YEAR 7 Scheme of Work

Rationale:

The curriculum ensures that all pupils become fluent in the fundamentals of mathematics, including through varied and frequent practise with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. All pupils will reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language. In addition, all pupils will 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.

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The Mathematics Department aims to provide an engaging, challenging curriculum where students, regardless of age, background, gender or ability develop an enthusiasm for and deep theoretical understanding of Mathematics and its relevance to the world around them. Our goal is to provide breadth, stretch and depth in the curriculum to encourage students to become independent thinkers as well as creative and strategic problem solvers, with the skills required to be financially and numerically literate to make sound mathematical decisions in their personal life and the ever-changing world of work.
At UAH we foster positive can do attitudes and we promote the fact that ‘We can all do maths!’ We believe all children can achieve in mathematics, and teach for secure and deep understanding of mathematical concepts through manageable steps. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems.
Following on from the National Curriculum guidance we have 3 key aims for our students to achieve:
• become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
• be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication,

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Our Scheme of work is split into 4 key sections:

Number
Algebra
Shape, Space and Measure
Handling Data

Importance is given to Number topics and it underpins the first half Term for all KS3 years. We feel that our student often have weaker number skills which require refreshing/developing before seeing some of the Algebra/Shape topics. In the past 12 months since the pandemic, there has been a real focus on Key number skills with lower groups completing specific catch up books once a week. Although other SOW have Algebra as the first concept for Y7 students as a department we feel that the number topic underpins all future Maths and is fundamental to the journey students enter at UAH. We do not put the roof on a house until the foundations and walls are correctly built.

We ensure that the majority of pupils will move through the curriculum at broadly the same pace. However, our teachers make decisions about when

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The impact will be:
All students study Mathematics in Key Stage 3 and Key Stage 4, who are taught by passionate teachers who have the knowledge and understanding to demonstrate a love of their subject. Through the setting of high standards we aim to have Students who have a confident and positive attitude towards Mathematics. Who recognise the importance of Mathematics to everyday life.
Students are able to tackle problem solving questions in a variety of contexts.
Students make good progress as measured by the Positive P8 of the department in recent years.
The department is responsible for the ongoing development of the curriculum and it is all members of the department’s responsibility. Future changes to the sequencing and devilry of certain topics can improve learning. Through collaborative planning our teaching can only improve. This is improving but more work is needed on this in the future.

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including in unfamiliar contexts and to model real-life scenarios • reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language • Our curriculum goes far beyond what is taught in lessons, for whilst we want students to achieve the very best examination results possible, we believe our curriculum goes beyond what is examinable. As a department we offer opportunities for individual and team competition through the UKMT in years 7-10. Whilst offering STEM days at Oundle School for our most able students. We also offer a GCSE revision trip which is held at Lincoln University to raise aspirations Maths inspiration events through our sponsor University. • We build the Cultural Capital of our students by whole year group events such as our Curriculum Day. Through our curriculum we introduce students to the stories of some of the most influential Mathematicians throughout history and the impact that their work has had on the world we live in. Real life applications of Mathematical ideas are made explicit to students whenever possible • Through our end of term projects we aim to build develop enterprise skills as students begin to plan and work as a team to produce a collective outcome.	to progress children, based on the security of pupils' understanding and their readiness to progress to the next stage. This does not mean that 'we hold children back' or that all children access the same questions and same activities all of the time. Pupils who grasp concepts rapidly are challenged by 'going deeper', being offered rich and more sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material, consolidate their understanding, including through additional practice, before moving on. A ceiling is not put on children's learning and flexible grouping is adopted based on pre assessments. The curriculum is designed to give Maths staff freedom to move between topics which means a child is not restricted by which group he/she is in, meaning our curriculum can be ambitious. • Our strength as a department is regular marking and feedback given in student's homework books. Students complete weekly pieces of homework which are timely marked, with feedback given including : • What has gone well? • How to improve? • Something to Improve on Students will then complete a feedback task during the first 10 minutes of lesson. This also underpins students understanding and helps to plan future teaching. • Whilst we teach Maths in progressive distinct domains (units of work) we recognise that Maths is an interconnected subject. Therefore, we encourage children to make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. Children also apply their mathematical knowledge across the curriculum, and particularly in Science, where relevant.	

	• Where possible we aim to relate the Maths undertaken to where it is seen in everyday life and where Maths I used in a wide array of careers. • Throughout each level of KS3, mathematical projects are embedded into the curriculum to further promote a love of mathematics and aspirations. This also helps to promote the understanding that Maths is used all time in everday life. • Each member of the department is a mathematical specialist and has a unique pedagogy, so teaching does not follow a uniform approach. However, resources are available as a link to the SOW for staff to use as a base. Most lessons will feature an explanation of a concept, modelling of a correct approach, having a class discussion and activities provided for students to tackle. All lessons have a clear starter activity which develops prior mathematics learning and the objective of the lesson is shared with students. . Students are challenged to build on fundamental concepts by structured extension activities. • When delivering content we are mindful as a department of Memory overload and through careful mapping and coverage we aim to develop learning over time using a spiral curriculum. • Assessment points throughout the year are written papers which are teacher marked. KS4 use Merit Maths to find areas of weakness which will need revisiting. • Consolidation lessons are built into the curriculum to allow for further differentiated tailored teaching to review areas of challenge in prior learning or explore topics in further depth. The curriculum map throughout years 7-11 supports students to build on prior skills as well as reviewing their key skills	

	throughout the year to increase their numeracy skills. Through our KS3 Curriculum coverage we are confident that all elements of the National Curriculum are being met and taught at KS3. • A regular QA process is completed of the department with Regular Learning Walks, homework checks and books scrutinises. As well as the introduction of a Pupil Voice with the department review.	

Autumn Term 1	Spring Term 1	Summer Term 1
Number 1 Number 2 Algebra 1 Algebra 2	Number 3 Handling Data 2 Algebra 3	Shape, Space and Measure 4 Revision Progress Tests Progress tests
5 1 8 2 4	8 1 4 2 7	8 1 2
Autumn Term 2	**Spring Term 2**	**Summer Term 3**
Shape, Space and Measure 1 Data Handling 1 Shape, Space and Measure 2 Revision Progress Tests Progress Tests Christmas Project	Number 4 Shape, Space and Measure 3 Algebra 4 End of term Investigations	Handling Data 3 Enrichment week End of year Projects
8 1 4 2 7	6 7 4 1 2 9	1 2 8 6 7

No.	• Cross Curricular Link • Literacy • Numeracy highlighted in topics	Examples
1	Literacy and Oracy	Reading and understanding worded questions, particularly ratio, volume and percentages
2	Numeracy	Underpins all Mathematics topics as a continuing thread.
3	RSE **	
4	SMSC /CITIZENSHIP*	Sequences in nature from breeding Rabbits to arrangement of seeds in a sunflower - Nature
5	Digital Competency	Binary numbers and number systems. Statistical analysis
6	Careers	Collaboration on projects – team work. Finance project.
7	Enterprise	Collaboration on projects – team work. Finance project. Summer term projects eg: Holiday budget.
8	Economic Understanding	Percentages – finance, Best buys
9	Appreciation of Sports and the Arts	Tessellation, Transformations, averages

YEAR 7 Maths Term 1

Rationale:

Week 1	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 1 4 operations of Arithmetic. To include negative numbers BIDMAS to include powers and roots	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. • Round any whole number to a required degree of accuracy. • Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1 000 giving answers up to three decimal places	Product Sum Factor Multiple Order of operations Multiply Divide Add Subtract Brackets power	To be able to calculate with 4 operations including decimal and negative numbers. BIDMAS to answer calculations, including using powers and roots.	To be able to calculate with four operations. Including with negative numbers. To be able to use BIDMAS to answer calculations, including using powers and roots.	To know place value of digits in any number. To be able to calculate with four operations. Including multiplying 2 two digit numbers. To be able to calculate with negative numbers, including ordering.	Arithmetic procedures with integers and decimals Understand and use the structures that underpin addition and subtraction strategies Understand and use the structures that underpin multiplication and division strategies Use the laws and conventions of arithmetic to calculate effectively.
Week 2	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**Higher**	**Mid**	**Low**	**National Curriculum Statement**

	Number 1 To be able to find HCF and Lcm Prime number decomposition	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite numbers (non-prime, greater than one). • Establish whether a number up to 100 is prime.	Factors Multiples Primes Multiplication tables Indices (powers)	To be able to find HCF, LCM and prime factors of numbers using index form, including an Investigation into the use of Venn Diagrams.	To be able to find HCF, LCM and prime factors of numbers using index form.	To be able to calculate with BIDMAS	Students will have been introduced to multiples and factors at Key Stage 2 and will have had the opportunity to find factor pairs for a given number. They should know that prime numbers have exactly two factors; and why, therefore, one is not prime. They should also be able to recall prime numbers up to 19 and identify others (possibly using the Sieve of Eratosthenes to find all the prime numbers up to 100).

YEAR 7 MATHS TERM 1

Rationale:

Week 3	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 2	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	Multiply Divide Subtract Add Numerator Denominator Reciprocal	To be able to perform 4 operations with basic fractions To be able to perform 4 operations with mixed numbers.	To be able to perform 4 operations with basic fractions. To be able to perform 4 operations with mixed Numbers.	To find simple equivalent fractions. To write fractions in their simplest form. To find simple equivalent fractions. To write fractions in their simplest form	Know, understand and use fluently a range of calculation strategies for addition and subtraction of fractions Know, understand and use fluently a range of calculation strategies for multiplication and division of fractions
Week 4	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**

	Number 2	The inclusion of the multiplicative identity may help students make sense of the fact that m0 = 1. Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1 000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1 000).	Index notation Powers of 10	To be able to write large and small numbers in Standard Form. To be able to multiply and divide using standard form.	Calculate with decimals including multiplication and division. To substitute numbers into expressions to work out their value	To be able to operate four operations with decimals including answering money problems. To be able to multiply and divide by 10/100/1000.To use algebra to write simple expressions and recognise equivalent expressions.	Standard form Interpret and compare numbers in standard form A × 10n , 1 ≤ A < 10

YEAR 7 Maths Term 1

Rationale:

Week 5	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1	Use their knowledge of the order of operations to carry out calculations involving the four operations. • Use simple formulae. • Express missing number problems algebraically	Factorise Expand Substitute Simplify Expression Quadratic Term	To substitute numbers into expressions to work out their value. To be able to simplify expressions by collecting like terms.	To substitute numbers into expressions to work out their value. To be able to simplify expressions by collecting like terms.	To use algebra to write simple expressions and recognise equivalent expressions. To substitute numbers into expressions to work out their value. To be able to expand single brackets.	At the heart of algebra and algebraic thinking is the expression of generality. Algebraic notation and techniques for its manipulation, including conventions governing its use, should naturally arise from exploring the structure of the number system and operations on number. For this reason, algebra is not a separate theme in these materials but is linked to the two themes associated with number: 'The structure of the number system' and 'Operating on number'
Week 6	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**

	Algebra 1	Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables. • Be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand (non-statutory guidance).	Factorise Expand Substitute Simplify Expression Quadratic Term	To be able to expand single brackets. To be able to factorise single brackets. To be able to expand Double brackets to form quadratics.	To be able to expand single brackets. To be able to factorise single brackets.	To be able to simplify expressions by collecting like terms.	Students are presented with situations where the structure of numbers can be generalised. Students are introduced to conventions concerning the writing of algebraic symbols and learn techniques for symbolic manipulation. For example, students who know that equivalent subtractions can be formed by adding or subtracting the same quantity from both the subtrahend and the minuend (for example, 3 476 – 1 998 = 3 478 – 2 000), can be taught to generalise this as (a + n) − (b + n) = a − b = (a − n) − (b − n).

YEAR 7 Maths Term 1

Rationale:

Week 7	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 2	Before beginning sequences at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key Stage 2: • Generate and describe linear number sequences • Use simple formulae	Term Fibonacci Input Output Linear Quadratic Arithmetic Geometric	To work out the *n*th term of a sequence. To use the *n*th term to work out any term in a sequence. To apply the nth term to patterns- such as the Matchstick problem.	To recognise, describe and generate sequences that use a simple rule. To work out missing terms in a sequence.	To recognise, describe and generate sequences that use a simple rule. To work out missing terms in a sequence. .	Students will have explored non-numerical (shape) and numerical sequences, noticed a pattern, described the pattern in words and found the next term in the sequence from the previous term. They will primarily have focused on generating and describing linear number sequences, though they may have also experienced naturally occurring patterns in mathematics, such as square numbers.

Week 8	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Mid	National Curriculum Statement
	Algebra 2	Understand multiples 130 • Understand integer exponents and roots • Understand and use the conventions and vocabulary of algebra, including forming and interpreting algebraic expressions and equations	Term Fibonacci Input Output Linear Quadratic Arithmetic Geometric	To investigate special sequences (Fibonacci and Triangular Numbers). To be able to find missing terms in a quadratic Sequence.	To work out the *n*th term of a sequence. To use the *n*th term to work out any term in a sequence.	To work out the *n*th term of a sequence. To use the *n*th term to work out any term in a sequence	The extent to which students have explored these concepts in depth may vary. Therefore, students should consolidate, secure and deepen their understanding of linear sequences and how to find and use term-to-term rules to generate the next term. Then, they can progress to describing any term in the sequence directly in relation to its position in the sequence.

Rationale:

YEAR 7 Maths Term 1

Rationale:

Week 9	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 1	Find the area of rectilinear shapes by counting squares. • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and	Area Perimeter Formula Radius Diameter Circumference Chord Sector Tangent Segment π	To work out the area of a rectangle, triangle, parallelogram and a trapezium. To work out the perimeter and the area of compound shapes.	To use a simple formula to work out the perimeter and area of a rectangle. To work out the area of a triangle, parallelogram and a trapezium	To use a simple formula to work out the perimeter and area of a rectangle To work out the area of a triangle.	At Key Stage 2, students will have had the opportunity to measure the perimeter of simple 2D shapes, find the area by counting squares, and estimate volume by counting blocks. They should have calculated the area of rectangles, triangles and parallelograms. They should also have had opportunities to develop their conceptual understanding by relating the area of rectangles to parallelograms and triangles

		estimate the area of irregular shapes					

YEAR 7 Maths Term 1

Rationale:

Week 10	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement

	Shape, space and measure 1	Recognise that shapes with the same areas can have different perimeters and vice versa. • Recognise when it is possible to use formulae for area of shapes. • Calculate the area of parallelograms and triangles.	Area Perimeter Formula Radius Diameter Circumference Chord Sector Tangent Segment π	To know the definition of a circle and the names of its parts. To be able to find the circumference of a circle To be able to find the area of a circle To be able to solve circle problems giving answers in π.	To work out the area of a triangle, parallelogram and a trapezium To work out the perimeter and the area of compound shapes.	To work out the area of a triangle. To work out the perimeter and the area of compound	Students should fully understand the concepts involved, appreciate how the various formulae are derived and connected, and reason mathematically to solve a wide range of problems, including those in new and unfamiliar situations.

Rationale:

YEAR 7 Maths Term 1

Rationale:

Week 11	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Progress test revision			Revision	Revision	Revision	
Week 12	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**Key vocabulary/grammar**
	Progress tests non- calculator and calculator papers			Progress test	Progress test	Progress test	

YEAR 7 Maths Term 1

Rationale:

Week 13	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data Handling 1	Before encountering statistical representations and measures at Key Stage 3, students should already have a secure understanding of the following from previous study in Key Stage 2: • Calculate and interpret the mean as an average. • Draw given angles and measure them in degrees (°). • Interpret and construct pie charts and line graphs and use these to solve problems.	Mean Median Mode Range Continuous Data Discrete Data Key Axis Descending Ascending	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to find averages from a frequency table.	To be able to read data from tables and charts. To understand and calculate the mean, mode, median and range from a set of raw data.	To be able to order decimals and negative numbers. shapes To read data from tables and charts and answer questions on it.	At Key Stage 2, students encountered the concept of central tendency and learnt how to calculate the (arithmetic) mean. At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis. While calculating measures of central tendency accurately and efficiently is important, this should not be the dominant aspect of the learning and teaching in this core concept.
Week 14	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Christmas Project All groups to complete the Elf project			All groups to complete the Elf project	All groups to complete the Elf project	All groups to complete the Elf project	

YEAR 7 Maths Term 1

Rationale:

Week 15	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape space and measure 2	Before beginning geometrical properties of polygons at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key Stage 2: • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	Acute Obtuse Reflex Polygon Isosceles Scalene Equilateral Interior and exterior angles Corresponding Alternate	To calculate missing angles in a triangle, straight line, quadrilateral, around a point. To be able to calculate missing angles in an irregular polygon by using the formula (n-2) x180.	To understand and use the properties of triangles and quadrilaterals. To calculate missing angles in a triangle, straight line, quadrilateral, around a point.	To use a protractor to measure and draw an angle. To understand and use the properties of triangles. To understand and use the properties of quadrilaterals.	Students will have had opportunities to develop their spatial awareness and geometrical intuition in Key Stage 2 through situations involving angles (angles meeting at a point, angles on a straight line, vertically opposite angles and angles in regular polygons) and similar shapes. They will be aware of the geometrical facts and properties inherent in these situations. An important development throughout Key Stage 3 is to be able to reason and construct proofs for why such facts and properties hold and begin to understand the nature of mathematical proof.
Week 16	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape space and measure 2	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.	Acute Obtuse Reflex Polygon Isosceles Scalene Equilateral Interior and exterior angles Corresponding Alternate	To work out the exterior and interior angles of a regular polygon. To be able to find missing lengths using Pythagoras.	To be able to calculate missing angles in an irregular polygon by using the formula (n-2) x180.	To calculate missing angles in a triangle, straight line, quadrilateral, around a point.	Students develop a narrative, connecting and combining known facts in order to generate further mathematical truths. The order of teaching needs careful consideration as some proofs of the angle sum of a triangle rely on an understanding of the angles generated when a transversal crosses a pair of parallel lines.

YEAR 7 Maths Term 1

Rationale:

Week 17	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 3	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1 000.	Multiplier Interest Depreciation Percentage change	To understand the equivalence between a fraction, a decimal and a percentage.	To understand the equivalence between a fraction, a decimal and a percentage.	To understand the equivalence between a fraction, a decimal and a percentage.	A key awareness for students here is that some calculations can be simplified. Students should not automatically reach for their calculator. Instead, they should consider each calculation as a whole in order to identify relationships and possible known facts, so reducing the amount of calculation necessary. Rather than focus on the final result of each calculation, it will be more helpful to emphasise the laws of arithmetic that have been used to simplify the calculations.
Week 18	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Number 3	Know how to fluently use certain calculator functions and use a calculator appropriately	Multiplier Interest Depreciation Percentage change	To find a fraction of a quantity and percentages without a calculator. To use a calculator find percentage increases and decreases introducing the use of multipliers. To be able to calculate compound Interest.	To find a fraction of a quantity. To work out a percentage of a quantity without using a calculator. To use a calculator to find percentages of an amount.	To find a fraction of a quantity. To work out a percentage of a quantity without using a calculator. To be able to use percentages to do basic increases and decrease.	A key awareness for students here is that some calculations can be simplified. Students should not automatically reach for their calculator. Instead, they should consider each calculation as a whole in order to identify relationships and possible known facts, so reducing the amount of calculation necessary. Rather than focus on the final result of each calculation, it will be more helpful to emphasise the laws of arithmetic that have been used to simplify the calculations.

YEAR 7 Maths Term 2

Rationale:

Week 19	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Handling Data 2	Before beginning to teach probability at Key Stage 3, students should already have a secure understanding of the following learning outcomes from earlier in Key Stage 3: • Understand that fractions are an example of a multiplicative relationship and apply this understanding to a range of contexts	Outcome Experimental Relative frequency Mutually exclusive Independent	To be able to calculate probability of events happening and not happening using a scale between 0-1. To be able to use a Venn diagram. .	To be able to calculate probability using a scale between 0-1. To find the probability of something not happening.	To learn and use words about probability To be able to calculate probability using a scale between 0-1.	Students will encounter probability in many aspects of their daily lives, from sporting events to weather reports. However, students may feel that their lived experiences do not reflect calculated mathematical likelihoods. For example, rolling a six on a die in order to win a board game often 'feels' far less likely than any of the other outcomes. The introduction of probability at Key Stage 3 will offer students a way to quantify, explore and explain likelihood and coincidence, and to reason about uncertainty.
Week 20	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Handling Data 2	Understand that ratios are an example of a multiplicative relationship and apply this understanding to a range of contexts Express fractions in a common denomination and use this to compare fractions that are similar in value	Outcome Experimental Relative frequency Mutually exclusive Independent	To investigate what happens when combining events by looking at sample space diagrams. To begin to use Tree diagrams to show the probability of different outcomes when two different events happen	To be able to explain mutually exclusive events. To be able to calculate expectation of an event happening.	To find the probability of something not happening	Before they quantify probabilities, students need to appreciate that, where an event has different possible outcomes, some of these outcomes may be more or less likely than others for different possible reasons. One factor that underpins uncertainty is that of randomness. A key awareness for students is to understand that although an individual event might be random, reasoning about uncertain events can be fruitful when they are repeated many times. Given enough time, trends in apparently random behaviour can become predictable by analysing the frequency of outcomes.

YEAR 7 Maths Term 2

Rationale:

Week 21	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 3	Before beginning graphical representations at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key Stage 2: • Describe positions on the full coordinate grid (all four quadrants)	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept	To be able to plot and recognise lines such as y=2. To be able to plot straight line graphs such as Y=3x+2	To be able to plot coordinates in all 4 quadrants. To be able to plot and recognise lines such as y=2.	To be able to plot coordinates in all 4 quadrants. To be able to plot and recognise lines such as y=2. To be able to plot and recognise lines such as y=2.	In Key Stage 2, students should have become familiar with coordinates in all four quadrants. They should have made links with their work in geometry by both plotting points to form common 2D quadrilaterals and 'predicting missing coordinates using the properties of shapes' (Department for Education, 2013). These skills are developed further in Key Stage 3. A key focus will be thinking about x- and y-coordinates as the input and output respectively of a function or rule, and appreciating that the set of coordinates generated and the line joining them can be thought of as a graphical representation of that function.
Week 22	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra 3	Find pairs of numbers that satisfy an equation with two unknowns • Enumerate possibilities of combinations of two variables		To be able to find the equation of a line in the form y=mx +c To be able to plot quadratic graphs.	To be able to plot straight line graphs such as Y=3x+2.	To be able to plot straight line graphs such as Y=3x+2.	Later in Key Stage 3, significant attention will be given to exploring linear relationships and their representation as straight line graphs. Students should appreciate that all linear relationships have certain key characteristics: • a specific pair of values or points on the graph; for example, where x = 0 (the intercept) • a rate of change of one variable in relation to the other variable; for example, how the y-value increases (or decreases) as the x-value increases (the gradient). Students should be able to recognise these features, both in the written algebraic form of the relationship and in its graphical representation.

YEAR 7 Maths Term 2

Rationale:

Week 23	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 4	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. • Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.	Direct and Inverse proportion Simplify	To be able to simplify and split an amount in a given ratio. To be able to answer worded ratio questions. To be able to answer S,D,T problems.	To write a ratio as simply as possible. To be able to split an amount in a given ratio. To be able to solve direct proportion problems such as recipe questions.	To write a ratio as simply as possible. To be able to split an amount in a given ratio.	Multiplicative relationships underpin many aspects of mathematics at Key Stage 3, but students often experience them as distinct topics with no obvious connections. Percentages, fractions, proportionality and ratio, for example, can all be considered as contexts in which multiplicative relationships are used and explored. It is, therefore, important that the vocabulary and imagery used in all contexts is consistent, to support students in their understanding that the same mathematical principles are involved.
Week 24	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Number 4	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping, using knowledge of fractions and multiples.	Direct and Inverse proportion Simplify	To be able to answer S,D,T problems. To be able to solve simple direct and indirect proportion problems using k.	To be able to solve direct proportion problems such as recipe questions.	To be able to solve direct proportion problems such as recipe questions.	Students should have interpreted multiplication as scaling at Key Stage 2, but here it is developed in more depth. Students should recognise that it is possible to go from any number (except the specific case involving zero as one of the factors but not the product) to any other number by multiplying. They should not simply view multiplication as repeated addition, because this could lead to incorrect additive strategies.

YEAR 7 Maths Term 2

Rationale:

Week 25	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 4	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping, using knowledge of fractions and multiples.	Direct and Inverse proportion Simplify	To be able to solve simple direct and indirect proportion problems using k.	To be able to answer S,D,T problems.	To be able to answer S,D,T problems.	Students should have interpreted multiplication as scaling at Key Stage 2, but here it is developed in more depth. Students should recognise that it is possible to go from any number (except the specific case involving zero as one of the factors but not the product) to any other number by multiplying. They should not simply view multiplication as repeated addition, because this could lead to incorrect additive strategies.
Week 26	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Revision for Summer progress tests			Revision	Revision	Revision	
Week 27	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Summer progress tests Non- calculator and calculator papers			Progress tests	Progress tests	Progress tests	

YEAR 7 Maths Term 3

Rationale:

Week 28	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape space and measure 3	Before beginning transforming shapes at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key Stage 2: • Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.		To be able to rotate, reflect and translate shapes. To be able to enlarge shapes given a scale factor and centre of enlargement.	To be able to calculate the order of rotation symmetry of a shape. To be able to enlarge shapes given a scale factor	To recognise shapes that have reflective symmetry. To be able to rotate and reflect shape	Transformations describe different ways of mapping points on a plane to other points on the plane. A way to think about, describe and classify transformations is to consider what changes and what stays the same under different transformations. This also allows for discussion about congruence and similarity. At Key Stage 2, students will have encountered all four transformations – translation, reflection, rotation and enlargement – and learnt to distinguish between them. However, they may not have concentrated on specific features, such as the centre of rotation or the centre of enlargement.
Week 29	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape space and measure 3	Draw and translate simple shapes on the coordinate plane and reflect them in the axes. 113 • Solve problems involving similar shapes where the scale factor is known or can be found.	Rotational Symmetry Translation Reflection Rotation Vector Scalar Magnitude	To be able to enlarge shapes given a fractional scale factor To be able to enlarge a shape given a negative scale factor	To be able to enlarge a shape with a centre of enlargement.	To be able to translate a shape. To be able to enlarge a shape with a given scale factor	The order in which transformations have been introduced in this work– translation, rotation, reflection and, finally, enlargement – highlights how the degrees of freedom available, with regards to what can vary, are being increased. Translation maintains congruence and orientation. Rotation produces a change in orientation but maintains the 'sense' of the image – a feature which is able to change only under reflection. Translation, rotation and reflection produce congruent shapes in an increasing range of orientations and senses. Enlargement is the only transformation that does not maintain congruence (other than when the scale factor is ±1) but does maintain similarity in any orientation and sense.

YEAR 7 Maths Term 3

Rationale:

Week 30	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 4	Use their knowledge of the order of operations to carry out calculations involving the four operations. • Use simple formulae. • Express missing number problems algebraically.	Solve Equation Solution Inverse	To be able to solve equations with unknowns on both sides. This may involve questions that contain fractions.	To be able to solve equations with unknowns on both sides.	To understand what an equation is. To be able to solve one step equations.	It is important for students to appreciate that number and algebra are connected. The solving of equations is essentially concerned with operations on as yet unknown numbers. At Key Stage 3, this work builds on students' introduction to the language of algebra at Key Stage 2. It explores how linear equations are effectively the formulation of a series of operations on unknown numbers, and how the solving of such equations is concerned with undoing these

Week 31	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 4	Find pairs of numbers that satisfy an equation with two unknowns. • Enumerate possibilities of combinations of two variables. • Be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand (non-statutory guidance).	Solve Equation Solution Inverse	To be able to solve linear equations with brackets in. To be able to solve fractional equations such as: $\frac{3x+2}{4} = x - 1$	To be able to solve equations that contain fractions.	To be able to solve 2 step equations involving fractions.	Understanding the '=' sign as 'having the same value as', and the correct use of order of operations, along with inverse operations, are key to the solving of equations. Students also need to understand the difference between an expression and an equation, and the different roles that letters might take. For example, 3x + 7 is an expression where the variable x, and therefore the expression as a whole, can take an infinite number of values. It also has a duality about it – it is a process and the result of that process. It is a way of describing a set of operations on a variable (i.e. multiply by three and add seven), as well as a way of representing the actual result when x is multiplied by three and seven is added. When some restriction is put on this expression, as in 3x + 7 = 10, the letter x ceases to represent a variable but is now an unknown, the specific value of which will make the equation true.

YEAR 7 Maths Term 3
Rationale:

Week 32	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 4	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. • Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2)	Cross section Volume Area Faces Edges Vertex (vertices)	To be able to find the area and perimeter of a sector	To be able to calculate the volume and surface area of a cuboid and a triangular prism.	To be able to calculate the volume and surface area of a cuboid and a triangular prism.	Students should be exposed to a range of problems involving the perimeter of rectilinear shapes and circles. These problems should require students to choose which lengths to include, which lengths not to include and which lengths must be found by reasoning. Students should also work with problems where the perimeter is stated and the side lengths need to be found.
Week 33	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape space and measure 4	Recognise when it is possible to use formulae for area and volume of shapes	Cross section Volume Area Faces Edges Vertex (vertices)	To be able to find the volume and surface area of a cylinder	To be able to calculate the volume of a cylinder.	To be able to calculate the volume of a cylinder.	At Key Stage 3, such reasoning will be applied to other shapes. Students should be encouraged to explore how they might find areas in different ways and to see how these 187 ways can all be generalised to a formula. For example, students should fully understand how the formula for the area of a circle $A = \pi r$ 2 is derived from other known facts.

YEAR 7 Maths Term 3

Rationale:

			vocabulary/grammar				Statement
	Shape, space and measure 4	Students will use and apply their knowledge of the area of 2D shapes to calculate the cross-sectional area of a variety of prisms	Cross section Volume Area Faces Edges Vertex (vertices)	To be able to calculate the volume of a cone and a sphere	To be able to calculate the area and circumference of a circle To be able to calculate the area of a circle.	To be able to calculate the area of a circle	Although a cylinder is not strictly a prism (a prism has a polygonal uniform cross-section), it is important for students to appreciate that it has the same structure as a prism (with the uniform cross-section being a circle) and its volume can be calculated in a similar way. Thereby, students will see the formula $v = \pi r$ $2h$ as an example of a general geometrical property of cylinders that has meaning, and not just a collection of symbols to be memorised.

YEAR 7 Maths Term 3

Rationale:

Week 35	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data Handling 3	Calculate and interpret the mean as an average. • Draw given angles and measure them in degrees (°). • Interpret and construct pie charts and line graphs and use these to solve problems.		To draw and interpret pie charts and solve problems involving pie charts	To comment on different sets of data and uses of averages	To comment on different sets of data and uses of averages	Students will construct scatter graphs for the first time, building on the representations covered at Key Stage 2 – bar charts, pie charts and pictograms. Constructing pie charts at Key Stage 3 will involve students making connections with angles, fractions and percentages, and using rulers, protractors and angle measurers.
Week 36	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Enrichment week Students follow alternative curriculum						
Week 37	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Data Handling 3	Understand what the mode is measuring, how it is measuring it and identify the mode from data presented in a range of different ways* • Understand what the range is measuring, how it is measuring it and calculate the range from data presented in a range of different ways	Correlation Outlier Line of best fit Sector Cumulative Interpret Quartiles Inter-quartile	To draw and Interpret data from a scatter graph	To draw and interpret pie charts	To comment on different sets of data and uses of averages. Interpreting charts and tables using known averages	Engagement in a range of real-life, contextual problems that require the collection, analysis and representation of data will be an important part of students' study in this area.

YEAR 7 Maths Term 3

Rationale:

Week 38	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data Handling 3	Measuring angles, Using averages to solve problems from charts and to estimate.	Correlation Outlier Line of best fit Sector Cumulative Interpret Quartiles Inter-quartile	To be able to draw and interpret a cumulative frequency diagram	To draw and interpret a scatter graph	To read data from pie charts where data is given in simple sectors	Students will construct all the Key Stage 3 statistical representations, including representing bivariate data in scatter graphs. They should appreciate the difference between a frequency-based chart (such as a bar chart or pictogram) and a proportion based chart (such as a pie chart). Teaching should encourage students to think about when one type of chart is more appropriate than another. Construct bar charts from data presented in a number of different ways • Construct pie charts from data presented in a number of different ways* • Construct pictograms from data presented in a number of different ways • Construct scatter graphs from data presented in a number of different ways
Week 39	**Topic**	**Prior Learning**	**Key vocabulary/ Grammar**	**High**	**Mid**	**Low**	**National curriculum statement**
	Projects Staff to select an end of year project from resources T: Drive Eg; Holiday planning, Lunar,			Project	Project	Project	

YEAR 8 Scheme of Work Maths

Autumn Term 1	Spring Term 1	Summer Term 1
Number 1 Algebra 1 Shape, Space and Measure 1 1 2 8 4 6	Shape, Space and Measure 2 Handling Data 2 Number 3 1 2 6 5 8	Number 4 Data Handling 3 Progress Test Revision Progress Tests 1 2 4 8
Autumn Term 2	**Spring Term 2**	**Summer Term 3**
Handling Data 1 Number 2 Algebra 2 Revision Progress tests Progress tests Christmas project 1 2 6 4 7	Algebra 3 Shape, Space and Measure 3 Investigations 1 2 6 9	Data Handling 3 Household Finance Enrichment week End of year topic reviews 2 1 7 6 9

No.	• Cross Curricular Link • Literacy • Numeracy highlighted in topics	Examples
1	Literacy and Oracy	Reading worded problems – comprehension , understanding what the question asks
2	Numeracy	Continuing skill throughout all topic areas to underpin Mathematics
3	RSE **	
4	SMSC /CITIZENSHIP*	Awareness of speed (ratio)
5	Digital Competency	Number bonds and relationships. Use of spreadsheets, averages
6	Careers	Through project work linking topics to careers EG: Trigonometry for Architecture

7	Enterprise	Finance project, percentages
8	Economic Understanding	Sequences – nature probability, stock market
9	Appreciation of Sports and the Arts	Tessellations and transformations, scale drawings

YEAR 8 Maths Term1

Rationale:

		multiplication and division, including using their knowledge of factors and multiples, squares and cubes. • Identify common factors, common multiples and prime numbers. • Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	Square Root Power Sum Factor Multiple Indices Prime Number Reciprocal	on HCF, LCM and prime factors.	HCF, LCM and prime factors of numbers using index form.	multiplications and divisions involving negative numbers To be able to find HCF, LCM and prime factors of numbers using index form.	will have had the opportunity to find factor pairs for a given number. They should know that prime numbers have exactly two factors; and why, therefore, one is not prime. They should also be able to recall prime numbers up to 19 and identify others (possibly using the Sieve of Eratosthenes to find all the prime numbers up to 100). The focus at Key Stage 3 is on examining the structure of numbers and being able to reason whether numbers are multiples of other numbers or not without the need for creating lists of multiples. For example, students should recognise that 176 is a multiple of eight because it is the sum of 160 and 16, both of which are multiples of eight. Connections can be made here to the rules for divisibility, with students exploring why the rules work and how they can help identify multiples of a number.
Week 2	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**Higher**	**Mid**	**Low**	**National Curriculum Statement**
	Number 1	Students should already be familiar with at least the first 12 square numbers. They are likely to have a basic grasp of the notation, including square and cube roots, and know that, e.g. √16 = 4 because 42 = 16 and √8 3 = 2 because 23 = 8. Students should recognise that the square (or cube) root of any number can be found.	Square root Reciprocal index	To be able to use index laws. To be able to simplify negative powers and write as fractions	To be able to use index laws to simplify expressions To be able to use roots and powers confidently	To know and be able to use index laws to simplify expressions.	A key awareness for students here is that some calculations can be simplified. Students should not automatically reach for their calculator. Instead, they should consider each calculation as a whole in order to identify relationships and possible known facts, so reducing the amount of calculation necessary. Rather than focus on the final result of each calculation, it will be more helpful to emphasise the laws of arithmetic that have been used to simplify the calculations

YEAR 8 Maths Term 1

Rationale:

	Number 1 Algebra 1	earlier in Key Stage 3: Understand the value of digits in decimals, measure and integers Understand integer exponents and roots Compare and order positive and negative integers, decimals and fractions	Square root Reciprocal index substitute simplify expression	To be able use fractional indices To be able to substitute into expressions and formulae. To be able to collect like terms.	To be able to simplify complex expressions involving indices. To understand power 0. To be able to substitute into expressions and formulae	To be able to confidently use roots and powers. To be able to substitute numbers into expressions to work out their value.	At Key Stage 3, students will further develop their understanding of the different ways that numbers can be expressed and will become more proficient in changing from one form to another. This will develop their awareness that different representations of the same number can reveal something of its structure. Know the meaning of and identify: term, coefficient, factor, product, expression, formula and equation. Understand and recognise that a letter can be used to represent a specific unknown value or a variable* Understand that substituting particular values into a generalised algebraic statement gives a sense of how the value of the expression changes.

Week 4	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1	Use simple formulae. Be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand (non-statutory guidance)	substitute simplify expression quadratic roots minimum point Coefficient	To be able to expand single brackets and factorise a linear expression. To be able to expand double brackets to form quadratics and to solve quadratic equations	To be able to expand single brackets and factorise a linear expression. To be able to expand double brackets to form quadratics and to solve quadratic equations	To be able to simplify expressions by collecting like terms. To expand single brackets To be able to expand a two brackets.	At the heart of algebra and algebraic thinking is the expression of generality. Algebraic notation and techniques for its manipulation, including conventions governing its use, should naturally arise from exploring the structure of the number system and operations on number. For this reason, algebra is not a separate theme in these materials but is linked to the two themes associated with number:

Rationale:

Week 5	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1	Students will have learnt at Key Stage 2 that to calculate an expression such as 3 × 48 they can think of it as 3 × (40 + 8), which equals 3 × 40 + 3 × 8. Students may know this as the distributive law, although this should not be assumed. What is important at Key Stage 3 is that students come to see this as a general structure that will hold true for all numbers. They should be able to express this general structure symbolically (i.e. 3(a + b) = 3a + 3b)	substitute simplify expression quadratic roots minimum point Coefficient	To be able to factorise into two brackets and solve quadratic equations	To be able to factorise a linear expression.	To factorise into a single bracket	It is useful at this stage to draw attention to the 'factor × factor = product' structure of the equivalence 3(a + b) = 3a + 3b, i.e. two factors, 3 and (a + b), have been multiplied together to give a product equivalent to 3a + 3b. This will support students' understanding of the inverse process of factorising. For example, 'If the product is 3a + 3b, what might the two factors be?'.

YEAR 8 Maths Term 1

Rationale:

Week 6	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, Space and Measure 1 (Geometry)	identify 3-D shapes, including cubes and other cuboids, from 2-D representations know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees (o) identify: angles at a point and one whole turn (total 360o) angles at a point on a straight line and 2 1 a turn (total 180o) other multiples of 90o use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Acute Obtuse Reflex Polygon Interior and exterior angles Corresponding Alternate Opposite Rotational Symmetry Translation Reflection Rotation Vector Scalar Adjacent Hypotenuse	To be able to calculate missing angles in an irregular polygon by using the formula (n-2) x180. To work out the exterior and interior angles of a regular polygon. To be able to find missing angles in parallel lines.	To refresh knowledge on angle facts and how to use them to find missing angles. To be able to calculate missing angles in an irregular polygon by using the formula (n-2) x180.	To be able to transform shapes using rotation, reflection and translation. To refresh knowledge on angle facts and how to use them to find missing angles.	Notes and guidance (non-statutory) Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles. Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools. Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

YEAR 8 Maths Term 1

Rationale:

Week 7	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, Space and Measure 1 (Geometry)	Understand and use the conventions and vocabulary of algebra including forming and interpreting algebraic expressions and equations Simplify algebraic expressions by collecting like terms to maintain equivalence Manipulate algebraic expressions using the distributive law to maintain equivalence Find products of binomials Rearrange formulae to change the subject Understand and use similarity and congruence	Acute Obtuse Reflex Polygon Interior and exterior angles Corresponding Alternate Opposite Rotational Symmetry Translation Reflection Rotation Vector Scalar Adjacent Hypotenuse	To refresh knowledge on Pythagoras Theorem. To refresh knowledge on Trigonometry.	To work out the exterior and interior angles of a regular polygon. To be able to find missing angles in parallel lines.	To work out the exterior and interior angles of a regular polygon.	While learning about an important theorem in mathematics, such as Pythagoras' theorem, there is an opportunity to go beyond knowing that it is true to knowing why. Teaching and learning associated with this core concept offers an opportunity for students to think about relationships and structures, to reason with them and to prove results. Geometrical properties, possibly above all other areas of mathematics, offers students a set of contexts with which to build their understanding of key mathematical concepts and the nature of mathematics itself. At Key Stage 2, students solved problems involving similar shapes, where the scale factor was known or could be found; earlier in Key Stage 3, students will have extended this work to explore conditions for similarity. This work on similarity and scale factors is now linked to the trigonometric functions and the fundamental ratios of $\sin\theta = opp/hyp$, $\cos\theta = adj/hyp$ and $\tan\theta = opp/adj$. The intention is that trigonometry is connected to previous learning and not perceived as a stand-alone topic.

YEAR 8 Maths Term 1

Rationale:

Week 8	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Probability1	Before beginning to teach probability at Key Stage 3, students should already have a secure understanding of the following learning outcomes from earlier in Key Stage 3	Outcome Experimental Relative frequency Mutually exclusive Independent Conditional Element Universal set Union Tree Diagram	To be able to draw a Venn diagram and use notation. To be able to interpret a Venn diagram. To be able to use a Venn diagram to investigate what happens when combining events by looking at sample space diagrams.	To be able to use a Venn Diagram. To investigate what happens when combining events by looking at sample space diagrams. To be able to use tree diagrams to show the probability of multiple events happening including conditional events.	To be able to calculate probability using a scale between 0-1. To find the probability of something not happening. To be able to explain mutually exclusive events.	Students will encounter probability in many aspects of their daily lives, from sporting events to weather reports. The introduction of probability at Key Stage 3 will offer students a way to quantify, explore and explain likelihood and coincidence, and to reason about uncertainty.

YEAR 8 Maths Term 1

Rationale:

Week 9	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Probability1	Understand that fractions are an example of a multiplicative relationship and apply this understanding to a range of contexts	Outcome Experimental Relative frequency Mutually exclusive Independent Conditional Element Universal set Union Tree Diagram	Outcome Experimental Relative frequency Mutually exclusive Independent Conditional Element Universal set Union Tree Diagram	To be able to use tree diagrams to show the probability of multiple events happening including conditional events.	To be able to use tree diagrams to show the probability of multiple events happening including conditional events.	Students will encounter probability in many aspects of their daily lives, from sporting events to weather reports. The introduction of probability at Key Stage 3 will offer students a way to quantify, explore and explain likelihood and coincidence, and to reason about uncertainty.
	Number 2 (Percentages)	Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate	To understand the equivalence between a fraction, decimal and apercentage. To find a fraction of a quantity and percentages without a calculator.	To understand the equivalence between a fraction, decimal and, a percentage. To find a fraction of a quantity and percentages without a calculator.	Percentages, fractions, proportionality and ratio can all be considered as contexts in which multiplicative relationships are used and explored. Maintaining consistency with the vocabulary and imagery used in all contexts will support students in their understanding that the same mathematical principles are involved.

YEAR 8 Maths Term 1

Rationale:

Week 10	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 2 (Percentages)	Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate	To be able to calculate compound and simple Interest. To be able to calculate reverse percentages and original amounts..	To use a calculator find percentage increases and decreases introducing the use of multipliers. To be able to calculate compound Interest.	To work out a percentage of a quantity without using a calculator. To use a calculator to find percentages of an amount. To use a calculator find percentage increases and introducing the use of multipliers.	Students may use informal additive methods to calculate percentages. For example, to find 16% of a total they will find 10%, find 5%, find 1% and add these together. While it is important for students to know this, and to be able to work flexibly with percentages, it is also important for efficiency and depth of understanding that they recognise them as multiplicative relationships and understand that there exists a single multiplier linked to any percentage.

YEAR 8 Maths Term 1

Rationale:

Week 11	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Revision for Progress tests			Revision	Revision	Revision	

YEAR 8 Maths Term 1

Rationale:

Week 12	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Progress tests Non calculator And Calculator In classrooms			Progress tests	Progress tests	Progress tests	
Week 13	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra 2 (solving equations)	Understand and use the conventions and vocabulary of algebra including forming and interpreting algebraic expressions and equations. Simplify algebraic expressions by collecting like terms to maintain equivalence. Manipulate algebraic expressions using the distributive law to maintain equivalence	Solve Equation Solution Inverse Coefficient Inequality	To be able to solve linear equations with brackets in.	To be able to solve linear equations with brackets in.	To be able to solve equations including with brackets	It is important for students to appreciate that number and algebra are connected. The solving of equations is essentially concerned with operations on as yet unknown numbers. At Key Stage 3, this work builds on students' introduction to the language of algebra at Key Stage 2. It explores how linear equations are effectively the formulation of a series of operations on unknown numbers, and how the solving of such equations is concerned with undoing these operations to find the value of the unknown.

YEAR 8 Maths Term 1

Rationale:

Week 14	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 2 (solving equations)	Students should understand that if they have found a solution to the equation, they can easily check its accuracy themselves, by substituting it back into the equation. This can be very empowering.	Solve Equation Solution Inverse Coefficient Inequality	To be able to solve Simultaneous equations using an algebraic elimination method including forming equations from worded problems	To be able to solve Linear inequalities and represent it on a number line.	To be able to solve Linear inequalities and represent it on a number line.	By considering a range of linear equations involving brackets, students should explore the importance of noticing the structure of an equation in order to decide on the most efficient method for solving it. For example, $3(x - 2) = 27$ can be simplified directly to $x - 2 = 9$ rather than multiplying out the brackets first.
Week 15	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	End of Term Investigation: Elf Project			Elf Project	Elf Project	Elf Project	

YEAR 8 Maths Term 2

Rationale:

Week 16	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 2	Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes. Estimate volume (for example, using 1 cm^3 blocks to build cuboids [including cubes]) and capacity (for example, using water	Area Perimeter Formula Radius Diameter Chord Sector Tangent	volume and surface area of prisms including Cylinders. To be able to use formula to find the Volume and Surface Area of Spheres and Cones.	To work out the perimeter and the area of a compound shapes. To be able to find the area and circumference of a circle and circle parts. volume and surface area of prisms including Cylinders.	To work out the area of a rectangle, triangle, parallelogram and a trapezium. To work out the perimeter and the area of a compound shapes. To be able to find the area and circumference of a circle and circle parts.	Earlier in Key Stage 3, when calculating perimeters, students will likely have already used the properties of parallelograms, isosceles triangles and trapezia, as well as nonstandard shapes; and reasoned mathematically to deduce missing information. They will now build on this to learn about the perimeter (circumference) of circles and that the ratio between circumference and diameter is the same for all circles. When calculating areas, this will include students using their knowledge of area of circles and the surface area of prism
Week 17	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape, space and measure 2	Understand and use the conventions and vocabulary of algebra including forming and interpreting algebraic expressions and equations Simplify algebraic expressions by collecting like terms to maintain equivalence Manipulate algebraic expressions using the distributive law to maintain equivalence Find products of binomials Rearrange formulae to change the subject	Segment Adjacent Hypotenuse Opposite	To be able to use Pythagoras Theorem to find missing sides in right angled triangles. Solve more complex problems involving Pythagoras including worded problems	To be able to find the volume and surface area of prisms including Cylinders.	To be able to find the volume and surface area of cuboids and triangular based prisms.	While learning about an important theorem in mathematics, such as Pythagoras' theorem, there is an opportunity to go beyond knowing that it is true to knowing why. Teaching and learning associated with this core concept offers an opportunity for students to think about relationships and structures, to reason with them and to prove results. Geometrical properties, possibly above all other areas of mathematics, offers students a set of contexts with which to build the

YEAR 8 Maths TERM 2

Rationale:

Week 18	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 2	Use of formulae and rearranging a formula. Knowledge of square and square roots of numbers.	Segment Adjacent Hypotenuse Opposite	To be able to use Trigonometry to find missing sides and angles in right angled triangles.	To be able to use Pythagoras Theorem to find missing sides in right angled triangles.	To be able to find the volume and surface area of cuboids and triangular based prisms.	Identifying where Pythagoras' theorem can be used within a problem where the triangle is not explicit can be a challenge. As students are introduced to trigonometric ratios and how to use these to calculate missing sides, there is a danger that this becomes the sole strategy for solving problems involving right-angled triangles and that Pythagoras' theorem might be an under-used strategy. To address both of these issues, it may be useful for students to experience Pythagoras' theorem problems in many different forms, so that they are able to identify where it is an appropriate technique when solving a problem, and to deepen their understanding of the relationship that it describes
Week 19	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Data Handling 2 (Averages	Calculate and interpret the mean as an average.	Mean Median Mode Range Continuous Data Discrete Data	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to find averages from a frequency table.	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to find averages from a frequency table.	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to complete a tally table and frequency.	At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis

YEAR 8 Maths TERM 2

Rationale:

Week 20	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data Handling 2 (Averages)	Calculate and interpret the mean as an average.	Mean, Median, Mode, Range Discrete, Continuous	To be able to find estimates of averages from a grouped frequency table including the median. (estimating the mean)	To be able to find estimates of averages from a grouped frequency table. Estimating the mean.	To be able to find averages from a frequency table.	At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis.
	Number 3 (Rounding and standard form)	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. • Round any whole number to a required degree of accuracy.	Significant figures Estimate Bounds Error Intervals Indices	To be able to write large and small numbers in standard form.	To be able to round to different degrees of accuracy including significant figures. To round numbers, where necessary, to an appropriate or suitable degree of accuracy.	To be able to multiply and divide by powers of 10/100/1000. To be able to round to different degrees of accuracy including 1, 2 and 3 decimal places	It is essential that students are aware of the general structure of the place-value system as being based on powers of ten and begin to see how this naturally extends to decimals.

Week 21	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 3 (Rounding and standard form)	Round decimals to a required number of decimal places. To know the rules for rounding. To be able to write a number to a given index.	Significant figures Estimate Bounds Error Intervals Indices	To be able to multiply and divide with numbers in standard form. To be able to calculate error intervals and investigate the use of bounds	To be able to use Index Laws. To be able to write large and small numbers in standard form.	To be able to round to different degrees of accuracy including significant figures. To be able to use index laws	This learning will support students' work on significant figures and standard form, as students who can express numbers (including very large and very small numbers) in these different ways are more likely to have a feel for the size of such numbers and where they fit in the number system. Estimation is a key skill that contributes to students' fluency in calculation.

YEAR 8 Maths TERM 2

Rationale:

Week 22	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 3 (sequences and graphs	Before beginning sequences at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key Stage 2: Generate and describe linear number sequences .Use simple formulae	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept Term Arithmetic Geometric Quadratic	To apply the nth term to patterns- such as the matchstick problem. To be able to find the nth term of a geometric progression	To work out the *n*th term. To use the *n*th term to work out any term in a sequence	To work out missing terms in a sequence. To work out the *n*th term.	The extent to which students have explored these concepts in depth may vary. Therefore, students should consolidate, secure and deepen their understanding of linear sequences and how to find and use term-to-term rules to generate the next term. Then, they can progress to describing any term in the sequence directly in relation to its position in the sequence.
Week 23	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra 3 (sequences and graphs)	Understand integer exponents and roots Understand and use the conventions and vocabulary of algebra, including forming and interpreting algebraic expressions and equations	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept Term Arithmetic Geometric Quadratic	To investigate the nth term in Quadratic sequences To work out an equation of a line in the form $y = mx + c$ from its graph. To be able to find the mid-point of a line segment.	To apply the nth term to patterns- such as the matchstick problem. To be able to plot and recognise lines such as y=2. To be able to plot straight line graphs such as Y=3x+2.	To use the *n*th term to work out any term in a sequence. To be able to plot coordinates in all 4 quadrants To be able to plot and recognise line such as y=2.	This work extends students' knowledge of sequences through exploration of the mathematical structure, not just by spotting the patterns that the structure creates. Algebraic notation is used to express the structure, and students should become familiar with finding and using the nth term of a linear sequence. It is important that students have time to develop a full understanding of the connection between the notation and the sequence and come to see the nth term as a way of expressing the structure of every term in the sequence.

YEAR 8 Maths TERM 2

Rationale:

Week 24	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 3 (sequences and graphs)	Describe positions on the full coordinate grid (all four quadrants) • Find pairs of numbers that satisfy an equation with two unknowns • Enumerate possibilities of combinations of two variables and earlier in Key Stage 3: • Understand and use the conventions and vocabulary of algebra, including forming and interpreting algebraic expressions and equations	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept Term Arithmetic Geometric Quadratic	To be able to calculate how to find parallel and perpendicular lines given a point. To be able to plot Quadratic graphs, such as y= x^2+ 3x +4.	Find the mid point of a line segment To be able to plot quadratic graphs, such as: y= x^2+ 3x +4.	To be able to plot straight line graphs such as Y=3x+2 from a table of values To be able to identify the y intercept. To be able to complete a table of values and draw the graph. To be able to find the gradient of a line.	Significant attention is now given in this work to exploring linear relationships and their representation as straight line graphs. Students should appreciate that all linear relationships have certain key characteristics: • a specific pair of values or points on the graph; for example, where x = 0 (the intercept) • a rate of change of one variable in relation to the other variable; for example, how the y-value increases (or decreases) as the x-value increases (the gradient).
Week 25	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape, space and measure 3 (construction and enlargement)	Students are likely to be familiar with enlargements through their work on similar shapes in Key Stage 2. At Key Stage 3, they are introduced to the idea of a centre of enlargement and that the position of this in relation to the object affects the image's position.	Rotational Symmetry Translation Reflection Rotation Vector Scalar Magnitude	To understand and use scale diagrams. To be able to answer Loci problems. To be able to use Vectors and their properties.	To use a scale factor to enlarge a shape given a centre of enlargement including fractional scale factors. To understand how to use map scales	To use a scale factor to show an enlargement. To enlarge a shape about a centre of enlargement	At Key Stage 3, the focus is on enlargements with a scale factor ≥1, but the use of dynamic geometry software offers students an opportunity to reason mathematically about the images that will result if a scale factor outside of this range is used (as it is in Key Stage 4), and to then test and refine their conjectures.An important awareness is that these constructions are based on the geometrical properties of a few key shapes (a circle, an isosceles triangle and a rhombus). A deep understanding and awareness of these geometrical properties will support students in gaining a conceptual overview of these constructions and guard against constructions being learnt mechanically as a set of procedural steps.

YEAR 8 Maths TERM 2

Rationale:

Week 26	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Revision for Progress tests			Revision	Revision	Revision	

YEAR 8 Maths TERM 2

Rationale:

Week 27	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	SUMMER EXAMS Progress tests Calculator and non- calculator			Progress tests	Progress tests	Progress tests	
Week 28							
	Number 4 (Ratio and Proportion)	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • Solve problems involving similar shapes where the scale factor is known or can be found. • Solve problems involving unequal sharing and grouping, using knowledge of fractions and multiples	Direct and Inverse proportion Simplify	To be able to simplify and split an amount in a given ratio. To be able to answer worded ratio questions. To be able to answer S,D,T problems.	To write a ratio as simply as possible. To be able to simplify in the form 1: n To be able to split an amount in a given ratio.	To write a ratio as simply as possible. To be able to split an amount in a given ratio.	Multiplicative relationships underpin many aspects of mathematics at Key Stage 3, but students often experience them as distinct topics with no obvious connections. Percentages, fractions, proportionality and ratio, for example, can all be considered as contexts in which multiplicative relationships are used and explored.

YEAR 8 Maths TERM 2

Rationale:

Week 29	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 4 (Ratio and Proportion)	Appreciate that any two numbers can be connected via a multiplicative relationship* Understand that a multiplicative relationship can be expressed as a ratio and as a fraction • Be able to calculate the multiplier for any given two numbers Understand the connection between multiplicative relationships and direct proportion Recognise direct proportion and use in a range of contexts, including compound measures Recognise and use inverse proportionality in a range of contexts	Direct and Inverse proportion Simplify	To be able to solve simple direct and indirect proportion problems using k. Look at proportion graphs and with squares and cubes.	To be able to solve direct proportion problems such as recipe questions. To be able to answer S,D,T problems.	To be able to solve direct proportion problems such as recipe questions. To be able to answer S,D,T problems.	It is important that the vocabulary and imagery used in all contexts is consistent, to support students in their understanding that the same mathematical principles are involved. In many cases there will be several different possible representations that could be used to help understand the mathematical structure of a situation. It is important to consider the relative usefulness and efficiency of different representations and approaches. An important awareness here is that there is one unifying structure which connects fractions, percentages and ratio, and that this one structure can be described by the algebraic formulae x × k = y or alternatively k = , where x and y are the quantities in proportion and k is the constant of proportionality.

YEAR 8 Maths TERM 3

Rationale:

Week 30	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data handling 3 (Representing data)	Calculate and interpret the mean as an average. Draw given angles and measure them in degrees (°).	Correlation Outlier Line of best fit Cumulative Median Quartile Interquartile range Frequency density	To be able to draw cumulative frequency diagrams and box plots.	To be able to make comments on different sets of data commenting on averages. To draw and interpret data from pie charts.	To be able to make comments on different sets of data commenting on averages. To draw and interpret data from pie charts.	At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis.
Week 31	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Data handling 3 (Representing data)	Interpret and construct pie charts and line graphs and use these to solve problems. Know the difference between discrete and continuous data.	Correlation Outlier Line of best fit Cumulative Median Quartile Interquartile range Frequency density	To be able to draw a Histogram. To be able to find Frequency density. To find frequency from a Histogram.	To be able to complete a scatter graph, draw an accurate line of best fit and use the graph to estimate other values.	To be able to draw a scatter graph and understand the relationship between the types.(Correlation)	Students will construct scatter graphs building on the representations covered at Key Stage 2 – bar charts, pie charts and pictograms. Constructing pie charts at Key Stage 3 will involve students making connections with angles, fractions and percentages, and using rulers, protractors and angle measurers. Again, while the accurate construction of such diagrams is important in order to communicate findings clearly, it is also necessary for students to think about when a particular statistical diagram is appropriate and what each type of diagram is communicating about the data.

YEAR 8 Maths TERM 3

Rationale:

Week 32	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	House hold Finance	Percentages, number skills(arithmetic) Conversion facts This brings together many of the concepts and key skills learned to enable real life problem solving	Debit Credit Salary Tax National Insurance Interest Compound Interest and depreciation	Bank account interest, difference between simple and compound interest. Credit card interest and payment (min payment or pay in full) which is best? Mortgage loans and interest	Utility bills checking charges for gas and electricity, pence /KWH Working out cost of electricity, gas, water Basic bank account statements	Best buys- Household grocery shopping and budgeting Household budgets and managing money responsibly	
Week 33	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra review and extension Review algebra according to needs of individual groups. Some teacher discretion with particular topics	Collecting like terms Expanding brackets Formulae and substitution Factors and multiples	Expression, Coefficient, solve, factorise	Introduce and use the quadratic formula for solving equations that will not factorise.	Solve a quadratic by factorising	Expand double brackets to create a quadratic expression	It is important for students to appreciate that number and algebra are connected. The solving of equations is essentially concerned with operations on as yet unknown numbers.

YEAR 8 Maths TERM 3

Rationale:

Week 34	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number review and extension Some teacher discretion with particular topics	Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes. Identify common factors, common multiples and prime numbers. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	Square numbers roots	Simplify surds Add and subtract surds Rationalise the denominator	Prime factor decomposition HCF/ LCM Sort into Venn diagrams	Prime factor decomposition HCF/ LCM	Rather than focus on the final result of each calculation, it will be more helpful to emphasise the laws of arithmetic that have been used to simplify the calculations
Week 35							
	Shape, Space and Measure review and extension Some teacher discretion with particular topics	Know how to use compasses and a protractor, Able to classify angles to check if an answer is sensible.	Bisect, construct, Centre, enlarge, vector	Constructions – triangles and other polygons, Angle bisectors Review Loci	To understand what similar triangles are and how missing sides can be found. To understand and use scale diagrams. To be able to answer Loci problems.	Transformations , – rotations from centre of rotation, describing transformations	Students will have learnt about the properties of certain geometric shapes and used these properties to compare and classify shapes. They will also have had experience of drawing certain shapes using a ruler and angle measurer. Developing this work in Key Stage 3, students will learn the ruler and compass constructions of: triangles of given lengths a perpendicular bisector of a line segment a perpendicular to a given line through a given point • an angle bisector

YEAR 8 Maths TERM 3
Rationale:

Week 36	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Enrichment week whole school alternative curriculum.			Enrichment week whole school alternative curriculum.	Enrichment week whole school alternative curriculum.	Enrichment week whole school alternative curriculum.	
Week 37	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Data Handling Review and extension Some teacher discretion with particular topics	Recall the four averages and know which one would be more applicable to describing a problem. To be able to multiply and add fractions. Interpret data from given charts Extension to incorporate some ideas from KS4	Average, interpret, Calculate,	Estimate the mean – consolidate finding the median from a table of values Review Tree diagrams Review Venn diagrams	Draw a tree diagram and find probabilities	Draw a frequency tree and complete Review types of graph eg: Vertical line graph, dual bar chart, composite bar chart, picto gram	Students should experience different ways to record and represent outcomes, including lists, tables, grids and Venn diagrams. (Note that 'tree diagrams' are introduced in the national curriculum Key Stage 4 programme of study.)

YEAR 8 Maths TERM 3

Rationale:

Week 38	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Project week Code breaking Darts Holiday planning Lunar Park Other projects in resources on staff T;Drive Staff decide which project they would like to do with their groups	Draws together mathematical skills learned over the course of the year		Project	Project	Project	Teaching and learning are complex, but the intention should always be to develop students' understanding of mathematical concepts and structures, alongside providing sufficient practice to attain fluency. This combination of developing fluency and mathematical understanding in tandem will enable students to use their learning accurately, efficiently and flexibly to reason mathematically and solve routine and non-routine problems.
Week 39	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Continue with Project from week 38. Presentations Look at Best Buy Problems End of Year rewards assemblies	Promoting team work and collaboration building on previous end of term projects					Teaching and learning are complex, but the intention should always be to develop students' understanding of mathematical concepts and structures, alongside providing sufficient practice to attain fluency. This combination of developing fluency and mathematical understanding in tandem will enable students to use their learning accurately, efficiently and flexibly to reason mathematically and solve routine and non-routine problems.

YEAR 9 Scheme of Work Maths

Autumn Term 1	Spring Term 1	Summer Term 1
Number 1 Shape, Space and Measure 1 Algebra 1 1 2 4 7 8	Number 2 Algebra 2 1 2 5 4 8	Number 3 Revision Progress tests Progress tests 4

Autumn Term 2	Spring Term 2	Summer Term 3
Algebra 1 continued Handling Data 1 Revision for Progress tests Progress Tests Household Finance 1 2 7 6 4 8	Functional skills Functional skills exam Shape, Space and Measure 2 1 2 8 7 9	Algebra 3 Data Handling 2 Enrichment Week Consolidation in preparation for KS4 1 2 7 6 8 4

No.	• Cross Curricular Link • Literacy • Numeracy highlighted in topics	Examples
1	Literacy and Oracy	Reading and understanding worded problems. Comprehension.
2	Numeracy	Underpins all topics and is found in all topics links to science, geography
3	RSE **	
4	SMSC /CITIZENSHIP*	Uses in real life such as temperatures and depth. Percentages.
5	Digital Competency	Use of data and averages in spread sheets, charts and diagrams that can be used in a wide variety of situations. For example: populations
6	Careers	Use of financial awareness through projects. Collaboration in teams.
7	Enterprise	Probability to predict trends
8	Economic Understanding	Finance education, use of diagrams. Percentages. Interpret a bank statement
9	Appreciation of Sports and the Arts	Use of Trigonometry and transformations within Art statistical analysis of athletic performances.

YEAR 9 Maths Term 1

Rationale:

Week 1	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 1 12	Builds on number skills learned in year 7 and year 8. Understanding of basic number place value and number bonds	Product Square Root Power Sum Factor Multiple Indices Prime Number	To be able to Multiply and Divide with Decimals To be able to estimate after rounding to decimal places or significant figures.	To work out answers to problems using BIDMAS To be able to use the four rules of arithmetic with integers and decimals	To be able to Order positive and negative numbers To be able to find factors and multiples of whole numbers	When dividing one decimal by another it will be important for students to understand how multiplying and dividing the dividend and the divisor by 10, 100, etc. changes the quotient, e.g. 74 ÷ 3 = 7.4 ÷ 0.3 = 0.74 ÷ 0.03, etc.; and that, e.g. 7.4 ÷ 3 is ten times smaller than 74 ÷ 3, 74 ÷ 0.3 is ten times bigger than 74 ÷ 3 and 74 ÷ 0.003 is one thousand times bigger than 74 ÷ 3. These various awarenesses come together to give meaning to the idea that a calculation such as 3.14 × 5.6 can be calculated as (314 × 56) ÷ 1 000 and that 25.7 ÷ 0.32 can be calculated as 2 570 ÷ 32
Week 2	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**Higher**	**Mid**	**Low**	**National Curriculum Statement**
	Number 1	Builds on number skills learned in year 7 and year 8. Understanding of basic number place value and number bonds	Product Square Root Power Sum Factor Multiple Indices Prime Number	To identify the LCM and HCF and Prime Factors of two numbers	To be able to use the four rules of arithmetic with integers and decimals and use to solve problems.	To be able to identify Prime Numbers. Prime number decomposition	At Key Stage 3, they will build on this by using other positive integer exponents greater than three, and associated real roots (square, cube and higher). Work on exponents and roots in Key Stage 3 provides the foundation for future learning when exploring negative integer and fractional exponents in Key Stage 4.

Year 9 Maths Term 1

Rationale

Week 3	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	To be able to identify square numbers up to 225 Low	National Curriculum Statement
	Number 1	Builds on number skills learned in year 7 and year 8. Use their knowledge of the order of operations to carry out calculations involving the four operations. Know that "percent" means out of 100. Able to multiply and divide by 10,100 and 1000	Product Square Root Power Sum Factor Multiple Indices Prime Number	To be able to calculate four operations with fractions including Mixed Numbers To be able to calculate percentage increases and decreases using a Non Calculator method. To be able to calculate percentage change.	To be able to compare and order positive and negative numbers To identify the LCM and HCF and Prime Factors of two numbers	To work out answers to problems using BIDMAS	An understanding of and ability to use standard arithmetic procedures for all four operations with integers and decimals, as well as procedures for some calculations with fractions, should be well established at Key Stage 2. Work in Key Stage 3 should develop this both conceptually and procedurally.
Week 4	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape, space and measure 1 10	Types of angles – classification. Knowledge of basic angle facts Build on previous work with Pythagoras and Trigonometry(higher) Apply using a protractor.	Acute Obtuse Reflex Polygon Isosceles Scalene Equilateral Interior and exterior angles Corresponding Alternate	To be able to apply basic angle facts To work out interior and exterior angles in a polygon To be able to solve missing angles problems in Parallel lines.	To be able to convert between metric and Imperial Units To be able to Draw Nets of 3d Shapes To be able to interpret diagrams from a plan/elevation	To be able to convert between metric Units To be able to Draw Nets of 3d Shapes a point.	Students are required to go beyond intuitively recognising when shapes are similar or congruent, and to think about what can change and what has to stay the same for these properties to hold. While learning about an important theorem in mathematics, such as Pythagoras' theorem, there is an opportunity to go beyond knowing that it is true to knowing why.

YEAR 9 Maths Term 1

Rationale:

Week 5	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 1	Types of angles – classification. Knowledge of basic angle facts Build on previous work with Pythagoras and Trigonometry(higher) Apply using a protractor.	Acute Obtuse Reflex Polygon Isosceles Scalene Equilateral Interior and exterior angles Corresponding Alternate	To be able to read Scale Drawings and Maps To use bearings to specify a direction To be able to use Pythagoras Theorem to find missing sides in right angled triangles.	To be able to interpret diagrams from a plan/elevation To calculate missing angles in a triangle, straight line, quadrilateral, around a point.	To be able to interpret diagrams from a plan/elevation To use a protractor to measure and draw an angle. To understand and use the properties of quadrilaterals.	Previously students will have drawn a perpendicular bisector by using a ruler to determine the midpoint of a line and a protractor to judge a right angle. In a construction, it is geometrical properties, not measurement, which are used to produce the required result. While learning about an important theorem in mathematics, such as Pythagoras' theorem, there is an opportunity to go beyond knowing that it is true to knowing why.

YEAR 9 Maths TERM 1

Rationale:

Week 6	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 1	Types of angles – classification. Knowledge of basic angle facts Build on previous work with Pythagoras and Trigonometry(higher) Apply using a protractor. Understand and use similarity and congruence	Acute Obtuse Reflex Polygon Isosceles Scalene Equilateral Interior and exterior angles Corresponding Alternate	To be able to use Trigonometry to find missing sides and angles in right angled triangles.	To be able to find missing angles in a Polygon To use bearings to specify a direction	To calculate missing angles in a triangle, straight line, quadrilateral, around a point	The intention is that trigonometry is connected to previous learning and not perceived as a stand-alone topic. This sense of all right-angled triangles being a scaling of one of the two 'unit' right-angled triangles within the unit circle emphasises the multiplicative relationship between triangles. As students practise their skills, the opportunity arises to introduce a variety of contextual situations so students can appreciate that, once they strip away the context, the remaining mathematical model can be solved abstractly. This can then be interpreted to arrive at the contextual solution.
	Algebra 1	Collecting like terms together. Using positive and negative numbers. Expanding brackets. HCF	Factorise Expand Substitute Simplify Expression Quadratic	To be able to substitute into expressions using positive and negative integers	To substitute numbers into expressions to work out their value. To be able to simplify expressions by collecting like terms.	To substitute numbers into expressions to work out their value.	Understand that a letter can be used to represent a generalised number • Understand that algebraic notation follows particular conventions and that following these aids clear communication. Know the meaning of and identify: term, coefficient, factor, product, expression, formula and equation. Understand and recognise that a letter can be used to represent a specific unknown value or a variable. Understand that relationships can be generalised using algebraic statements.Understand that substituting particular values into a generalised algebraic statement gives a sense of how the value of the expression changes.

Week 7	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1 3	Collecting like terms together. Using positive and negative numbers. Expanding brackets. HCF Knowledge of expanding brackets from earlier in KS3. Know that factorising is to use the HCF of pairs of numbers. Know that factorising means "to put into a bracket"	Factorise Expand Substitute Simplify Expression Quadratic	To be able to manipulate Algebra including collecting terms, expand single brackets and factorise. To be able to expand double brackets to obtain a quadratic expression	To be able to expand single brackets. To be able to factorise single brackets	To be able to expand single brackets.	At the heart of algebra and algebraic thinking is the expression of generality. Algebraic notation and techniques for its manipulation, including conventions governing its use, should naturally arise from exploring the structure of the number system and operations on number. For this reason, algebra is not a separate theme in these materials but is linked to the two themes associated with number. Students need to generalise further, to situations where there are more than two binomials and realise that the product of more than two binomials can be reduced to two polynomials by successive multiplication of pairs.

YEAR 9 Maths TERM 1

Rationale:

Week 8	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1	Collecting like terms together. Using positive and negative numbers. Expanding brackets. HCF Know that factorising means "to put into a bracket". Quadratics contain an x^2 term.	Factorise Expand Substitute Simplify Expression Quadratic	To be able to factorise quadratics including ax2+bx+c	To be able to expand double brackets to obtain a quadratic expression To be able to factorise quadratics	To be able to factorise single brackets.	At the heart of algebra and algebraic thinking is the expression of generality. Algebraic notation and techniques for its manipulation, including conventions governing its use, should naturally arise from exploring the structure of the number system and operations on number. For this reason, algebra is not a separate theme in these materials but is linked to the two themes associated with number:

YEAR 9 Maths Term 1

Rationale:

Week 9	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 1	Using inverse functions for the four operations: addition, subtraction, multiplication and division. Understand that the inverse of square root is the square of a number Using positive and negative numbers.	Factorise Expand Substitute Simplify Expression Quadratic	To be able to change the subject of the formula complex	To be able to change the subject of simple formula	To be able to expand a double bracket	When working with formulae, students should appreciate that, when expressing the relationship between one variable (the subject of the formula) and the rest of the expression, it is possible to evaluate any of the variables, given values for all the others.

YEAR 9 Maths Term 1

Rationale:

Week 10	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Handling Data 1	Knowledge of four averages, tally charts and drawing a bar chart. Finding mid –points Calculator skills Basic arithmetic Calculate and interpret the mean as an average.	Correlation Outlier Line of best fit Mean Median Mode Range Continuous Data Discrete Data Ascending Descending	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to find averages from a frequency table.	To understand and calculate the mean, mode, median and range from a set of raw data. To be able to find averages from a frequency table.	To be able to draw frequency Diagrams including bar Charts and Pictograms. Including vertical line graphs and dual bar charts.	At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis

YEAR 9 Maths Term 1

Rationale:

Week 11	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Revision for progress tests	Recap earlier topics from the term and topics from year 8 .		Revision higher topics	Revision all topics	Revision all topics (number emphasis)	

YEAR 9 Maths Term 1

Rationale:

Week 12	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Progress tests			Progress tests	Progress tests	Progress tests	

YEAR 9 Maths Term 1

Rationale:

Week 13	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Handling Data 1		Correlation Outlier Line of best fit Mean Median Mode Range Continuous Data Discrete Data Ascending Descending	To be able to find estimates of averages from a grouped frequency table. To be able to estimate the mean from grouped frequency (find the mid -point of an interval.	To be able to find estimates of averages from a grouped frequency table.	To understand and calculate the mean, mode, median and range from a set of raw data.	

YEAR 9 Maths Term 1

Rationale:

Week 14	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Handling Data 1	Calculate and interpret the mean as an average. Draw given angles and measure them in degrees (°). Interpret and construct pie charts and line graphs and use these to solve problems. Know the difference between discrete and continuous data.	Correlation Outlier Line of best fit Mean Median Mode Range Continuous Data Discrete Data Ascending Descending	To draw and interpret data from pie charts. To draw and interpret data from a scatter Graph	To draw and interpret data from pie charts.	To be able to find averages from a frequency table.	At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range. This will enable students to engage in more sophisticated data analysis.

Week 15	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	House hold Finance	Problem solving using percentages/ number skills	Bank statement Compound calculate	Bank statement Utility To be able to calculate utility bills To understand the role of a mortgage Calculate compound	To be able to answer Best Buy problems To be able to understand bank statements	To be able to answer time problems. Best Buy problems	Students will construct scatter graphs building on the representations covered at Key Stage 2 – bar charts, pie charts and pictograms. Constructing pie charts at Key Stage 3 will involve students making connections with angles, fractions and percentages, and using rulers, protractors and angle measurers.

YEAR 9 Maths Term 1

Rationale:

Week 16	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 2	HCF Fractions and simplifying Decimal place value	Estimate Direct and Inverse proportion Understand the connection between multiplicative relationships and direct proportion Recognise direct proportion and use in a range of contexts, including compound measures Recognise and use inverse proportionality in a range of contexts	To be able to simplify and split an amount in a given ratio. To be able to answer worded ratio questions. .	To be able to use approximations to estimate calculations To write a ratio as simply as possible.	To be able to round numbers to a given accuracy To be able to multiply and divide by powers of 10/100/1000.	It is important that the vocabulary and imagery used in all contexts is consistent, to support students in their understanding that the same mathematical principles are involved. In many cases there will be several different possible representations that could be used to help understand the mathematical structure of a situation. It is important to consider the relative usefulness and efficiency of different representations and approaches.
Week 17	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Number 2	HCF Fractions and simplifying Decimal place value	Estimate Direct and Inverse proportion	To be able to answer S,D,T problems. To be able to solve problems involving density and pressure To be able to solve simple direct and indirect proportion problems using k. Look at proportion graphs and with squares and cubes	To be able to split an amount in a given ratio.	To be able to round numbers to significant figures	An important awareness here is that there is one unifying structure which connects fractions, percentages and ratio, and that this one structure can be described by the algebraic formulae x × k = y or alternatively k = , where x and y are the quantities in proportion and k is the constant of proportionality.

YEAR 9 Maths Term 2

Rationale:

Week 18	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 2	HCF Fractions and simplifying Decimal place value	Estimate Direct and Inverse proportion Percentage multiplier	To be able to calculate compound and simple Interest. To be able to calculate reverse percentages and original amounts	To be able to answer S,D,T To be able to solve simple direct and indirect proportion problems using k.	To be able to use approximations to estimate calculations	Percentages, fractions, proportionality and ratio can all be considered as contexts in which multiplicative relationships are used and explored. Exploring a range of real-life contexts (including use of compound measures) will further support students' understanding of proportionality. Stressing the notion that, when one measure doubles (or trebles or is multiplied by any scale factor) so too does the other, can usefully highlight the terminology of 'direct' proportion and this can be contrasted with inverse proportion, which is a key idea to introduce at Key Stage 3.
Week 19	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra 2	Using co-ordinates Plotting points Negative number addition and subtraction Substitution Knowing and understanding a quadratic expression.	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept Term Fibonacci Input Output Linear Quadratic Arithmetic Geometric	To be able to plot straight line graphs such as Y=3x+2. To be able to find the equation of a line in the form y=mx +c To be able to plot quadratic graphs, such as $y= x^2+ 3x +4$. Find the relationship of the coordinates of the graph, turning point and minimum/ maximum point of the graph	To be able to plot coordinates in all 4 quadrants. To be able to plot and recognise lines such as y=2.	To be able to plot coordinates in all 4 quadrants. To be able to plot and recognise lines such as y=2.	Students should understand the key idea that the gradient is a measure of the rate at which the function is changing (i.e. as x increases by one, how is y increasing – or decreasing?) and that the y-intercept is a fixed point (i.e. the value of y when x is zero). Students should be aware that these two pieces of information uniquely define any straight line. Another difficulty is the perceived randomness of 'm' and 'c' to represent the value of the gradient and y-intercept.

YEAR 9 Maths TERM 2

Rationale:

Week 20	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 2	Using co-ordinates Plotting points Negative number addition and subtraction Substitution Term to term rule Identify the next term in a sequence	Gradient Intersect Parallel Perpendicular Parabola Y- Intercept Term Fibonacci Input Output Linear Quadratic Arithmetic Geometric	To be able find the equation of a line from a given point To be able to find the equation of Parallel and Perpendicular Lines To be able to find the equation of a line in the form y=mx +c To be able to find the rule for a geometric sequence To be able the find the nth term for a quadratic sequence	To be able to plot straight line graphs such as Y=3x+2. To be able to find the equation of a line in the form y=mx +c To be able to plot quadratic graphs, such as $y= x^2+ 3x +4$.	To be able to plot straight line graphs such as Y=3x+2 from a table of values To be able to identify the y-intercept and find the gradient of a line.	Students should consolidate, secure and deepen their understanding of sequences so they can progress to describing any term directly in relation to its position in the sequence.
Week 21	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Algebra 2	Understand integer exponents and roots. Understand and use the conventions and vocabulary of algebra, including forming and interpreting algebraic expressions and equations	Term Fibonacci Input Output Linear Quadratic Arithmetic Geometric	To be able to find nth term for a linear sequence To be able to recognise special sequences such as; Fibonacci To be able the find the nth term for a quadratic sequence	To be able to find nth term for a linear sequence To be able to recognise special sequences such as; Fibonacci	To be able to find nth term for a linear sequence	This work extends students' knowledge of sequences through exploration of the mathematical structure, not just by spotting the patterns that the structure creates. This learning has connections to other areas of algebra, particularly solving equations (when checking if a number is a term in a sequence) and graphs. Work on sequences in Key Stage 3 provides the foundation for exploring quadratic sequences and simple geometric progressions in Key Stage 4.

YEAR 9 Maths Term 2

Rationale:

Week 22	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Algebra 2 Functional skills level 1 and level 2 Revision and past papers	substitution Skills to use in problem solving, percentages, number, area and volume	Gradient Intersect Linear Quadratic Arithmetic Geometric	To be able the find the nth term for a simple quadratic sequence Functional skills level 2 past paper practice	To be able to find the equation of a line in the form y=mx +c Functional skills level 1 past papers practice	To be able to find the next term of a sequence and write down a rule Functional skills level 1 past papers practice	Work on sequences in Key Stage 3 provides the foundation for exploring quadratic sequences and simple geometric progressions in Key Stage 4.
Week 23	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Functional skills level 1 and level 2 Revision and past papers. Students to sit Functional skills exam	Skills to use in problem solving, percentages, number, area and volume		Functional skills level 2 past paper practice	Functional skills level 1 past papers practice	Functional skills level 1 past papers practice	

YEAR 9 Maths TERM 2

Rationale:

Week 24	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Shape, space and measure 2	Substitution into formulae Use of Pi Knowing and using formulae	Area Perimeter Circumference Radius, Diameter Chord, Sector Tangent, Segment	To be able to find the Area and Circumference of a Circle To be able to find the Area and Circumference in terms of Pi	To be able to find the Area of Compound Shapes made up of Rectangles and Triangles To be able to label key parts of a circle	To be able to find the Area of Compound Shapes made up of Rectangles and Triangles To be able to label key parts of a circle	Earlier in Key Stage 3, when calculating perimeters, students will likely have already used the properties of parallelograms, isosceles triangles and trapezia, as well as nonstandard shapes; and reasoned mathematically to deduce missing information. They will now build on this to learn about the perimeter (circumference) of circles and that the ratio between circumference and diameter is the same for all circles. When calculating areas, this will include students using their knowledge of area of circles and the surface area of prisms.
Week 25	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape, space and measure 2	Substitution into formulae Use of Pi Knowing and using formulae	Area Perimeter Circumference Radius, Diameter Chord, Sector Tangent, Segment	To be able to find the Volume and Surface Area of prisms including Cylinders To be able to find Arc Length and Sector Area	To be able to find the Area and Circumference of a Circle To be able to find the Area and Circumference in terms of Pi	To be able to find the Area and Circumference of a Circle To be able to find the Area and Circumference in terms of Pi	When circles and the ratio π are introduced, a key awareness is that, no matter how large or small the circle, the ratio between its circumference and its diameter is always the same. This is the classic multiplicative relationship within every circle, which is encapsulated by the formula $C = \pi d$ or $\pi = C$. Students will be familiar with finding the volume of cubes and cuboids from Key Stage 2 and will have used the formula Volume = width × height × length (or similar) to calculate volumes. At Key Stage 3, these ideas are developed to include the volume of prisms more generally.

YEAR 9 Maths TERM 2

Rationale:

Week 26	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Revision for Summer Progress Tests	Scheme of work covered including prior knowledge from year 7 and year 8 key skills		Higher content Revision for progress tests.	Revision for progress tests. All topics with some stretch	Revision for progress tests. All topics with emphasis on Number and calculator skills	

YEAR 9 Maths TERM 2

Rationale:

Week 27	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Progress Tests Non- Calculator and calculator papers	Scheme of work covered including prior knowledge from year 7 and year 8 key skills		Progress tests	Progress tests	Progress tests	
Week 28	**Topic**	**Prior Learning**	**Key vocabulary/ Grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Shape, space and measure 2	Substitution into formulae Use of Pi Knowing and using formulae Estimate volume (for example, using 1 cm³ blocks to build cuboids [including cubes]) and capacity (for example, using water).	Area Perimeter Circumference Radius, Diameter Chord, Sector Tangent, Segment	To be able to find the Surface Area and Volume of a Cone/Sphere To be able to Solve Problems Involving Similar Shapes including with Area and	To be able to find the Volume and Surface Area of prisms including Cylinders	To be able to find the Volume and Surface Area of prisms including Cylinder	Although a cylinder is not strictly a prism (a prism has a polygonal uniform cross-section), it is important for students to appreciate that it has the same structure as a prism (with the uniform cross-section being a circle) and its volume can be calculated in a similar way. Thereby, students will see the formula $v = \pi r$ $2h$ as an example of a general geometrical property of cylinders that has meaning, and not just a collection of symbols to be memorised.

YEAR 9 Maths TERM 3

Rationale:

Week 29	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 3	Knowledge of place value of digits Previous work on percentages. Index laws Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate Indices Bounds	To be able to use all 4 Index Laws To convert numbers to Standard Form(Big and Small) Calculate using Standard Form	To be able to convert between Fraction, Decimals and Percentages To be able to calculate four operations with fractions including Mixed Numbers	To be able to convert between Fraction, Decimals and Percentages To find a fraction of a quantity and percentages without a calculator.	In Year 9, students will further develop their understanding of the different ways that numbers can be expressed and will become more proficient in changing from one form to another. This will develop their awareness that different representations of the same number can reveal something of its structure and so can be used to compare and order numbers with ease. When thinking about very large and very small numbers, working with standard form notation will enable students to develop further their understanding of multiplication and division by powers of ten. Percentages, fractions, proportionality and ratio can all be considered as contexts in which multiplicative relationships are used and explored. Maintaining consistency with the vocabulary and imagery used in all contexts will support students in their understanding that the same mathematical principles are involved.

YEAR 9 Maths TERM 3

Rationale:

Week 30	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 3	Knowledge of place value of digits Previous work on percentages. Index laws	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate Indices Bounds	Calculate using Standard Form Upper and Lower bounds (limits of accuracy)	To be able to calculate four operations with fractions including Mixed Numbers To find a fraction of a quantity and percentages without a calculator. To be able to calculate Percentage Change	To be able to calculate four operations with fractions including Mixed Numbers	Instead, they should consider each calculation as a whole in order to identify relationships and possible known facts, so reducing the amount of calculation necessary. Rather than focus on the final result of each calculation, it will be more helpful to emphasise the laws of arithmetic that have been used to simplify the calculations
Week 31	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Number 3	Knowledge of place value of digits Previous work on percentages. Square numbers and roots. Index laws	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate Indices Bounds	Apply the rules of Fractional and Negative Powers To be able to Simplify Surds	To use a calculator find percentage increases and decreases introducing the use of multipliers.	To use a calculator find percentage increases and decreases introducing the use of multipliers.	A key awareness for students here is that some calculations can be simplified. Students should not automatically reach for their calculator.

YEAR 9 Maths TERM 3

Rationale:

Week 32	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Number 3	Knowledge of place value of digits Previous work on percentages. Square numbers and roots Index laws	Reciprocal Recurring Terminating Numerator Denominator Improper Estimate Indices Bounds	To be able to Calculate and Manipulate Surds. Including Rationalising the denominator and expanding brackets	To be able to calculate Percentage Change To calculate percentage increases and decreases using a multiplier	To be able to calculate Percentage Change	A key awareness for students here is that some calculations can be simplified. Students should not automatically reach for their calculator.
Week 33	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**
	Data Handling 2	Knowledge of probability scale Language of probability Fractions, decimals and percentages Multiplying fractions. "AND" "OR" rules	Outcome Experimental Relative frequency Mutually exclusive Independent Conditional Element Universal set Union	To be able to use a Venn diagram. To investigate what happens when combining events by looking at sample space diagrams. Including conditional events.	To be able to calculate probability of events happening and not happening using a scale between 0-1. To be able to use draw a Venn diagram using correct notation.	To be able to calculate probability using a scale between 0-1. To find the probability of an event not happening. .	Students need to appreciate that predictions of likelihood do not predict individual events. Rather, experimental data will tend towards this theoretical value. For example, knowing that flipping a head or a tail on a coin has an even chance of occurring does not mean these outcomes will occur an equal number of times.

YEAR 9 Maths Term 1

Rationale:

Week 34	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Data Handling 2	Knowledge of probability scale Language of probability Fractions, decimals and percentages	Outcome Experimental Relative frequency Mutually exclusive Independent Conditional Element Universal set Union	To be able to use tree diagrams to show the probability of multiple events happening	To be able to use a Venn diagram. To investigate what happens when combining events by looking at sample space diagrams.	To be able to explain mutually exclusive events. To be able to calculate expectation of an event happening	
Week 35	**Topic**	**Prior Learning**	**Key vocabulary/grammar**	**High**	**Mid**	**Low**	**National Curriculum Statement**

Week 36

Enrichment week: students follow an alternative timetable to participate in cross- curricular activities to enhance their learning. This may include subject specific trips, careers, sports, Finance to widen their horizons.

YEAR 9 Maths TERM 3

Rationale:

Week 37 - 38	Topic	Prior Learning	Key vocabulary/grammar	High	Mid	Low	National Curriculum Statement
	Revision and extension topics from the Scheme of work that have been identified as areas for consolidation or stretch. Teacher discretion used based on individual groups	Scheme of work for year 9		Consolidate/ extend higher topics in preparation for Key Stage 4.	Consolidate topics for preparation for Key stage 4.	Refresh number skills and prepare for Key stage 4 topics	
Week 39							
	Projects – to facilitate group work and enable them to work out and solve problems in a real life context	Key skills from the scheme of work. Number – addition, subtraction and multiplication. Percentages Probability		Independent learning	Independent learning with some guidance	Independent learning with prompts and extra teacher support	