent and connected nature of the subject, and ensuring they consolidate learning by continually using and applying it in a variety of contexts. Our curriculum map is sequenced with fewer topics each week, term or year, putting depth before breadth. We find that spending longer on each topic enables pupils to really think and talk about the

mathematics they are learning. Our programme of study also enables students to revisit areas of mathematics each year, but with an increased complexity so that they can build on the knowledge they already obtained.

In Key Stage 4, students will continue to build on and develop the skills and knowledge obtained during Key Stage 3 and develop them further. They will prepare for Edexcel Mathematics GCSE and Functional Skills Level 1 and 2 qualifications.

The Programme of study incorporates elements that:

- Have the same unique mastery approach and unit structure with in-built differentiation as our *Edexcel GCSE (9-1) Mathematics* course.
- Are developed to help build confidence in mathematics and prepare students for GCSE.
- Cater for all attainment levels with differentiated exercises.
- Focus on problem-solving and mathematical reasoning skills while providing plenty of extra practice on every topic.

Examinations

It is our intention at Goldwyn School that all students will have the opportunity to gain a number of qualifications in Maths, including a GCSE in Maths at the end of Year 11. We are aware that some pupils who would not be able to access the full Maths GCSE content. Where this is the case students will be given the opportunity to work towards Entry Level Certificate in Maths (Level 1, 2 or 3), Level 1 Functional Skills in Maths, Level 2 Functional Skills in Maths or a combination of these qualifications. Additionally, we are aware there are pupils that could access both, and again they will be given the opportunity to do so. The accreditations we use can be used interchangeably allowing us the flexibility to be able to move pupils between pathways if they begin to excel, or even struggle. We do not cap learning and therefore will make group changes where it will work best for the pupil.

Maths Department: Long Term Plan

At Goldwyn Ashford the students are provided with a rewarding and enjoyable experience of mathematics. Our intention is to prepare students to become confident, numerate individuals who are able to deal with all aspects of mathematics in their chosen career and in all aspects of their adult life. In Key Stage 3, students will follow a scheme of work developed by Pearson that encourages learners to develop as mathematical thinkers and which will encompass maths across a number of different media. In Key Stage 4, students at Goldwyn Ashford have the potential to gain a number of qualifications while at the school. They will begin by working towards gaining Level 1 Functional Skills in Maths, before working towards a Maths GCSE and potentially also Level 2 Functional Skills in Maths.

Term	1	2	3	4	5	6
Year 7	At Goldwyn Ashford, Key Stage 3 students will follow the 'KS3 Maths Progress' scheme set up by Pearson ActiveLearn. Throughout the first term students will develop their number skills using all four operations. This will give them a solid foundation which will help them develop other skills as they progress through the scheme. After this Year 7 will apply the number skills acquired in the 'Calculating' unit to deal with Fractions and Percentages.	In Term 2, pupils begin to learn about some of the foundation aspects of Algebra, which will give them a good understanding of the need of Algebra in Maths. After this, Year 7 will build on their Data Handling knowledge from KS2. They will recap displaying and interpreting data and begin to explore averages. **Expressions, Functions & Formulae** Key Learning; Using Functions	The first half of Term 3 will be spent developing the Number Skills they acquired in Term1 further. This unit will focus on written methods for multiplication and division. We will then begin to introduce Common Factors and Multiples and Prime Numbers. After this the students will begin a unit on 2D shapes where they will learn about the different properties of 2D shapes and then start applying their calculating and algebra skill in the context of perimeter and/or area. **Factors and Multiples**	Term 4 will begin with the completion of the '2D shape unit. Afterwards, pupils will begin a unit exploring angles. They will build on the knowledge acquired in KS2 by identifying different types of lines, drawing and measuring angles to greater degrees of accuracy. **Measuring and Shapes** **Key Learning:** Area Perimeter **Angles and Lines** **Key Learning:** Right angles and lines	Pupils will begin Term 5 with 'Graphs' unit where they will use the data handling and algebra skills developed throughout Term 2 to learn about different types of graphs and how they can be created algebraically. **Graphs** **Key Learning** Real Life Graphs Coordinates Graphs of Functions Assessment **Measuring and**	Year 7 will begin their final term working with different measures and develop the skill of making an estimate before attempting any questions in mathematics. They will revise all the written methods for calculating using decimal numbers. Finally, Year 7 will conclude the year by using the drawing, measuring and geometry skills developed throughout the year to learn about the different types of transformation. They will continue to learn new geometrical terms

	Calculating **Key Learning;** **Adding** **Subtracting** **Multiplying and Dividing by 10, 100, 1000** **Multiplying** **Dividing** **Using the Four Operations** **Positive and Negative Numbers** **Assessment** **Fractions, Decimals & Percentages** **Key Learning;** **Comparing Fractions** **Equivalent Fractions** **Calculating with Fractions** **Adding and Subtracting Fractions Introducing Percentages** **Finding Percentages** **Assessment**	Function Machines Simplifying Expressions Writing Expressions Using Formulae Writing Formulae Assessment **Analysing & Displaying Data** **Key Learning;** Tables and Pictograms Bar Charts Grouped Data Mode and Modal Class Range and Median Mean Assessment	Key Learning; Number Rules and Relationships Multiplication Division Solving Problems Multiples Factors and Primes Common Factors and Multiples Assessment **Measuring and Shapes** **Key Learning;** Shapes Symmetry in Shapes More Symmetry	Measuring angles 1 Measuring angles 2 Drawing and estimating angles Putting angles together	**Shapes** **Key Learning** Shapes Symmetry in Shapes More Symmetry Perimeter Area Assessment	and apply these to a set of instructions where they will have to move shapes in a specific manner. **Decimals and Measures** **Key Learning** Decimal Numbers Metric Units Adding and Subtracting Decimals Rounding Multiplying and Dividing Decimals **Transformations** **Key Learning** Reflection Translation Rotation Congruency Assessment
Year 8	At the beginning of Year 8 students at Goldwyn Ashford will complete a number skills unit where they will develop further the number skills they have acquired in Year 7 and start applying these	In Term 2, Year 8 pupils will spend some time experiencing algebraic challenges where they will be expected to use prior knowledge gained in year 7 as well as being introduced to	In term 3 the pupils will begin by looking at angles, where they will continue to develop their drawing and measuring skills as well as learn the properties that angles possess. They will learn to	At the beginning of term 4, pupils will complete a number skills unit which will take the skills acquired so far and develop them further. They will start being introduced to Prime	Students will spend Term 5 working with fractions and percentages. Building on previous learning by knowing that the skills developed in Year 7	Year 8 will conclude the year by being introduced to 'Probability'. Learning about the different terminology used and applying the skills from the work on fractions,

	to more varied exercises which gradually prepares for them for the GCSE course they will begin in Year 10. They will then build on their geometry knowledge by focusing on 3D Shapes. In this unit the children will begin to calculate the volume and surface areas of cubes and cuboids. **Number Properties and Calculations** **Key Learning:** Adding and Subtracting with Larger Numbers More Calculations Negative Numbers Writing Ratios Using Ratios to Solve Problems Multiplication Reasoning Assessment **Shapes and Measure in 3D** **Key Learning:** 3D solids Nets of 3D solids	new skills and terminology. After this the students will build on the skills they develop in the Decimal and Measure unit in Year 7 where they will continue to develop their number skills and become more confident working with decimals calculations. **Expressions & Equations** **Key Learning:** Simplifying Expressions Functions Solving Equations Using Brackets Assessment **Decimals Calculations** **Key Learning;** Adding and subtracting decimals Multiplying decimals Ordering and rounding decimals STEM: Problem-solving with decimals Assessment	recognise vertically opposite angles, angles in a triangle and finally use these skills to draw triangles and nets. Year 8 will conclude Term 3 revisiting statistics skills by interpreting data from graphs, including compound bar charts and pie charts, as well as learning how to draw their own types of graphs, which will require skills acquired throughout the this term. **Angles** **Key Learning:** Measuring and drawing angles Vertically opposite angles Angles in triangles Drawing triangles accurately Designing nets Assessment **Expressions & Equations** **Key Learning**: Statistics Data Collection Sheets Interpreting Bar Charts Drawing Bar Charts	Factor Decomposition and other scenarios which are similar to those that they will meet during the GCSE course. The students will then start looking at number sequences and learn how to create sequences algebraically, learning to distinguish between 'geometric' and 'arithmetic' sequences. They will be introduced to 'nth term' and learn how sequences can be generated from this. **Number Properties** **Key Learning:** Squares, cubes and roots Calculating with brackets and indices LCM and HCF Prime factor decomposition Assessment **Sequences** **Key Learning:** Generating sequences Extending sequences Special sequences	and 8 can be applied as each form has a fractional, decimal or percentage equivalent. **Fractions and Percentages** **Key Learning:** Comparing fractions Fractions of amounts Adding and subtracting fractions Fractions and percentages Calculating percentages STEM: Percentages and proportion Assessment	decimals and percentages to determine the likelihood of an event from happening. **Probability** **Key Learning:** The language of probability Outcomes Probability calculations Experimental probability FINANCE: Comparing probabilities Assessment **Consolidation and Revision** End of Year Test

	Surface area Volume Working with measures Assessment		Pie Charts Assessment	Position-to-term rules Finding the nth term Assessment		
Year 9	Year 9 will begin the year with a number calculations unit which will take the skills acquired throughout all of Year 7 and 8 and develop them further. This unit will then be followed by a Sequences and Equations Unit. They will develop their algebraic knowledge further and start being introduced more and more to scenarios which are similar to those that they will meet during the GCSE course. **Number Calculations** **Key Learning:** Adding and subtracting Multiplying Dividing Multiplying and dividing negative numbers Squares, cubes and roots	In Term 2, Year 9 will be exploring some of the key topic that they will need for their Functional Skills and GCSE courses. They will begin by revisiting Statistics. Building on the work they completed in Year 7 and 8, they will learn how to find averages from tables, compare data and recognise misleading data. The students will learn how to draw scatter diagrams and begin to understand different correlations. After this, Year 9 will then start looking at Fractions, Decimals and Percentages. In this unit they will develop their skills in calculating with fractions, including multiplying and	Year 9 will begin Term 3 by learning about Geometry in 2D and 3D Shapes. They will develop their knowledge of angles acquired in Year 7 and 8 to be able to recognise alternate and corresponding angles. They will learn to Bisect lines and angles. Finally, they will be introduced to Pythagoras' Theorem. After this Year 9 will develop their algebraic graphs skills to be able to plot straight line graphs and use real life graphs such as Distance - Time Graphs. They will learn how to plot algebraic graphs as wells identifying midpoints and intercepts. **Geometry in 2D and 3D Shapes** **Key Learning:** Angles	Year 9 will spend the first half of Term 4 completing the 'Algebraic and Real-Life Graphs Unit. In the second half of Term 4 will see Year 9 begin working with Ratios and Proportion, where they will learn about dividing into a ratio and using proportions to solve real life problems for example scaling a recipe up or down. Students will also begin to explore conversion graphs. **Algebraic and Real-Life Graphs** **Key Learning:** Midpoints Intercepts and gradients Assessment **Multiplicative Reasoning** **Key Learning;** STEM: Using ratios	In Term 5, Year 9 will be learning about Algebraic and Geometric Formula, where they will learn to apply the formulas required to work out an areas and volumes of shapes, including circles - key skills required in GSCE and Functional Skills. **Algebraic and Geometric Formulae** **Key Learning;** Substituting into formulae More complex formulae Formulae in geometry Compound shapes Circles Assessment	Year 9 will conclude the year by completing the 'Angles' unit and then progressing to working with probability. Learning about the different terminology used and applying the skills from the work on fractions, decimals and percentages to determine the likelihood of an event from happening. **Polygons and Transformations** **Key Learning:** Quadrilaterals Triangles Transformations Enlargement Congruent shapes Assessment **Probability** **Key Learning** Probability experiments Sample space diagrams

	More powers Calculations Assessment **Sequences and Equations** **Key Learning:** Algebraic expressions Using the nth term Finding the nth term Solving equations Assessment	dividing fractions, and learn how to calculate percentage change. **Statistic** **Key Learning;** Planning a survey Statistics from tables Comparing data Tables Pie charts and scatter graphs FINANCE: Misleading graphs Writing a report Assessment **Fractions, Decimals and Percentages** **Key Learning;** Equivalent proportions Recurring decimals Adding and subtracting fractions Multiplying fractions Dividing fractions Comparing proportions FINANCE: Percentage change	Maps and scales Constructions 3D solids MODELLING: Pythagoras' theorem Assessment **Algebraic and Real-Life Graphs** **Key Learning:** Reading graphs Plotting graphs Distance-time graphs	Using proportions Problem-solving with proportions Measures and conversions Assessment		MODELLING: Two-way tables Tree diagrams Assessment
Year 10 (Set A)	At the beginning of Year 10 pupils will begin the first qualification that they can gain in Maths. They will follow the	Term 2 will see Year 10 to continue working through the Functional Skills course, where they will recap over	In Term 3, Year 10 will continue working through the Functional Skills course, where they will finish off learning about	At the beginning of Term 4, Year 10 will continue working on their exam techniques and will have their first attempt at	In Term 5, Year 10 will continue working through the Algebra section of the GCSE course, where they	Year 10 will complete the year by continuing to work through the Geometry component of the course. They will

	Edexcel Functional Skills Level 1 in Maths course, where they will firstly recap number skills developed throughout the whole of KS3 and then use these skills in real life scenarios as well as in exam style questions that may be presented in a piece of text **Functional Skills Level 1 (Number)** **Key Learning** Numbers The Number Line and Scales Addition and Subtraction Multiplication and Division Checking Your Answers Multiplying and Dividing by 10, 100, 1000 Squares Numbers Order of Operation Fractions Decimals Rounding Percentages Fractions, Decimals and Percentages Ratios.	skills developed in geometry but again delivered in real life scenarios, exam style questions or imbedded within text. **Functional Skills Level 1 (Measure, Shape & Space)** **Key Learning** Formulas in Words Money Length Weight Capacity Time Length and Perimeter Area Volume 2D Shapes Nets, Plans and Elevation Angles and Bearings	scales used in map drawings. They will then progress on to learning about statistics and how they can apply to real life scenarios, where they will interpret graphs, work out averages and probability. Year 10 will then finish the term by beginning to prepare themselves for their Functional Skills exam that they will sit in the following term. **Functional Skills Level 1 (Measure, Shape & Space)** **Key Learning** Maps and Map Scale Functional Skills Level 1 (Data Handling) Key Learning; Tables Charts and Graphs Pie Charts Drawing Charts, Graphs and Pie Charts Grouped Data Mean and Range Probability Functional Skills Level 1 (Catch Up) Key Learning; Chance to catch up, complete or spend extra	completing an official Edexcel Functional Skills exam halfway through the term. Afterwards Year 10 will then start working exclusively on the GCSE Maths course, where they will begin developing their Algebra skills. GSCE (Algebra) **Key Learning** Simplifying Multiplying out Brackets Factorising Solving Equations	will develop previously taught skills as well as being introduced to new elements of Algebra. At the end of Term 5, Year 10 will then start working through the Geometry aspect of the course where they will recap over basic characteristics of 2D shapes. **GCSE (Algebra)** **Key Learning** Expressions, Formulas and Functions Formulas and Equations from Words Formulas and Equations from Diagrams Rearranging Formulas Sequences Inequalities Simultaneous Equations GCSE (Shape and Area)	initially learn about the different transformations that can be made using shapes and the terminology used to express the transformation. Afterwards Year 10 will then learn about a shapes perimeter and area, before using this skill to work out a 3D shapes surface area. **GCSE (Shape and Area)** **Key Learning** Translations Rotations Reflections Enlargements Perimeter and Area Perimeter and Area - Circles 3D Shapes - Surface Area

			time on confusing topics Functional Skills Level 1 (Exam Prep) Key Learning; Practice Paper		**Key Learning** Properties of 2D Shapes Congruent Shapes Similar Shapes Pythagoras' Theorem	
Year 10 (Set B)	**Functional Skills Level 1 Revision and Exam Practice** Pupils revise Level 1 topics and practise for the exam. **Key Learning** Using numbers and the number system – whole numbers, fractions, decimals and percentages; Using common measures, shape and space; Handling information and data. Functional Skills Level 1 Exam (first opportunity) Functional Skills Level 2/GCSE: NUMBER In this set of lessons, pupils develop their ability to use numbers and the number system – whole numbers,	**Functional Skills Level 2/GCSE:** NUMBER (continued) **Key Learning** (8) Order, approximate and compare decimals; (7) Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers; (9) Order, approximate and compare decimals; (10) Add, subtract, multiply and divide decimals up to three decimal places; (5) Work out percentages of amounts and express one amount as a percentage of another; (6) Calculate percentage change (any size increase and decrease), and original value after percentage	**Functional Skills Level 2/GCSE:** MEASURES/SHAPE/SPACE In this set of lessons, pupils develop their ability to use measures and work with shape and space. **Key Learning** (13) Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting; (14) Convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph; (15) Calculate using compound measures including speed, density and rates of pay; (16) Calculate perimeters and areas of 2-D shapes including triangles and circles and composite	**Functional Skills Level 2/GCSE:** MEASURES/SHAPE/SPACE (continued) **Key Learning** (17a) Use formulae to find surface areas of 3-D shapes including cylinders; (21) Draw 3-D shapes to include plans and elevations (17b) Use formulae to find volumes of 3-D shapes including cylinders; (18) Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements; (19) Use coordinates in 2-D, positive and negative, to specify the positions of points; (22) Calculate values of angles and/or coordinates with 2-D and	**Functional Skills Level 2/GCSE:** HANDLING DATA In this set of lessons, pupils develop their ability to handle information and data. **Key Learning** (23) Calculate the median and mode of a set of quantities; (25) Use the mean, median, mode and range to compare two sets of data; (24) Estimate the mean of a grouped frequency distribution from discrete data; (27) Express probabilities as fractions, decimals and percentages; (26) Work out the probability of combined events	**Functional Skills Level 2 Exam (first opportunity)** GCSE EXTRA: NUMBER In this set of lessons, pupils develop their understanding and use of number to include topics covered at Foundation GCSE that are not in the L2 Functional Skills syllabus. **Key Learning** Use index notation with positive indices; Understand that a number to the power of zero is always 1; Multiply and divide with indices; Use a calculator for squares, roots, cubes, powers. Use index notation with negative indices, indices with brackets or fractions;

	fractions, decimals and percentages. **Key Learning** (1) Read, write, order and compare positive and negative numbers of any size: (2) Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation: (12) Follow the order of precedence of operators, including indices; (8) Express one number as a fraction of another; (7) Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers.	change; (4) Identify and know the equivalence between fractions, decimals and percentages; (11) Understand and calculate using ratios, direct proportion and inverse proportion; (3) Evaluate expressions and make substitutions in given formulae in words and symbols.	shapes including non-rectangular shapes (formulae given except for triangles and circles); (20) Understand and use common 2-D representations of 3-D objects;	3-D shapes.	including the use of diagrams and tables, including two-way tables; (28) Draw and interpret scatter diagrams and recognise positive and negative correlation. Functional Skills Level 2 Revision and Exam Practice Pupils revise Level 2 topics and practise for the exam.	Make estimates for calculations by rounding to 1sf; Find and recognise factors and multiples of numbers; Identify prime numbers; Express numbers as products of prime factors; Find the HCF and LCM of 2 numbers; Write large and small numbers in standard form; Use a calculator for standard form. GCSE EXTRA: ALGEBRA In this set of lessons, pupils develop their understanding and use of algebra to include topics covered at Foundation GCSE that are not in the L2 Functional Skills syllabus. Key Learning Simplify expressions (X, divide) Multiply and divide algebraic indices; Expand expressions with single brackets

						(and simplify); Factorise linear expressions; Solve linear equations with 1 or 2 steps (letters only 1 side).
Year 11 (Set A)	Year 11 will begin their final year at Goldwyn Ashford by completing the Geometry component of the GCSE course, where they will learn about constructing shapes using different means and algebra. This will be followed with Year 11 beginning the statistics component, where they will use the skills developed through the Functional Skills course to interpret and draw charts/graphs. **GCSE (Geometry & Measure)** **Key Learning** Bearings Map and Scale Drawings Loci and Construction Similarity and Congruence Vectors Trigonometry	In Term 2, Year 11 will continue working through the statistics component of the course, where they will learn about new ways of displaying data, generating averages and also working out the probability of an event/events happening. **GCSE (Probability & Statistics)** **Key Learning** Pie Charts Averages Averages from tables Line Graphs Stem and leaf Diagrams Sampling Stratified Sampling Comparing Data Probability Relative Frequency The and/or Rule Frequency and	Year 11 will complete the statistics component of the course in Term 3, where they will continue to learn about different ways of expressing an events probability. After completing this component, they will go back to the algebra component of the course, where they will gradually be exposed to more complex elements of the course that will require them to manipulate formulas and equations with a multi-step approach. **GCSE (Probability & Statistics)** **Key Learning** Venn Diagrams Independent Events Problem Solving **GCSE (Algebra)**	Term 4 will see Year 11 being taught the last few elements of the GCSE Foundation course. This will consist of the higher-level work which will also appear in the Higher course and will test the pupils understanding of Algebra. Towards the end of the term, Year 11 will then have an opportunity to recap any work which they feel they still do not fully understand and have a tailored curriculum to meet these needs. **GCSE (Algebra)** **Key Learning** Simultaneous Equations Rearranging Formulas Using Algebra **GCSE (Exam Prep)** **Key Learning** Review Old Exam Papers	Year 11 will begin Term 5 continuing to prepare themselves for their GCSE exams. They will experience exam style scenarios to help them understand the need for time management, develop exam skills and understand how to set out their answers to gain maximum marks. **GCSE (Exam Prep)** **Key Learning** Review Old Exam Papers Exam Skills Exam Practice	In Term 6 Year 11 will continue preparing themselves for their GCSE exams, where they will continue to be given exam style scenarios and techniques on how to handle and/or understand what is expected of them. **GCSE (Exam Prep)** **Key Learning** Review Old Exam Papers Exam Skills Exam Practice

	GCSE (Probability & Statistics) **Key Learning** Two-way Tables Pictograms Bar Charts Scatter Graphs Pie Charts	Outcomes	**Key Learning** Rates of Change Expanding Double Brackets Factorising Quadratics Factorising Quadratics Quadratic Equation Quadratic Graphs Cubic and Reciprocal Graphs Simultaneous Equations	Exam Skills Exam Practice		
Year 11 (Set B)	**GCSE EXTRA: Algebra (continued)** In this set of lessons, pupils develop their understanding and use of algebra to include topics covered at Foundation GCSE that are not in the L2 Functional Skills syllabus. **Key Learning** Show and recognise inequalities on number lines; Find upper and lower bounds and use inequalities to express the range of values; Simplify expressions (X, divide) Multiply and divide algebraic indices;	**GCSE EXTRA: Geometry & measures** In this set of lessons, pupils develop their understanding and use of geometry and measures to include topics covered at Foundation GCSE that are not in the L2 Functional Skills syllabus. **Key Learning** Name and identify properties of quadrilaterals, using appropriate vocabulary; Identify angle types; Know and use rules for sums of angles at a point and on a straight line;	**GCSE EXTRA: Geometry & measures (continued)** **Key Learning** Construct 60 degree and 45 degree angles; Draw the locus of points (lines or regions) using compasses; Find bearings and back-bearings; Use bearings and map scales to solve problems; Calculate the perimeter and area of sectors of circles; Use formulae to calculate the volumes of cones, cylinders, spheres and combinations of solids; Calculate the surface area of cones, spheres, hemispheres, cylinders and combinations of these;	**GCSE Revision and exam practice** Pupils tackle past papers and revise topics as the need arises, either on an individual basis or as a whole class. Most lessons will include a warmup on a revision topic.	**GCSE Revision and Exam Practice (continued)** Pupils tackle past papers and revise topics as the need arises, either on an individual basis or as a whole class. Most lessons will include a warmup on a revision topic.	**GCSE (Exam Prep)** **Key Learning** Review Old Exam Papers Exam Skills Exam Practice

	Expand expressions with single brackets (and simplify); Factorise linear expressions; Solve linear equations with 1 or 2 steps (letters only 1 side); Show and recognise inequalities on number lines; Find upper and lower bounds and use inequalities to express the range of values; Solve (linear) inequalities (inequations); Continue sequences; understand the vocab: term, consecutive, linear; Find the nth term of a sequence (give as an expression or formula); Use the nth term to generate a sequence; Give coordinates in all 4 quadrants; Find midpoints of line segments and solve problems involving midpoints; Find gradients of lines on a grid; Draw straight line	Measure and draw angles accurately; Use rules for angles on parallel lines to solve problems, giving reasons; Find the exterior angle of a regular polygon; Find the interior angle of a regular polygon; Solve problems involving interior and exterior angles; Know and use formulae for the area of a parallelogram, trapezium, triangle and compound shapes; Solve problems involving areas; Name common 3D shapes; Find the surface area of 3D shapes (cubes, cuboids, prisms, pyramids); Convert between square and cubic metric units, such as cubic mm to cubic m; Use vector notation to describe translations fully; Reflect shapes on a grid with a mirror line or on a given line, such	Identify congruent shapes; Identify similar shapes, including in 3D; Solve problems involving similar triangles and other polygons; Show that 2 triangles are congruent; Use column vectors and vector notation; Simplify combinations of vectors; Solve problems using Geometry and Measures skills. **GCSE EXTRA: Handling data** In this set of lessons, pupils develop their ability to handle data and probabilities, including topics covered at Foundation GCSE that are not in the L2 Functional Skills syllabus. **Key Learning** Identify and explain correlation on a scatter graph; use a scatter graph to estimate values; explain the reliability of an estimate; Draw and interpret stem			

	graphs; Interpret real-life graphs (including Distance/Time graphs); Interpret graphs showing rates of change, e.g. of depth, money, distance or velocity - using the gradient; Expand double brackets (using the FOIL method); Use tables of values to draw quadratic graphs and find the turning point; Solve quadratic equations by drawing a graph and finding x values when y=0; Factorize quadratics into pairs of brackets; Solve quadratic equations by factorizing, including the difference of 2 squares; Draw and identify cubic and reciprocal graphs and use the graphs to estimate solutions to equations; Solve simultaneous equations graphically and algebraically; Rearrange formulae to	as y=x; Describe reflections fully; Rotate objects on a grid; Describe rotations fully; Find the scale factor of an enlargement (including fractions); Enlarge a shape by a scale factor; Describe enlargements fully; Calculate triangle side lengths using Pythagoras' Theorem; Solve problems involving Pythagoras' Theorem; Find the length of line segments using Pythagoras' Theorem; Understand the terminology (adjacent, opposite, hypotenuse); Use Tan, Cos, Sin and inverses to calculate angles in right angled triangles; Calculate lengths in right angled triangles using trigonometry; Solve problems involving trigonometry; Use ruler and	and leaf diagrams; find the range, mode and median from a stem-and-leaf diagram; Understand the reason for sampling, how bias can occur and be avoided; how sample size affects accuracy; use stratified sampling methods to calculate sample sizes; Work out relative frequencies (probabilities) from tables of results; Draw and interpret Frequency Polygons; Calculate probabilities of combinations of events; create and use a table of outcomes; draw frequency trees; Interpret and draw Venn diagrams (and the terminology); Use the ‘AND’ and ‘OR’ rules to find probabilities of combined independent events; draw probability tree diagrams and use to solve problems; Use Handling Data knowledge to solve problems;			

	change the subject; Use algebraic understanding and skills to solve real-life problems.	compasses to construct perpendicular bisectors, perpendiculars to line segments through points on or off the line; Use ruler and compasses to construct triangles; Construct angle bisectors.				