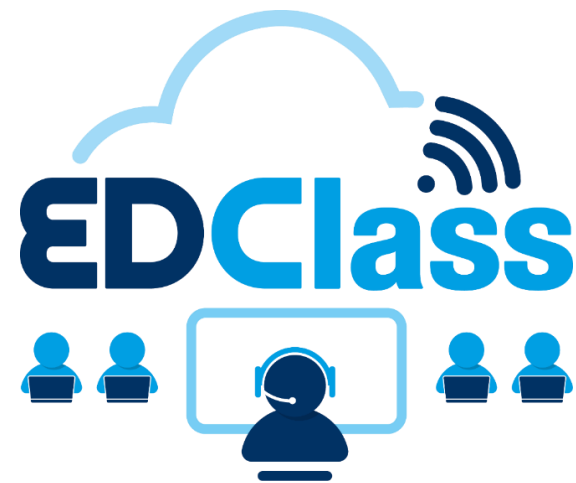# EDClass Maths Curriculum and Scheme of work

www.edclass.com

MATHS

Objectives within this scheme of work	Learners will demonstrate an understanding of the methodologies found within 'Number', 'Algebra', 'Geometry and Measures', 'Ratio and Proportion' and 'Probability and Statistics'. Learners will acquire resilience, confidence and independence while learning at their own pace. Mistakes are seen as valuable learning opportunities and are all part of the learning process. Learners will develop mathematical fluency, be able to reason mathematically and apply their knowledge in order to solve problems.

NUMBER	ALGEBRA	GEOMETRY AND MEASURE	RATIO AND PROPORTION	PROBABILITY AND STATISTICS
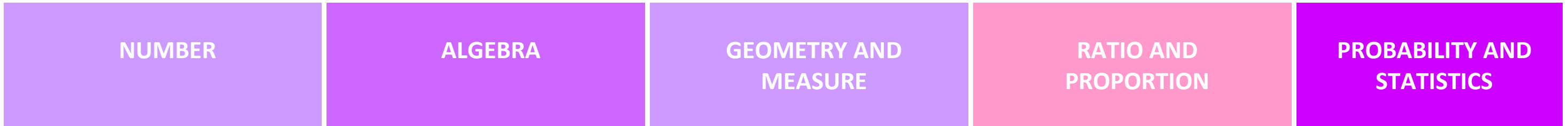
EDClass

Maths Assessment, Curriculum and Delivery Process

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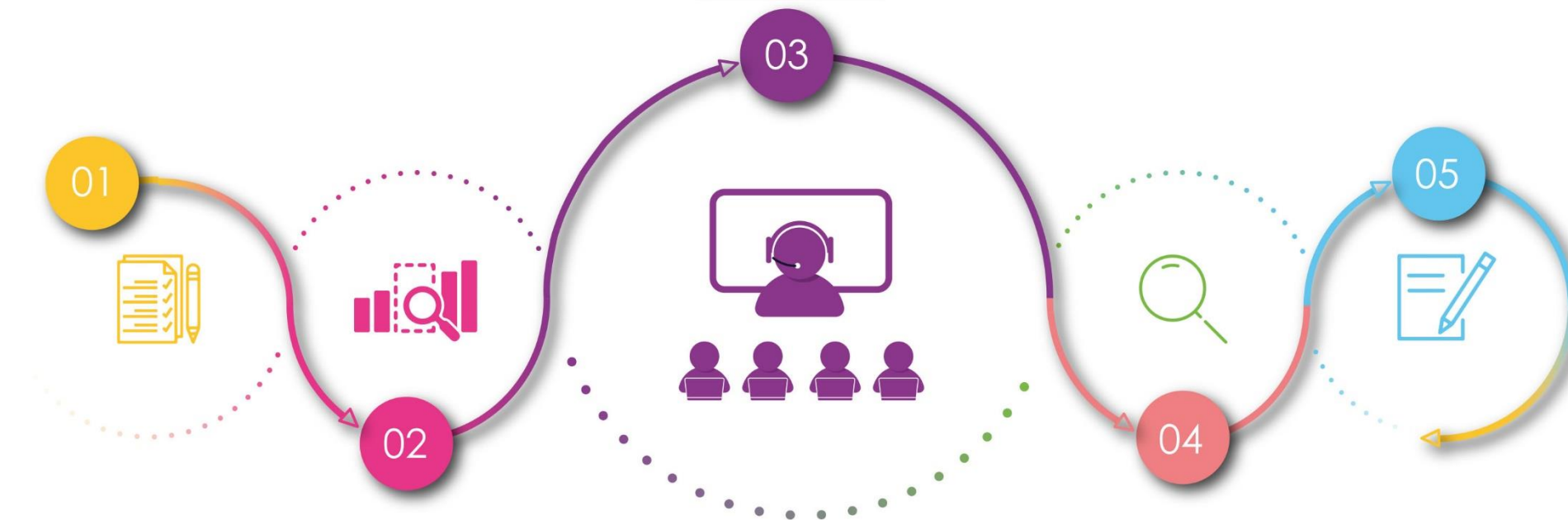
Initial Assessment	Gap Analysis	Teaching and Learning	Continuous Assessment	Track Impact
The purpose of the initial assessment is to determine the learner's starting point and evaluate their current level of understanding.	After conducting the initial assessment, we present the results in a R.A.G table to highlight gaps in knowledge. This helps us create a personalised learning pathway tailored to the academic needs of the learner.	Learners engage with digital lessons that evaluate their understanding of topics with the Maths curriculum, alongside video-based lessons. They can interact with qualified teachers live, while accessing the aforementioned content. The teachers also provide live lessons based on the curriculum and address any skill gaps within the learner population.	Our lessons incorporate a series of questions that are placed to assess the learners' knowledge and understanding throughout their learning experience. The answers are monitored and documented, providing the commissioner with a clear overview of the learners' engagement and progress.	After completing the learning pathway, a second assessment is conducted to assess whether the gaps have been filled, if further intervention is required, or if the learner is prepared to advance to the next stage of learning. This cycle is then repeated to enable learners to progress further in the Maths curriculum or to address any remaining knowledge gaps.

Experiences that pupils will gain through our Maths KS3 and KS4 curriculum, lessons and resources

Experiences in EDClass	The principle of EDClass is that we are a re-engagement and intervention provision working in direct partnership with the commissioners to provide a safe, positive and secure learning environment that breaks any barrier to their learning. Our teaching and learning team give pupils cross-curriculum delivery and positive experiences in linguistic, mathematical, scientific, technological, human and social, physical, aesthetic and creative education. Students can also engage in general chat with our teachers to create a relaxed atmosphere whilst also gaining subject-specific support.
Diagnostic assessments	Diagnostic assessments inform personalised pathways of lessons for learners. They also inform the live lessons being delivered.
Language development / linguistics	Language development/linguistics is recognised as necessary for cognitive development and reasoning. Learners' linguistic development is part of every subject and is the responsibility of all teachers and learners.
How EDClass gives pupils experience in mathematical education	Resilience in numeracy, problem-solving and mathematics is encouraged by breaking tasks down into logical, sequenced, real-world steps. Steps may include processes of measuring, data handling, recording time and handling money. Barriers concerning the accessibility of maths are acknowledged and anticipated by explaining different methodologies and approaches to promote a positive maths culture and demonstrate an appreciation of its importance. Methodologies and techniques are modelled, demonstrated and reinforced through multiple, deliberate and specific examples in all lesson types. Learners' application of methodologies gives opportunity to address misconceptions, develop confidence and progress towards independent work. Lessons and lesson sets are arranged for learners to experience progression in a concept from the concrete, to the pictorial, to the abstract (CPA approach). Such structures lend themselves to mastery of mathematical concepts. The curriculum links prior knowledge to new applications that are revisited, especially in terms of exam preparation and technique. Learners experience cross-curricular links between maths, science, technology and humanities, where applicable. A visualiser is used to aid subject-specific maths support to make visuals and highlight the importance of demonstrating clear and logical methods when solving problems. Learners experience scaffolded learning opportunities to develop confidence and independence. Mistakes are seen as valuable learning opportunities, both academically and as part of personal growth.
How EDClass gives pupils experience in human and social education	Teachers will gain knowledge of reasons why learners are using an AP platform as well as SEND needs and/or vulnerabilities and check on their welfare and well-being accordingly. Learners can expect stable routines such as an early greeting followed by opportunities to express any worries/concerns regarding well-being, mental health etc., as well as academic assistance. Teachers will gauge a learner's emotional readiness for learning and how they can assist/provide guidance Learners are encouraged to be positive and polite. Learners are encouraged to be reflective, considering any implications of their actions regarding behaviour and choices on others and the environment around them. This supports a successful reintegration into a school environment and a positive influence in the wider community. Learners are encouraged to appreciate the learning style that online AP allows: working independently, at their own pace, outside the influence of other influences/an audience of peers. Learners can experience goal setting and achievements celebrated by teachers, including the little wins. Learners are encouraged to consider careers, apprenticeships, the guidance they should seek and routes into further education. Our curriculum covers British values, spiritual, moral, cultural and social education. In addition to this, it covers personal, social, health and economic education (PSHE), behaviour repair, relationships and being part of a group/community/citizenship. Feedback and subject-specific support are implemented with a growth mindset and learners are encouraged to adopt a positive approach to their learning. Learners are encouraged to reflect on their learning and respond to feedback to maximise their outcomes on their learning journey and to be aware of where they
How EDClass gives pupils experience in aesthetic and creative education	Creative hobbies and interests are encouraged and promoted, including group activities that can provide social interaction outside the classroom environment. Teachers often share their own experiences beyond the virtual classroom, not only for pleasure, but to promote well-being. Learners' artistic creations are celebrated by teachers. Learners often share their projects on camera or by email, which is encouraged. Virtual whiteboards can be used as a creative hook to motivate learners. English lesson sets cover how a writer creates effects and are guided on how to explain their methods. Learners are encouraged, through feedback, to take pride in their own work and its presentation.
How EDClass gives pupils experience in technological education	Learners' initial experience of the platform is a check that they understand the functionality, how to access learning, how to communicate with teachers and what to do should they feel unsafe in their location. Discussions will take place regarding diagnostic work to personalise learning pathways set after identifying strengths and areas to improve. Learners are informed that they can personalise the appearance of their lessons in line with potential SEND needs (fonts, colours, text size). Online safety (e-safety) will be discussed and reported should learners disclose issues around social media bullying/cyberbullying etc. They are also assigned the online safety lesson pathway or the behavioural pathway (visit here). Learners can be set lessons that directly relate to the subject of ICT which encourages digital fluency. Lessons and lesson sets cover online safety and behaviour. Learners are encouraged to inform teachers of any technical issues so that they can be resolved and learn themselves how to troubleshoot.

NUMBER

The EDClass teaching staff will use a combination of professional judgement, diagnostic assessment, the information provided by school staff and SLT through the admissions process and learner feedback to create a personalised, flexible and challenging learning pathway that offers eLearning, video clips, recorded sessions and live learning lessons for all learners regarding their mathematical needs found within the number strand of maths.

Place Value	Rounding	Addition and Subtraction	Multiply and Divide by Powers of 10	Multiplication and Division
Order of Operations and estimating	Factors and Multiples	Index Notation	Negative Numbers	Introduction to Fractions
Equivalent Fractions	Calculations with Fractions	Fraction, Decimal and Percentage Conversion	Using a Calculator	Percentages
Laws of Indices	Surds	Product of Prime Factors	Standard Form	Financial Maths

NUMBER

KS3 Number Objectives	To consolidate numerical and mathematical capability from Key Stage 2 and extend understanding of the number system and place value to include decimals, fractions, powers and roots. To select and use appropriate calculation strategies to solve increasingly complex problems. To use language and properties precisely to analyse numbers. To move freely between different numerical and diagrammatic representations [for example, equivalent fractions, fractions and decimals]. To make and test conjectures about patterns and relationships; look for proofs or counter examples. To begin to reason deductively in number. To interpret when the structure of a numerical problem requires additive or multiplicative reasoning. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics. To begin to model situations mathematically and express the results using a range of formal mathematical representations. To select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.
KS4 Number Objectives	To consolidate numerical and mathematical capability from Key Stage 3 and extend understanding of the number system to include powers, roots {and fractional indices}. To select and use appropriate calculation strategies to solve increasingly complex problems, including exact calculations involving multiples of π {and surds}, use of standard form and application and interpretation of limits of accuracy. To move freely between different numerical representations. To use mathematical language and properties precisely. To make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples. To reason deductively in number. To interpret when the structure of a numerical problem requires additive or multiplicative. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial contexts. To make and use connections between different parts of mathematics to solve problems. To model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how solutions may have been affected by any modelling assumptions. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret solutions in the context of the given problem.

Place Value

Lesson Set Objectives			To extend understanding of the number system and place value. To understand and use place value for decimals, measures and integers of any size. To order positive integers, decimals and fractions, using the number line as a model for ordering of the real numbers. To use the symbols =, ≠, <, >, ≤, ≥.		
Previous skills, themes or concepts	Key Stage 2 Programme of Study: Number and Place Value	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Place Value' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Place Value'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Place Value'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Place Value.'

This lesson set includes the following lessons:	Lesson Objectives
☐ Writing a Number is Words and Figures	☐ To use place value to write a number in words and figures.
☐ Naming Decimals (Fraction and Decimal Equivalents)	☐ To use place value to name decimals and fraction equivalents.
☐ The Value of the Underlined Digit	☐ To identify the value of a digit in a given place.
☐ Using Inequality Symbols	☐ To use symbols (=, ≠, <, >, ≤, ≥) to order positive and negative integers with decimals and fractions.
☐ Ordering Integers	☐ To order positive and negative integers.
☐ Ordering Decimals	☐ To order decimals.

Rounding

Lesson Set Objectives			To round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]. To use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x ≤ b$. To apply and interpret limits of accuracy when rounding or truncating, {including upper and lower bounds}.		
Previous skills, themes or concepts	Place Value	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Rounding' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Rounding'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Rounding'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Rounding'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Rounding to the Nearest 10	☐ To round numbers and measure to the nearest 10.
☐ Rounding to the Nearest 100	☐ To round numbers and measure to the nearest 100.
☐ Rounding to the Nearest Integer	☐ To round numbers to the nearest integer.
☐ Rounding to 1 Decimal Place	☐ To round numbers to one decimal place.
☐ Rounding to 2 Decimal Places	☐ To round numbers to two decimal places.
☐ Rounding to 3 Decimal Places	☐ To round a number to three decimal places.
☐ Rounding to 1 Significant Figure	☐ To round numbers to one significant figure.
☐ Rounding to 2 Significant Figures	☐ To round numbers to two significant figures.
☐ Rounding to 3 Significant Figures	☐ To round a number to three significant figures.
☐ Rounding Mix	☐ To round a number to the specified degree of accuracy.
☐ Maximum and Minimum Values	☐ To identify maximum and minimum values when given an amount rounded to a specified degree of accuracy.
☐ Upper and Lower Bounds	☐ To identify upper and lower bounds values when given an amount rounded to a specified degree of accuracy and explain the difference between bounds and maximum and minimum values.
☐ Error Intervals	☐ To identify upper and lower bounds values when given an amount rounded to a specified degree of accuracy and write these as an error interval.
☐ Upper and Lower Bound Calculations	☐ To use the correct bounds in calculations.

| | Upper and Lower Bounds Calculations - Suitable Degree of Accuracy | | To calculate final answers to a suitable degree of accuracy by following an analysis of upper and lower bounds. |

Addition and Subtraction

Lesson Set Objectives		To select and use appropriate calculation strategies to solve increasingly complex problems. To use the 4 operations, including formal written methods, applied to integers, decimals.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Addition and Subtraction	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Addition and Subtraction' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Addition and Subtraction'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Addition and Subtraction'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Addition and Subtraction'.

This lesson set includes the following lessons:		Lesson Objectives
	Commutativity		To explain the commutative property of addition and multiplication.
	Column Method for Addition		To calculate the sum of one or more integers using column addition.
	Adding Decimals		To calculate the sum of one or more decimals using column addition - including adding integers and decimals and decimals with a different number of decimal places.
	Column Method for Subtraction		To subtract one or more integers using column subtraction.
	Subtracting Decimals		To subtract one or more decimals using column subtraction - including subtracting integers and decimals and decimals with a different number of decimal places.
	Addition and Subtraction with Decimals		To add and subtract one or more decimals using column methods for addition and subtraction - including integers and decimals with a different number of decimal places.

Multiply and Divide by Powers of 10

Lesson Set Objectives		To select and use appropriate calculation strategies to solve increasingly complex problems. To understand and use place value for decimals, measures and integers of any size. To use the 4 operations, including formal written methods, applied to integers, decimals.

Previous skills, themes or concepts	Place Value	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Multiply and Divide by Powers of 10' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Multiply and Divide by Powers of 10'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Multiply and Divide by Powers of 10'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Multiply and Divide by Powers of 10'.

This lesson set includes the following lessons:		Lesson Objectives
	Multiplying Whole Numbers by Powers of 10		To multiply whole numbers by the powers of 10.
	Dividing Whole Numbers by Powers of 10		To divide whole numbers by the powers of 10.
	Multiplying Decimals by Powers of 10		To multiply decimals by the powers of 10.
	Dividing Decimals by Powers of 10		To divide decimals by the powers of 10.
	Related Calculations		To use calculations to compute related calculations.

Multiplication and Division

Lesson Set Objectives	To select and use appropriate calculation strategies to solve increasingly complex problems.
	To use the 4 operations, including formal written methods, applied to integers, decimals. To recognise and use relationships between operations including inverse operations.

| Previous skills, themes or concepts | Key Stage 2 Programme of Study: Multiplication and Division

Multiply and Divide by Powers of 10 | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Multiplication and Division' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Multiplication and Division'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Multiplication and Division'
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Multiplication and Division'. |

This lesson set includes the following lessons:	Lesson Objectives
☐ Family of Four	☐ To write a multiplication and a division calculation in 4 different ways.
☐ Multiplying by Considering Factors	☐ To multiply numbers by considering factors.
☐ Grid Multiplication	☐ To use the grid method for multiplication.
☐ Long Multiplication	☐ To use a formal written method for long multiplication.
☐ Lattice Method	☐ To multiply using the lattice method.
☐ Multiplication with Decimals	☐ To multiply with decimals.
☐ Short Division (Integer Answers)	☐ To use short division where the quotient is an integer.
☐ Long Division (Integer Answers)	☐ To use long division where the quotient is an integer.
☐ Short Division (Decimal Answers)	☐ To use short division where the quotient is a decimal.
☐ Division with Decimals	☐ To use related calculations and knowledge of multiplying and dividing by powers of 10, to divide with decimals.
☐ Multiplication and Division in Context	☐ To answer worded questions involving multiplication and division.

Order of Operations and Estimating

Lesson Set Objectives	To use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals.

| Previous skills, themes or concepts | Addition and Subtraction

Multiplication and Division

Rounding | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of the 'Order of Operations and Estimating' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of the 'Order of Operations and Estimating'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of the 'Order of Operations and Estimating'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for the 'Order of Operations and Estimating'. |

This lesson set includes the following lessons:	Lesson Objectives
☐ Order of Operations	☐ To state the correct order in which to perform the four operations. To evaluate expressions with more than two operations and write missing numbers or symbols into equations to make them true.
☐ Rounding to 1 Significant Figure	☐ To round numbers to 1 significant figure.
☐ Estimating	☐ To estimate the answers to calculations by rounding to 1 significant figure.

Factors and Multiples

Lesson Set Objectives	To use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple.

| Previous skills, themes or concepts | Key Stage 2 Programme of Study: Number Facts

Multiplication and Division | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Factors and Multiples' to test and evaluate a learner's prior learning and knowledge gaps.
Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Factors and Multiples'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Factors and Multiples'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Factors and Multiples'. |

This lesson set includes the following lessons:	Lesson Objectives
☐ Odd and Even Numbers	☐ To identify a number as even or odd by looking at its one's digit.
☐ Multiples	☐ To determine whether a number is a multiple of another number.
☐ Lowest Common Multiple (Listing)	☐ To find the lowest common multiple of two numbers, more than two numbers and to apply this concept to solve word problems.
☐ Factors	☐ To determine whether a number is a factor of another number, to explain the relationship between factors and multiples and to list all the factors of a number.
☐ Common Factors	☐ To identify common factors between two numbers and state when this would be useful.
☐ Highest Common Factor (Listing)	☐ To find the greatest common factor of two numbers, more than two numbers and to apply this concept to solve word problems.
☐ Prime Numbers	☐ To define a prime number as a number greater than 1 with exactly two factors. To define a composite number as a number greater than 1 with more than two factors. To decide if a number is prime or composite by using models and listing factors.

Index Notation

Lesson Set Objectives	To use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations.

| Previous skills, themes or concepts | Multiplication and Division | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Index Notation' to test and evaluate a learner's prior learning and knowledge gaps.
Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Index Notation'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Index Notation'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Index Notation'. |

This lesson set includes the following lessons:	Lesson Objectives
☐ Square Numbers	☐ To recognise square numbers in arrays, write powers to express square numbers and state the value of square numbers up to 12 squared.
☐ Cube Numbers	☐ To model cube numbers using cubes, write powers to express cube numbers and state the value of cube numbers up to 10 cubed.
☐ Roots	☐ To recognise that taking the square root of a number is the inverse operation of squaring that number, find the square root of a perfect square and to take the cube root of a perfect cube.
☐ Index Notation (Calculating)	☐ To recognise that a power is a repeated multiplication. To identify the base and exponent of a power. To write a power in expanded form (repeated multiplication) and vice versa. To evaluate powers of integers and rational numbers with positive integer exponents. To solve real-world problems using powers and exponents.
☐ Index Notation as Multiplication	☐ To express powers of numbers as multiplication. To express multiplication as a power.

Negative Numbers

Lesson Set Objectives	To order positive and negative integers, decimals and fractions, using the number line as a model for ordering of the real numbers. To use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative.			
Previous skills, themes or concepts	Place Value Addition and Subtraction Multiplication and Division	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Negative Numbers' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Negative Numbers'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Negative Numbers'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Negative Numbers'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Ordering Negative Numbers	☐ To represent positive and negative numbers on number line.
☐ Negative Numbers in Real Life	☐ To identify real-world applications for negative numbers.
☐ Addition and Subtraction with Negative Numbers	☐ To add a negative number to a positive number. To subtract a positive number from a positive or negative number. To calculate differences across zero. To solve word problems using negative numbers in real-life contexts.
☐ Multiplication with Negative Numbers	☐ To calculate the product of negative and positive integers.
☐ Division with Negative Numbers	☐ To divide with positive and negative integers.

Introduction to Fractions

Lesson Set Objectives	To recall understanding of fractions from Key Stage 2.			
Previous skills, themes or concepts	Key Stage 2 Programme of Study: Fractions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of an 'Introduction to Fractions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of an 'Introduction to Fractions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of an 'Introduction to Fractions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for an 'Introduction to Fractions'.

This lesson set includes the following lessons:	Lesson Objectives
☐ What is a Fraction?	☐ To recognise the denominator represents the number of equal parts in total and that the numerator represents the number of parts.
☐ Making a Whole	☐ To add to a fraction to make 1.
☐ Subtracting from a Whole	☐ To subtract a fraction from 1.

Equivalent Fractions

Lesson Set Objectives	To express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1. To move freely between different numerical, algebraic, graphical and diagrammatic representations [equivalent fractions].			
Previous skills, themes or concepts	Key Stage 2 Programme of Study: Fractions Introduction to Fractions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Equivalent Fractions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Equivalent Fractions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Equivalent Fractions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Equivalent Fractions'.

This lesson set includes the following lessons:		Lesson Objectives	
☐	Equivalent Fractions	☐	To identify and generate equivalent fractions.
☐	Finding a Common Denominator	☐	To find a common denominator of two proper fractions by using models or listing multiples and use this to write both fractions over the same denominator.
☐	Simplifying Fractions	☐	To define a fraction in its simplest form is when the only common factor is 1. To identify fractions in their simplest form. To find a proper fraction in its simplest form by dividing the numerator and denominator by one or more common factors.
☐	Quantities as Fractions (Proper Fractions)	☐	To recognise that an improper fraction is greater than 1. To express quantities as fractions.
☐	Types of Fractions (Mixed Numbers and Improper Fractions)	☐	To recognise that a mixed number is made up of a whole number and a fraction. To recognise that an improper fraction is a fraction greater than or equal to 1.
☐	Integers as Fractions	☐	To write integers as fractions.
☐	Converting Mixed Numbers to Improper Fractions	☐	To convert a mixed number to an improper fraction.
☐	Convert Improper Fractions to Mixed Numbers	☐	To identify the number of wholes in an improper fraction. To use models to convert improper fractions to mixed numbers. To convert improper fractions to mixed numbers using an abstract method without models. To solve word problems that involve converting improper fractions to mixed numbers.
☐	Quantities as Fractions (Improper Fractions)	☐	To recognise that an improper fraction is a fraction that is greater than 1. To express quantities as fractions.
☐	Comparing Fractions	☐	To explain why fractions, need to have the same denominator or numerator to be comparable.
☐	Ordering Fractions	☐	To explain why fractions, need to have the same denominator or numerator when ordering them.

Calculations with Fractions

Lesson Set Objectives	To use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers. To interpret fractions as operators.				
Previous skills, themes or concepts	Key Stage 2 Programme of Study: Fractions Equivalent Fractions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Calculations with Fractions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Calculations with Fractions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Calculations with Fractions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Calculations with Fractions'.

This lesson set includes the following lessons:		Lesson Objectives	
☐	Adding and Subtracting Fractions with a Common Denominator	☐	To add and subtract proper fractions with like denominators and simplify the result where necessary.
☐	Adding and Subtracting Fractions Changing One Denominator	☐	To add and subtract proper fractions with unlike denominators and simplify the result where necessary. To solve word problems involving addition and subtraction of fractions.
☐	Adding and Subtracting Fractions Changing Both Denominators	☐	To add and subtract proper fractions with unlike denominators and simplify the result where necessary. To solve word problems involving addition and subtraction of fractions.
☐	Adding and Subtracting Mixed Numbers	☐	To add and subtract a proper fraction and a mixed number. To subtract a proper fraction from a mixed number. To add two mixed numbers with like denominators To subtract mixed numbers with like denominators. To add two mixed numbers with unlike denominators. To subtract mixed numbers with unlike denominators. To solve problems involving adding and subtracting mixed numbers.
☐	Fraction of an Amount	☐	To calculate fractions of an amount.
☐	Finding the Original when Given the Fraction of an Amount	☐	To calculate an original amount when given a fraction of an amount.
☐	Multiplying Fractions	☐	To multiply two fractions together by multiplying the numerators and denominators and simplify the answer where necessary.
☐	Multiplying Mixed Numbers	☐	To multiply mixed numbers.
☐	Reciprocals	☐	To explain what the word reciprocal means and find reciprocals of integers and fractions.
☐	Dividing with Fractions	☐	To divide fractions by finding the reciprocal and multiplying. To solve problems involving the division of two fractions.
☐	Dividing with Mixed Numbers	☐	To divide mixed numbers.

Fraction, Decimal and Percentage Conversion

Lesson Set Objectives	To work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and $^7/_2$ or 0.375 and $^3/_8$).				
Previous skills, themes or concepts	Key Stage 2 Programme of Study: Fractions Equivalent Fractions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Fraction, Decimal and Percentage Conversion' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Fraction, Decimal and Percentage Conversion'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Fraction, Decimal and Percentage Conversion'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Fraction, Decimal and Percentage Conversion'.

This lesson set includes the following lessons:	Lesson Objectives
▪ Converting Decimals to Fractions	▪ To convert decimals to fractions.
▪ Converting Decimals to Percentages	▪ To convert decimals to percentages.
▪ Converting Fractions to Decimals	▪ To convert fractions to decimals.
▪ Converting Fractions to Percentages	▪ To convert fractions to percentages.
▪ Converting Percentages to Decimals and Fractions	▪ To convert percentages to decimals and vice versa.
▪ Amounts as Percentages	▪ To express one quantity as a percentage of another, by making sure that both quantities are expressed in the same units.
▪ Compare Quantities Using Percentages	▪ To compare quantities using percentages.
▪ Ordering Fractions, Decimals and Percentages	▪ To order fractions, decimals and percentages by considering percentage equivalents.

Using a Calculator

Lesson Set Objectives	To use a calculator and other technologies to calculate results accurately and then interpret them appropriately.				
Previous skills, themes or concepts	Rounding Order of Operations and Estimating	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Using a Calculator' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Using a Calculator'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Using a Calculator'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Using a Calculator'.

This lesson set includes the following lessons:	Lesson Objectives
▪ Navigating a Calculator	▪ To use a calculator including using the shift function.
▪ Exam Questions	▪ To use a calculator accurately and write down the full calculator display before rounding to a given degree of accuracy.

Percentages

Lesson Set Objectives	To define percentage as 'number of parts per hundred'. To interpret percentages and percentage changes as a fraction or a decimal and interpret these multiplicatively. To express 1 quantity as a percentage of another. To compare 2 quantities using percentages, and to work with percentages greater than 100%. To interpret percentages as operators. To solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics.				
Previous skills, themes or concepts	Fraction, Decimal and Percentage Conversion Using a Calculator	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Percentages' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Percentages'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Percentages'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Percentages'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Percentages of Amounts (Non-Calculator)	☐ To calculate percentages of an amount.
☐ Percentage Increase (Non-Calculator)	☐ To calculate percentage increase without a calculator.
☐ Percentage Decrease (Non-Calculator)	☐ To calculate percentage decrease without a calculator.
☐ Multipliers	☐ To identify multipliers for calculating a percentage of an amount, including percentage increase and decrease.
☐ Percentages of Amounts (Using Multipliers)	☐ To calculate the percentage of an amount using multipliers.
☐ Reverse Percentages	☐ To work out the original value after a percentage change.
☐ Percentage Change	☐ To calculate a percentage increase or decrease from one quantity to another. To solve word problems where a percentage change is included in the context.
☐ Reverse Percentages (Using Multipliers)	☐ To work out the original value after a percentage change using multipliers.
☐ Percentage Increase and Decrease (Using Multipliers)	☐ To calculate percentage increase and decrease, using multipliers.

Laws of Indices

Lesson Set Objectives	To calculate with roots, and with integer {and fractional} indices.				
Previous skills, themes or concepts	Index Notation	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Laws of Indices' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Laws of Indices'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Laws of Indices'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Laws of Indices'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Multiplying, Dividing, Brackets and Mixed Laws	☐ To identify and apply the laws of indices.
☐ Negative Indices	☐ To apply the laws of indices for negative integer exponents.
☐ Further Application of Mixed Laws	☐ To identify and apply the laws of indices.
☐ Unitary Fractional Indices	☐ To apply the laws of indices for unitary fractional exponents.
☐ Negative Unitary Fractional Indices	☐ To apply the laws of indices for negative unitary fractional exponents.
☐ Fractional Indices	☐ To apply the laws of indices for fractional exponents including where the exponent is negative.
☐ Solving Equations	☐ To apply the laws of indices further in problem solving questions including solving equations.

Surds

Lesson Set Objectives	To appreciate the infinite nature of the sets of integers, real and rational numbers. To estimate powers and roots of any given positive number. To calculate exactly with surds and simplify surd expressions involving squares [for example, √12 = √ (4 × 3) = √4 × √3 = 2√3] and rationalise denominators.

Previous skills, themes or concepts	Factors and Multiples Expanding and Factorising Index Notation Laws of Indices	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Surds' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Surds'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Surds'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Surds'.

This lesson set includes the following lessons:

Lesson Objectives

- Introduction to Surds
- Approximating Roots
- Addition and Subtraction of Surds (Same Radicand)
- Addition and Subtraction of Surds (Different Radicands)
- Surds and Perimeters

- Simplifying Surds
- Addition and Subtraction of Surds (Simplifying Required)
- Multiplication with Surds
- Division with Surds
- Expanding Brackets with Surds
- Rationalising the Denominator

- To explain the meaning of an irrational number.
- To estimate a square root that is not a perfect square.
- To add and subtract surds by simplifying to a single term (similarly to collecting like terms algebraically).
- To add and subtract surds by simplifying to one or more terms (similarly to collecting like terms algebraically) e.g. $3\sqrt{7} + 2\sqrt{3} + 5\sqrt{7} = 8\sqrt{7} + 2\sqrt{3}$
- To add and subtract surds by simplifying to one or more terms (similarly to collecting like terms algebraically) e.g. $3\sqrt{7} + 2\sqrt{3} + 5\sqrt{7} = 8\sqrt{7} + 2\sqrt{3}$ in context of perimeter.
- To simplify surds using knowledge of square factors.
- To add and subtract surds by simplifying to a single term by applying knowledge of simplifying surds.
- To use the property $\sqrt{ab} = \sqrt{a}\sqrt{b}$ to simplify the multiplication of square roots.
- To use the property $\sqrt{(a/b)} = \sqrt{a}/\sqrt{b}$ to simplify the division of square roots.
- To be able to expand brackets containing surd terms.
- To simplify a fraction with a square root in the denominator by multiplying both the numerator and the denominator by a square root. To rationalise the denominator using conjugates.

Product of Prime Factors

Lesson Set Objectives	To use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property.

Previous skills, themes or concepts	Factors and Multiples Multiplying and Dividing Index Notation	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of the 'Product of Prime Factors' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of the 'Product of Prime Factors'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of the 'Product of Prime Factors'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for the 'Product of Prime Factors'.

This lesson set includes the following lessons:

Lesson Objectives

- Prime Factor Decomposition
- Terminating and Recurring Decimals
- Introduction to Venn Diagrams
- Highest Common Factor
- Lowest Common Multiple

- To use repeated division and factor trees to find prime the factorisation of two- and three-digit numbers.
- To use prime factorisation to determine which fractions will have a decimal equivalent that terminates and which will have decimal equivalents that recur.
- To organise sets of data into a Venn diagram.
- To calculate the highest common factor by considering prime factorisation.
- To calculate the lowest common multiple by considering prime factorisation.

Standard Form

Lesson Set Objectives	To interpret and compare numbers in standard form A x 10^n, where $1 \leq A < 10$ and n is a positive or negative integer or 0. To calculate with numbers in standard form A $\times$ 10^n, where $1 \leq A < 10$ and n is an integer.

Previous skills, themes or concepts	Place Value Multiply and Divide by Powers of 10 Index Notation Laws of Indices	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Standard Form' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Standard Form'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Standard Form'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Standard Form'.

This lesson set includes the following lessons:

Lesson Objectives

- Introduction to Standard Form
- Converting Large Numbers into Standard Form
- Converting Small Numbers into Standard Form
- Converting Numbers out of Standard Form
- Comparing Numbers in Standard Form
- Adding and Subtracting Standard Form
- Multiplying and Dividing Standard Form
- Correcting Numbers into Standard Form
- Standard Form in Context

- To recognise when a number is in standard form and when it is not and the real-life applications of standard form.
- To convert large numbers into standard form.
- To convert small numbers into standard form.
- To convert a number greater than and less than one out of standard form including negative numbers.
- To convert a number greater than and less than one into standard form including negative numbers.
- To add and subtract with numbers in standard form (with and without a calculator).
- To multiply numbers in standard form using commutativity (with and without a calculator) and to divide numbers in standard form (with and without a calculator).
- To correct numbers not written in correct standard form and order these.
- To appreciate that standard form calculations can be applied in a range of contexts including examples taken from science.

Financial Maths

Lesson Set Objectives	To solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics. To set up, solve and interpret the answers in growth and decay problems, including compound interest {and work with general iterative processes}.

Previous skills, themes or concepts	Fraction, Decimal and Percentage Conversion Percentages Using a Calculator Index Notation	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Financial Maths' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of Financial Maths'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Financial Maths'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Financial Maths'.

This lesson set includes the following lessons:

Lesson Objectives

- Profit and Loss
- Interest
- Compound Interest
- Saving and Borrowing
- Growth and Decay
- Exchange Rates and Commission
- Bank Accounts and Savings
- VAT
- Income Tax and National Insurance
- Wages and Salaries
- Mortgages
- Utility Bills
- Budgeting
- Reverse Repeated Change

- To recognise the components of a simple profit and loss statement, and the importance of a profit and loss statement.
- To calculate simple interest.
- To know the difference between simple and compound interest.
- To calculate compound interest on savings and borrowing.
- To solve practical problems involving exponential decay.
- To calculate using exchange rates and use percentages of amounts to calculate commission.
- To identify different transactions on a bank statement.
- To calculate using VAT.
- To calculate using knowledge about income tax and National Insurance.
- To calculate wages and salaries using given information.
- To compare mortgage deals.
- To work out cost of gas and electric used.
- To plan a holiday on a budget.
- To calculate how many years, it will take to achieve an exponential growth or decay amount.

ALGEBRA

The EDClass teaching staff will use a combination of professional judgement, diagnostic assessment, the information provided by school staff and SLT through the admissions process and learner feedback to create a personalised, flexible and challenging learning pathway that offers eLearning, video clips, recorded sessions and live learning lessons for all learners regarding their mathematical needs found within the algebra strand of maths.

Substitution	Sequences and nth Term	Formula, Expressions and Inequalities	Expanding and Factorising	Solving Equations and Inequalities	Changing the Subject
Co-ordinates	The Equation of a Straight Line	Algebraic Simultaneous Equations	Quadratic Graphs	Quadratic Equations	Completing the Square
The Quadratic Formula	Non-Linear Graphs	Algebraic Fractions	Functions	Algebraic Proof	Iteration

MATHS

ALGEBRA

KS3 Algebra Objectives	To use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. To substitute values in expressions, rearrange and simplify expressions, and solve equations. To move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]. To develop algebraic and graphical fluency, including understanding linear and simple quadratic functions. To use language and properties precisely to analyse algebraic expressions. To extend understanding of the number system; make connections between number relationships, and their algebraic and graphical representations. To identify variables and express relations between variables algebraically and graphically. To make and test conjectures about patterns and relationships; look for proofs or counter-examples. To begin to reason deductively in algebra. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems. To begin to model situations mathematically and express the results using a range of formal mathematical representations. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.
KS4 Algebra Objectives	To consolidate algebraic capability from Key Stage 3 and extend understanding of algebraic simplification and manipulation to include quadratic expressions, {and expressions involving surds and algebraic fractions}. To extend fluency with expressions and equations from Key Stage 3, to include quadratic equations, simultaneous equations and inequalities. To move freely between different numerical, algebraic, graphical and diagrammatic representations, including of linear, quadratic, reciprocal, {exponential and trigonometric} functions. To use mathematical language and properties precisely. To extend ability to identify variables and express relations between variables algebraically and graphically. To begin to use algebra to support and construct arguments {and proofs}. To reason deductively in algebra. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial contexts. To make and use connections between different parts of mathematics to solve problems. To model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret solutions in the context of the given problem.

Substitution

Lesson Set Objectives	To substitute numerical values into formulae and expressions, including scientific formulae. To understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors. To know the difference between an equation and an identity.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Algebra Order of Operations and Estimating	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Substitution' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Substitution'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Substitution'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Substitution'.

This lesson set includes the following lessons:	Lesson Objectives
Introduction to Algebraic Notation	To demonstrate an understanding of the notation used in algebra.
Introduction to Algebraic Vocabulary	To demonstrate an understanding of the vocabulary used in algebra.
Introduction to Substitution	To know and understand what a substitution is. To be able to perform algebraic substitutions with one term or two terms.
Substitution	To perform algebraic substitutions with one term or two terms, involving negative numbers.
Harder Substitution	To be able to perform algebraic substitutions with one term or two terms, involving squares and cubes of a number, applying knowledge of order of operations.

Sequences and n^{th} Term

Lesson Set Objectives	To generate terms of a sequence from either a term-to-term or a position-to-term rule. To recognise arithmetic sequences and find the nth term. To recognise geometric sequences and appreciate other sequences that arise. To recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric progressions (rn) where n is an integer, and r is a positive rational number {or a surd} {and other sequences}. To deduce expressions to calculate the nth term of linear {and quadratic} sequences.

Previous skills, themes or concepts	Substitution Factors and Multiples	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Sequences and n^{th} Term' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Sequences and n^{th} Term'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Sequences and nth Term'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Sequences and nth Term'.

This lesson set includes the following lessons:	Lesson Objectives
Patterns in Numbers	To define a rule of a number pattern and extend number patterns by following given rules.
Recognising Patterns	To identifying repeating patterns.
Shape Sequences	To find the next shape in a growing pattern.
Finding the Term to Term Rule	To find missing terms in a given sequence without a term-to-term rule.
Finding the Next Term	To work with term-to-term rules. To use a first term and a term-to-term rule to generate terms in a sequence. To state the first term and the term-to-term rule from given terms of a sequence. To find the term-to-term rule and missing terms from given terms of a sequence.
Position to Term Rule	To use an nth term rule to work out the first five terms of a sequence.
Decimal Sequences	To recognise and continue decimal sequences, including finding the term-to-term rule.
Calculating the nth Term of an Increasing Sequence	To find the nth term for a given sequence of numbers or patterns.
Calculating the nth Term of a Decreasing Sequence	To find the nth term for a given sequence of decreasing numbers or patterns.
Using the nth Term	To use an nth term rule to work out terms of a sequence.
Identifying if a Term is in the Sequence	To use an nth term rule to identify if a term is in the sequence by solving an equation.
Geometric Sequences	To identify the common ratio of a geometric sequence from its recursive formula. To identify the common ratio of a geometric sequence from its recursive formula. To find the first terms of a geometric sequence using the common ratio. To identify whether a given sequence is geometric, To classify a given geometric sequence as decreasing or increasing.
Triangle Numbers	To identify triangular numbers.

	Fibonacci Sequences		To identify and continue Fibonacci sequences.
	Square Numbers		To identify square numbers.
	Special Sequences		To identify even numbers, odd numbers, square numbers, cube numbers, powers of 2, powers of 10 and triangle number sequences.
	Generating Quadratic Sequences		To generate a quadratic sequence when given the nth term.
	Quadratic nth Term		To recognise quadratic sequences by a constant second difference between consecutive terms. To find the general formula for the nth term of a quadratic sequence e.g. $n^2 + 4$.
	Harder Quadratic nth Term		To find the general formula for the nth term of a quadratic sequence e.g. $n^2 + 3n - 2$.

Formula, Expressions and Inequalities

Lesson Set Objectives	To use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. To use and interpret algebraic notation, including: ab in place of $a \times b$; $3y$ in place of $y + y + y$ and $3 \times y$ a^2 in place of $a \times a$, a^3 in place of $a \times a \times a$; a^2b in place of $a \times a \times b$; $^a/_b$ in place of $a \div b$; coefficients written as fractions rather than as decimals; brackets. To represent the solution set of an inequality on a number line

Previous skills, themes or concepts	Place Value Laws of Indices Order of Operations and Estimating	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Formula, Expressions and Inequalities' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Formula, Expressions and Inequalities'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Formula, Expressions and Inequalities'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Formula, Expressions and Inequalities'.

This lesson set includes the following lessons:		Lesson Objectives	
	Commutative Algebra		To apply the commutative property of addition and multiplication to algebra.
	Collecting Like Terms		To recognise like terms as having the same variables and the same exponents on each of the variables and simplify polynomial expressions by adding and subtracting like terms.
	Multiplying with Algebra		To simplify algebraic products.
	Division with Algebra		To simplify expressions with multiplications and divisions.
	Algebraic Square Roots		To find the square root of squared algebraic terms.
	Substituting into Formula		To substitute values into algebraic expressions using the order of operations.
	Forming and Substituting into a Formula		To write a formula from a worded description and evaluate a formula by substituting numeric values for one or more variables.
	Writing Expressions		To write an algebraic expression to represent a given word problem
	Expressions for Perimeter		To write an algebraic expression to represent simple properties of a geometric figure, such as the area or the perimeter.
	Using Inequality Symbols		To use inequality symbols to describe relationships between numbers and variables.
	Solutions to Inequalities		To list integers that satisfy an inequality.
	Inequalities on a Number Line		To use number lines to represent inequalities.

Expanding and Factorising

Lesson Set Objectives	To simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms; multiplying a single term over a bracket; taking out common factors; expanding products of 2 or more binomials. To interpret mathematical relationships both algebraically and geometrically.

Previous skills, themes or concepts	Factors and Multiples Formula, Expressions and Inequalities Laws of Indices	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Expanding and Factorising' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Expanding and Factorising'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of Expanding and Factorising. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Expanding and Factorising'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Expanding a Single Bracket	☐ To expand a pair of brackets with a constant on the outside.
☐ Expanding Single Brackets and Simplifying	☐ To expand two pairs of brackets and simplify the result.
☐ Factorise into a Single Bracket	☐ To fully factorise an algebraic expression in the form $ax + b$ where a and b are both constants.
☐ Expanding Double Brackets	☐ To expand a bracket multiplied by another bracket and simplify the result.
☐ Expanding Brackets (Area Problems)	☐ To expand a bracket multiplied by another bracket and simplify the result in the context of area.
☐ Expanding Triple Brackets	☐ To expand and simplify two brackets then multiply the resulting expression by the third bracket.

Solving Equations and Inequalities

Lesson Set Objectives	To use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. To model situations or procedures by translating them into algebraic expressions or formulae and by using graphs. To use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement). To interpret mathematical relationships both algebraically and geometrically. To solve linear inequalities in 1 {or 2} variable{s}; represent the solution set on a number line.

| Previous skills, themes or concepts | Place Value

Expanding and Factorising

Index Notation

Formula, Equations and Inequalities | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Solving Equations and Inequalities' to test and evaluate a learner's prior learning and knowledge gaps.
Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Solving Equations and Inequalities'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Solving Equations and Inequalities'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Solving Equations and Inequalities'. |
|---|---|---|---|---|---|

This lesson set includes the following lessons:	Lesson Objectives
☐ Solving 1 Step Equations (Addition and Subtraction)	☐ To recognise that solving a one-step equation means finding the unknown value to make the statement true. To solve a one-step equation by adding or subtracting a constant. To solve geometric problems and word problems by forming and solving a one-step equation involving addition or subtraction.
☐ Solving 1 Step Equations (Multiplication and Division)	☐ To recognise that solving a one-step equation means finding the unknown value to make the statement true. To solve a one-step equation by multiplying or dividing a constant. To solve geometric problems and word problems by forming and solving a one-step equation involving multiplication or division.
☐ Solving 1 Step Equations (Square and Square Roots)	☐ To recognise that solving a one-step equation means finding the unknown value to make the statement true. To solve a one-step equation by squaring or square rooting. To solve geometric problems and word problems by forming and solving a one-step equation involving squaring or square rooting.
☐ Solving 2 Step Equations	☐ To recognise that solving a two-step equation means finding the unknown value to make the statement true. To solve a two-step equation by adding or subtracting a constant and then dividing or multiplying by a constant or vice versa. To solve word problems by forming and solving a two-step equation. To solve problems in a geometric context by forming and solving a two-step equation.
☐ Expanding Brackets to Solve Equations	☐ To solve equations by expanding brackets first. To expand and simplify brackets to solve equations.
☐ Solving Equations with Unknowns on Both Sides	☐ To solve an equation where the unknown appears on both sides using the balance method involving positive and negative terms.
☐ Forming and Solving Equations	☐ To form and solve linear equations.
☐ Solving Complex Linear Equations	☐ To solve equations by manipulating algebraic fractions.
☐ Solving Inequalities	☐ To find the set of values for which a linear inequality is true by simplifying and rearranging. E.g. $2x + 5 > 8$. To solve compound inequalities by solving each inequality separately and then combining the solutions $-3 < 3x + 1 < 4$.

Changing the Subject

Lesson Set Objectives	To understand and use standard mathematical formulae; rearrange formulae to change the subject.

| Previous skills, themes or concepts | Solving Equations and Inequalities

Expanding and Factorising | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Changing the Subject' to test and evaluate a learner's prior learning and knowledge gaps.
Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of Changing the Subject'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Changing the Subject'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Changing the Subject'. |
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This lesson set includes the following lessons:	Lesson Objectives
☐ Changing the Subject	☐ To rearrange a formula in one step to change the subject. To rearrange a formula in two steps to change the subject. To rearrange a formula to change the subject before substituting in values of the variables. To solve more complex problems, including writing and rearranging a formula from a geometric context.
☐ Changing the Subject (Factorising Required)	☐ To change the subject of a formula by factorising.

Co-ordinates

Lesson Set Objectives	To work with co-ordinates in all 4 quadrants. To recognise, sketch and produce graphs of linear functions of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane. To use linear graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations. To find approximate solutions using a graph.

Previous skills, themes or concepts	Substitution Solving Equations and Inequalities Properties of 2-D and 3-D Shapes	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Co-ordinates' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Co-ordinates'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Co-ordinates' Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Co-ordinates'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Co-ordinates	☐ To identify the four distinct quadrants in the co-ordinate plane. To identify the co-ordinates of a point in any of the four quadrants. To plot the co-ordinates of a point in any of the four quadrants.
☐ Translating Co-ordinates	☐ To translate a point on a grid.
☐ Vertical, Horizontal and Diagonal Lines	☐ To state the equation of vertical and horizontal lines by considering co-ordinates. To recognise the lines y = x and y = -x.
☐ Shapes on a Cartesian Plane	☐ To plot vertices of shapes and find the co-ordinates of a missing vertex of a shape.
☐ Midpoints	☐ To calculate the co-ordinates of a midpoint between two co-ordinates and find the co-ordinates of an endpoint given the midpoint and the other endpoint.
☐ Introduction to Table of Values	☐ To complete a function table for a linear function, identify the corresponding table of values or graph when given an equation of a line and identify the corresponding equation of a line or table of values when given a graph.
☐ Plotting Linear Graphs	☐ To use given pairs of co-ordinates to draw a straight-line graph. To construct a straight-line graph by using a table of values.
☐ Plotting Quadratics	☐ To sketch a graph of a quadratic function using a table of values and a given interval.
☐ Solutions to Linear Equations	☐ To find solutions to linear equations and appreciate that an algebraic method is more accurate than a graphical method.
☐ Solutions to Simultaneous Equations Graphically	☐ To draw the graphs for systems of two linear equations and solve them by finding the points of intersection, and verify the solutions using substitution.
☐ Estimate Solutions to Quadratic Equations Graphically	☐ To identify whether a quadratic equation has real solutions or not by looking at its graph. To find the solutions to a quadratic equation by finding where the graph of the equation crosses the x-axis.
☐ Inequality Regions	☐ To identify the regions on a graph that represent the solution to a system of inequalities.

The Equation of a Straight Line

Lesson Set Objectives	To develop algebraic and graphical fluency, including understanding linear functions. To interpret mathematical relationships both algebraically and graphically. To reduce a given linear equation in 2 variables to the standard form $y = mx + c$. To calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically. To use the form $y = mx + c$ to identify parallel {and perpendicular} lines; find the equation of the line through 2 given points, or through 1 point with a given gradient.

Previous skills, themes or concepts	Substitution Co-ordinates Solving Equations and Inequalities	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'The Equation of a Straight Line' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'The Equation of a Straight Line'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'The Equation of a Straight Line'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'The Equation of a Straight Line'.

This lesson set includes the following lessons:	Lesson Objectives
Introduction to Gradient	To interpret gradient as the steepness of a line.
Gradient of a Straight Line	To calculate the gradient of a straight line by using the graph.
Gradient and y Intercept of a Straight Line from the Equation	To use the equation of a line in the form $y = mx + c$ or $ax + by + c = 0$ to identify the gradient and intercepts of the line.
$y = mx + c$	To plot a straight line when given the equation by applying knowledge of $y = mx + c$.
x and y Intercepts	Use x- and y-intercepts to graph lines.
Equation of a Line Between Two Points	To find the equation of a line when given two points on the line.
Parallel and Perpendicular Lines	To identify whether two given lines are parallel, perpendicular, or neither when given the slopes of the lines, a pair of points that lie on each line or a mixture of the above information allowing the slopes of both lines to be found.
Identifying if a Point Lies on a Line	To identify which of a given set of straight-line equations is or is not satisfied by a specified point.

Algebraic Simultaneous Equations

Lesson Set Objectives	To solve 2 simultaneous equations in 2 variables (linear/linear {or linear/quadratic) algebraically. To translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or 2 simultaneous equations), solve the equation(s) and interpret the solution.			
Previous skills, themes or concepts	Substitution Solving Equations and Inequalities Co-ordinates	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Algebraic Simultaneous Equations' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Algebraic Simultaneous Equations'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Algebraic Simultaneous Equations'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Algebraic Simultaneous Equations'.

This lesson set includes the following lessons:	Lesson Objectives
A Graphical Method Versus an Algebraic Method	To identify logical reasoning for choosing either a graphical method or algebraic method for solving simultaneous equations.
Substitution Method	To use algebraic substitution to solve simultaneous equations.
An Introduction to the Elimination Method	To solve a pair of equations simultaneously using the method of elimination by subtraction given equal coefficients of one unknown.
The Elimination Method with Negatives	To solve a pair of equations simultaneously using the method of elimination by addition given equal coefficients of one unknown.
The Elimination Method with Manipulation	To solve a pair of equations simultaneously using the method of elimination where one coefficient is a factor of the other and where one coefficient is not a factor of the other.
Simultaneous Equations in Context	To derive a pair of simultaneous equations and solve them algebraically.
Simultaneous Equations in Context (Perimeter)	To derive a pair of simultaneous equations and solve them algebraically in the context of perimeter.
Simultaneous Equations with Rearranging	To solve a pair of equations simultaneously using the method of elimination where one coefficient is not a factor of the other and where one equation needs rearranging so it looks similar to the other.
Quadratic Simultaneous Equations	To accurately solve quadratic simultaneous equations by substituting the linear equation into the quadratic equation.

Quadratic Graphs

Lesson Set Objectives	To recognise, sketch and produce graphs of quadratic functions of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane. To use quadratic graphs to estimate values of y for given values of x and vice versa. To identify and interpret roots, intercepts and turning points of quadratic functions graphically. To find approximate solutions using a graph.			
Previous skills, themes or concepts	Substitution Co-ordinates	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Quadratic Graphs' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Quadratic Graphs'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Quadratic Graphs'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Quadratic Graphs'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Plotting Quadratics	☐ To sketch a graph of a quadratic function using a table of values and a given interval.
☐ Sketching Quadratic Graphs	☐ To sketch quadratic graphs by calculating roots and the y intercept from the equation.
☐ Solving Quadratic Simultaneous Equations Graphically	☐ To draw the graphs for systems of one linear and one quadratic equation and solve them by finding the points of intersection, and verify the solutions using substitution.
☐ Roots, Intercepts, Turning Points and Simultaneous Equations	☐ To identify roots, intercepts and turning points from a quadratic graph.

Quadratic Equations

Lesson Set Objectives	To develop algebraic and graphical fluency, including understanding simple quadratic functions. To simplify and manipulate algebraic expressions including those involving surds and algebraic fractions by factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of 2 squares; factorising quadratic expressions of the form $ax^2 + bx + c$. To deduce roots algebraically. To solve quadratic equations including those that require rearrangement algebraically by factorising. To solve quadratic inequalities in 1 variable; represent the solution set on a number line, using set notation and on a graph.			
Previous skills, themes or concepts	Factors and Multiples Solving Equations and Inequalities Quadratic Graphs	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Quadratic Equations' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Quadratic Equations'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Quadratic Equations'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Quadratic Equations'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Factorising Quadratics	☐ To factorise quadratics in the form $ax^2 + bx + c$ where a = 1 and both factors are positive or either or both factors are negative.
☐ Difference Between Two Squares	☐ To identify an expression that is a difference of two squares and factorise simple expressions that are a difference of two square. To factorise expressions that are a difference of two square where the coefficient of one or both terms is greater than 1.
☐ Solving Quadratic Equations	☐ To recognise the terminology of roots, zeros, and solutions of functions and equations. To solve quadratic equations by factoring. To explore the relationship between the roots of a quadratic and the intersections of its graph with the x-axis.
☐ Factorising and Solving Harder Quadratic Equations	☐ To find real roots to quadratic equations in the form $ax^2 + bx + c = 0$ where $a > 1$, including where the quadratic equation needs rearranging.
☐ Quadratic Inequalities	☐ To solve a quadratic inequality from a sketched graph, to solve a quadratic inequality in the form $x^2 + bx + c < 0$ by factorising and to solve a quadratic inequality in the form $ax^2 + bx + c < 0$.

Completing the Square

Lesson Set Objectives	To deduce roots algebraically and turning points by completing the square. To solve quadratic equations including those that require rearrangement algebraically by completing the square.			
Previous skills, themes or concepts	Quadratic Equations Quadratic Graphs	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Completing the Square' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Completing the Square'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Completing the Square'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Completing the Square'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Completing the Square	☐ To rewrite and solve a quadratic equation by completing the square and applying the square root property.
☐ Turning Points	☐ To deduce turning points by completing the square.
☐ Solving Equations by Completing the Square	☐ To rewrite and solve quadratic equations in the form $x^2 + bx + c = 0$ by completing the square.
☐ Harder Solving Equations by Completing the Square	☐ To rewrite and solve quadratic equations in the form $ax^2 + bx + c = 0$ by completing the square.

The Quadratic Formula

Lesson Set Objectives	To solve quadratic equations including those that require rearrangement algebraically by using the quadratic formula.

Previous skills, themes or concepts	Quadratic Equations Substitution Quadratic Graphs	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'The Quadratic Formula' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'The Quadratic Formula'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'The Quadratic Formula'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'The Quadratic Formula'.

This lesson set includes the following lessons:

	Lesson Objectives
☐ An Introduction to the Quadratic Formula	☐ To solve quadratic equations in the form $ax^2 + bx + c = 0$ by using the quadratic formula and identify when the quadratic formula is required to solve quadratic equation.
☐ Using the Quadratic Formula with Rearranging	☐ To solve quadratic equations not in the form $ax^2 + bx + c = 0$ by using the quadratic formula.
☐ Solving Quadratic Equations in Context	☐ To derive and solve quadratic equations by factorising, using the square root property, completing the square and using the quadratic formula.

Non-Linear Graphs

Lesson Set Objectives	To find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs. To recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function y = $^1/_x$ with $x \neq 0$, {the exponential function y = kx for positive values of k, and the trigonometric functions (with arguments in degrees) y = sin(x), y = cos(x) and y = tan(x) for angles of any size}. To sketch translations and reflections of the graph of a given function. To plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration. To calculate or estimate gradients of graphs and areas under graphs (including quadratic and other non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts. To recognise and use the equation of a circle with centre at the origin; find the equation of a tangent to a circle at a given point. To interpret the gradient at a point on a curve as the instantaneous rate of change; apply the concepts of instantaneous and average rate of change (gradients of tangents and chords) in numerical, algebraic and graphical contexts. To interpret and construct tables and line graphs for time series data.

Previous skills, themes or concepts	The Equation of a Straight Line Compound Measures Area and Perimeter Right-Angled Trigonometry Circles Substitution	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Non-Linear Graphs' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Non-Linear Graphs'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Non-Linear Graphs'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Non-Linear Graphs'.

This lesson set includes the following lessons:

	Lesson Objectives
☐ Recognising Non-Linear Graphs and Equations	☐ To differentiate between linear and nonlinear functions (quadratic, cubic or reciprocal) both graphically and algebraically.
☐ Reciprocal Graphs	☐ To plot reciprocal graphs when given the equation.
☐ Exponential Graphs	☐ To identify an exponential function, both graphically and algebraically and to plot exponential graphs.
☐ Interpreting Distance/Time Graphs	☐ To interpret distance–time graphs and understand that they are used to represent a journey travelled over a period of time.
☐ Speed from a Distance/Time Graph	☐ To calculate speeds and average speeds at different intervals on a distance–time graph.
☐ Drawing a Distance/Time Graph	☐ To plot a distance–time graph given a real-life scenario.
☐ Velocity/Time Graphs	☐ To find the time periods of maximum velocity, zero velocity, and positive or negative velocity from a velocity–time graph, find the distance travelled by a particle using its velocity–time graph and describe the movement of a particle using its velocity–time graph.
☐ Frequency Polygons	☐ To define and identify frequency polygons, read frequency polygons, follow a procedure to create frequency polygons and interpret frequency polygons.
☐ Calculate and Estimate Gradients	☐ To estimate the gradient of a curve at different points using tangents.
☐ Trapezium Rule	☐ To approximate the area between a curve and the x-axis by dividing it into a given number of trapezoids and by using the formula and identify whether an approximation using the trapezoidal rule is an overestimate or an underestimate.
☐ The Equation of a Circle	☐ To derive and recall the standard form of the equation of a circle, centred at the origin $x^2 + y^2 = r^2$

	Tangents to Circles		To calculate the equation of a line tangential to a circle.
	Trigonometric Graphs		To graph and recognise trigonometric functions $\sin(x)$, $\cos(x)$ and $\tan(x)$.
	Transformations of Graphs		To recognise that $y=f(-x)$ corresponds to a reflection of $y=f(x)$ in the y-axis. To recognise that $y=-f(x)$ corresponds to a reflection of $y=f(x)$ in the x-axis. To recognise horizontal translations of the function $f(x)$: $f(x-a)$ corresponds to a shift of a units in the positive x direction, $f(x+a)$ corresponds to a shift of a units in the negative x direction. To recognise vertical translations of the function $f(x)$: $f(x) + a$ corresponds to a shift of a units in the positive y direction, $f(x)-a$ corresponds to a shift of a units in the negative y direction. To recognise horizontal dilations of the function $f(x)$: $f(ax)$ corresponds to a horizontal dilation of scale factor $^1/_a$, when $a < 1$, the result is considered a stretch, when $a > 1$, the result is considered a compression. To recognise vertical dilations of the function $f(x)$: $af(x)$ corresponds to a vertical dilation of scale factor a, when $a > 1$, the result is considered a stretch, when $a < 1$, the result is considered a compression.

Algebraic Fractions

Lesson Set Objectives	To extend understanding of algebraic simplification and manipulation to include algebraic fractions.				
Previous skills, themes or concepts	Calculations with Fractions Expanding and Factorising Solving Equations and Inequalities Quadratic Equations	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Algebraic Fractions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Algebraic Fractions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Algebraic Fractions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Algebraic Fractions'.

This lesson set includes the following lessons:		Lesson Objectives
	Fractions Recap	To recall the four operations with fractions.
	Simplifying Algebraic Fractions	To factorise an algebraic fraction and simplify it by cancelling the common factors.
	Multiplying Algebraic Fractions	To multiply algebraic fractions.
	Dividing Algebraic Fractions	To divide algebraic fractions.
	Adding and Subtracting Algebraic Fractions	To add and subtract algebraic fractions.

Functions

Lesson Set Objectives	To interpret simple expressions as functions with inputs and outputs. To interpret the reverse process as the 'inverse function'. To interpret the succession of 2 functions as a 'composite function'.				
Previous skills, themes or concepts	Substitution Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Functions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Functions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Functions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Functions'.

This lesson set includes the following lessons:		Lesson Objectives
	Input and Output	To use two-step function machines to input a number into a function machine and calculate an output. To calculate an input from the function rules and the output.
	Function Machines	To gain a basic understanding of function notation.
	Simple Functions	To calculate the value of a function given the function's equation and a real number input for linear and nonlinear functions.
	Inverse Functions	To recognise the notation for the inverse function and to find the inverse of an invertible function, $f:x{\to}y$, by changing the subject from y to x.
	Solving Functions	To use algebra to determine the input of a composite function when given the output.
	Composite Functions	To evaluate a composite function at a given value of x when given the two (or more) original functions algebraically.

Algebraic Proof

Lesson Set Objectives	To make and test conjectures about patterns and relationships; look for proofs or counter-examples. To change recurring decimals into their corresponding fractions and vice versa. To argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments {and proofs}.

Previous skills, themes or concepts	Formula, Expressions and Inequalities Expanding and Factorising Substitution Solving Equations and Inequalities Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Algebraic Proof' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Algebraic Proof'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Algebraic proof'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Algebraic Proof'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Counter Examples	☐ To disprove a statement by providing a counter example.
☐ Odd and Even Numbers	☐ To write expressions for odd and even numbers and apply these to algebraic proof.
☐ Consecutive Integers	☐ To demonstrate algebraic proof involving consecutive integers.
☐ Identity Proof	☐ To demonstrate algebraic proof by applying the concept of an identity.
☐ Factor Proof	☐ To demonstrate algebraic proof by applying the concept of factors.
☐ Recurring Decimals as Fractions	☐ To convert a recurring decimal to a fraction.
☐ Change of Sign	☐ To show that a quadratic function has a solution between two values for x.

Iteration

Lesson Set Objectives	{To find approximate solutions to equations numerically using iteration}.

Previous skills, themes or concepts	Substitution Sequences and nth Term Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Iteration' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Iteration'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Iteration'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Iteration'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Recurrence Relation	☐ To recognise the notation for recurrence relation and apply this to an iterative process.
☐ Approximate Solutions	☐ To find approximate solutions to equations numerically using iteration.

GEOMETRY AND MEASURE

The EDClass teaching staff will use a combination of professional judgement, diagnostic assessment, the information provided by school staff through the admissions process and learner feedback to create a personalised, flexible and challenging learning pathway that offers eLearning, video clips, recorded sessions and live learning lessons for all learners regarding their mathematical needs found within the geometry and measure strand of maths.

☐ Properties of 2-D and 3-D Shapes	☐ Angles	☐ Bearings	☐ Constructions	☐ Time, Timetables, Mileage Charts and Money	☐ Metric Conversions
☐ Perimeter and Area	☐ Transformations	☐ Surface Area	☐ Volume	☐ Compound Measures	☐ Circles
☐ Pythagoras	☐ Congruence and Similarity	☐ Vectors	☐ Right-Angled Trigonometry	☐ Non-Right-Angled Trigonometry	☐ Circle Theorems

MATHS

GEOMETRY AND MEASURE

KS3 Geometry and Measure Objectives	To use language and properties precisely to analyse 2-D and 3-D shapes. To extend and formalise knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically. To begin to reason deductively in geometry. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems. To begin to model situations mathematically and express the results using a range of formal mathematical representations. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.
KS4 Geometry and Measure Objectives	To select and use appropriate calculation strategies to solve increasingly complex problems, including exact calculations involving multiples of π {and surds}, use of standard form and application and interpretation of limits of accuracy. To use mathematical language and properties precisely. To extend and formalise their knowledge of ratio and proportion, including trigonometric ratios, in working with measures and geometry. To reason deductively in geometry, including using geometrical constructions. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial contexts. To make and use connections between different parts of mathematics to solve problems. To model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how solutions may have been affected by any modelling assumptions. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret solutions in the context of the given problem.

Properties of 2-D and 3-D Shapes

Lesson Set Objectives	To describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric. To derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies. To construct and interpret plans and elevations of 3-D shapes.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Shape	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of the 'Properties of 2-D and 3-D Shapes' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of the 'Properties of 2-D and 3-D Shapes'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Properties of 2-D and 3-D Shapes'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Properties of 2-D and 3-D Shapes'.

This lesson set includes the following lessons:

	Lesson Objectives
Classifying Polygons	To define a polygon and be able to name regular and irregular polygons.
Properties of Triangles	To classify triangles as isosceles, scalene, or equilateral and as acute, right, or obtuse. To classify triangles when all side lengths and angle measures are given. To classify triangles by measuring the sides and angles. To classify triangles using the notation for congruent sides.
Properties of Quadrilaterals	To identify the geometric properties of angles, sides, and diagonals in different types of quadrilaterals, namely, squares, rectangles, rhombuses, parallelograms, trapezoids, kites, and arrowheads, using the properties of triangles. To classify different types of quadrilaterals according to the geometric properties of their angles, sides, and diagonals.
Lines of Symmetry	To define lines of symmetry. To determine whether a shape has line symmetry. To identify and draw lines of symmetry. To count lines of symmetry.
Rotational Symmetry	To calculate the order of rotational symmetry of a geometric figure.
3-D Shapes	To recognise 3-D shapes. To use proper terminology to describe 3-D shapes in terms of faces, edges, and vertices. To identify 2-D shapes that make faces or cross sections of 3-D shapes.
Planes of Symmetry	To identify the plane (or planes) and axis (or axes) of symmetry of a given 3-D shape.
Nets	To identify and draw nets of 3-D shapes.
Plans and Elevations	To draw the plan view of a 3-D solid. To draw the front and side elevations of a 3-D solid.

Angles

Lesson Set Objectives	To derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies. To apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles. To understand and use the relationship between parallel lines and alternate and corresponding angles. To derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Position and Direction	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Angles' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Angles'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Angles'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Angles'.

This lesson set includes the following lessons:

	Lesson Objectives
Angles in Turns	To recognise that a whole turn is 360°, a half-turn is 180°, and a right angle is 90°.
Calculating Parts of Turns	To calculate fractions of a turn on a clock face.
Acute and Obtuse Angles	To recognise and define acute angles. To recognise and define obtuse angles.
Reflex Angles	To recognise and define reflex angles.
Right Angles	To recognise and define right angles.
Types of Angles	To classify triangles as acute, right, or obtuse.
Drawing Acute Angles	To use a protractor to accurately draw an acute angle.

☐	Drawing Obtuse Angles	☐	To use a protractor to accurately draw an obtuse angle.
☐	Drawing Reflex Angles	☐	To use a protractor to accurately draw an angle of a given size.
☐	Measuring Angles	☐	To use a protractor to measure angles up to 180°. To use a protractor to measure reflex angles. To identify angles with a given measure. To recognise an angle as an acute, obtuse, or right angle. To estimate the size of an angle.
☐	Angles on a Straight Line	☐	To calculate measure of unknown angles on a straight line.
☐	Angles Around a Point	☐	To calculate measure of an angle around a point when given other angle measures.
☐	Vertically Opposite Angles	☐	To recognise that vertically opposite angles are equal.
☐	Angles in Triangles	☐	To explain, using models, that the sum of the measures of the angles of a triangle is 180°. To find the measures of unknown angles in a triangle. To investigate the measures of angles in an isosceles triangle. To find the measures of angles in simple figures containing a triangle.
☐	Angles in Isosceles Triangles	☐	To identify an isosceles triangle and calculate two of the angles in an isosceles triangle when given the size of one interior angle.
☐	Angles in Quadrilaterals	☐	To find the measure of an unknown angle in a quadrilateral.
☐	Tessellation	☐	To identify which regular polygons will tessellate by themselves by considering the measure of their internal angles, identify whether an irregular polygon can tessellate by itself and identify whether different types of polygons can tessellate.
☐	Angles in Parallel Lines	☐	To identify and name corresponding, interior, and alternate angles formed by two lines and a transversal. To state and use the fact that the measures of two alternate angles and two corresponding angles are equal when the two lines are parallel. To state and use the fact that two interior angles on the same side of the transversal are supplementary. To identify that two lines are parallel if they are cut by a transversal such that two alternate angles are equal, two corresponding angles are equal, or two interior angles are supplementary.
☐	Interior and Exterior Angles	☐	To identify interior and exterior angles on a diagram and understand the relationship between interior and exterior angles and their sums in a polygon.
☐	Exterior Angles	☐	To know that the exterior angles of a triangle sum to 360° and apply this to solve problems involving interior and exterior angles in both regular and irregular polygons.
☐	Interior Angles	☐	To divide a polygon into triangles in order to find the sum of its interior angles. To find the sum of the interior angles of a polygon given its number of sides using the formula. To find the measure of the interior angle of a regular polygon given its number of sides using the formula. To find the measure of an angle in an irregular polygon given its number of sides and the measure of the other angles in the polygon.
☐	How Many Sides Does the Polygon Have?	☐	To find the number of sides a regular polygon has given the measure of one of its interior angles.

Bearings

Lesson Set Objectives	To interpret and use bearings.

Previous skills, themes or concepts	Angles		Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Bearings' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Bearings'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Bearings' Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Bearings'.

This lesson set includes the following lessons:		Lesson Objectives

☐	Introduction to Bearings	☐	To recognise that bearings are measured clockwise from the north and are given as three figures. To read off a simple bearing in a diagram, distinguishing the bearing of B from A from the bearing of A from B.
☐	Calculating Bearings	☐	To use the bearing of B from A to work out the bearing of A from B and solve more complex problems, such as interpreting a word problem to identify a correct bearing or filling in missing angles in a diagram and using them to work out a bearing.
☐	Measuring Bearings	☐	To measure bearings using a protractor and use the bearing of B from A to work out the bearing of A from B and solve more complex problems, such as interpreting a word problem to identify a correct bearing or filling in missing angles in a diagram and using them to work out a bearing.
☐	Drawing Bearings	☐	To draw bearings using a protractor and a ruler, given a scale.

Constructions

Lesson Set Objectives	To draw and measure line segments and angles in geometric figures, including interpreting scale drawings. To derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle). To recognise and use the perpendicular distance from a point to a line as the shortest distance to the line.

Previous skills, themes or concepts	Angles Properties of 2-D and 3-D Shapes	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Constructions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Constructions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Constructions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Constructions'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Constructions Terminology	☐ To recognise mathematical language used for constructing triangles and loci.
☐ Constructing Angles	☐ To use a protractor to accurately draw an angle of a given size.
☐ Constructing Triangles (ASA) (SAS) (SSS)	☐ To construct a triangle using ASA, SAS, SSS.
☐ Loci	☐ To define a locus of points as a set of points that share a given property and draw a circle as the locus of points that are equidistant from a fixed point.
☐ Perpendicular Bisector and Constructing a Perpendicular Line from a Given Point	☐ To draw the perpendicular bisector of the line segment AB as the locus of points that are equidistant from A and B. To construct the perpendicular to a line from a given point not on the line and construct the perpendicular to a line at a given point on the line.
☐ Angle Bisector	☐ To draw the angle bisector as the locus of points that are equidistant from the two lines forming the angle.
☐ Angle and Line Bisectors	☐ To draw a locus that uses a combination of the circle and the perpendicular and angle bisectors, including areas between them.

Time, Timetables, Mileage Charts and Money

Lesson Set Objectives	To use standard units of mass, length, time, money and other measures, including with decimal quantities.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Measurement	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Time, Timetables, Mileage Charts and Money' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Time, Timetables, Mileage Charts and Money'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Time, Timetables, Mileage Charts and Money'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Time, Timetables, Mileage Charts and Money'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Units for Measuring Time	☐ To identify units of time.
☐ 12- and 24-Hour Clocks	☐ To convert time in words, including afternoon or morning, to 24-hour time. To convert between digital clocks with am or pm and 24-hour time. To convert between analogue clocks and 24-hour time, including afternoon or morning.
☐ Telling the Time	☐ To tell and write time to the nearest minute and measure time intervals in minutes.
☐ Converting Between Units for Measuring Time	☐ To convert durations in hours to days with and without remainders. To convert durations in minutes to hours with and without remainders. To convert durations in seconds to minutes with and without remainders. To convert mixed measures by converting into the larger or smaller unit. To compare durations, including mixed measures.
☐ Calculations with Time	☐ To add and subtract units of time to find duration, start time, and end time. To add and subtract mixed units of time. To convert units of time to add and subtract. To solve word problems by adding and subtracting units of time.
☐ Mileage Charts	☐ To calculate the distance between various places using a mileage chart.
☐ Bus Timetables	☐ To interpret a bus timetable.
☐ Train Timetables	☐ To interpret a train timetable.
☐ Money Calculations	☐ To calculate with money.

Metric Conversions

Lesson Set Objectives	To change freely between related standard units.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Measurement Place Value Multiplying and Dividing by Powers of 10	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Metric Conversions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Metric Conversions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Metric Conversions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Metric Conversions'.

This lesson set includes the following lessons:	Lesson Objectives
The Metric System	To explain what the metric system is. To identify the appropriate metric units of measurement for distance, weight, volume, and time. To know the basic prefixes associated with metric units.
Metric Conversions	To recall metric conversions.
Reading Metric Scales	To read a metric scale.
Mass	To convert metric units for mass.
Length	To convert metric units for length.
Money	To convert metric units for money.
Converting Measures of Capacity	To convert metric units for capacity.
Converting Measures of Mass	To convert metric units for mass to solve practical problems.
Converting Measures of Length	To convert metric units for length to solve practical problems.

Perimeter and Area

Lesson Set Objectives	To change freely between related standard units. To derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders). To calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Measurement Formula, Expressions and Inequalities	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Perimeter and Area' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Perimeter and Area'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Perimeter and Area'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Perimeter and Area'.

This lesson set includes the following lessons:	Lesson Objectives
Perimeter	To use addition to find the perimeter of polygons whose side lengths are given. To use attributes of common polygons like squares, rectangles, and equilateral triangles to find the perimeter when not all side lengths are given. To find missing side lengths in polygons given the perimeter.
Composite Shapes	To identify a composite shape.
Perimeter of Compound Shapes	To calculate the perimeter of a composite shape.
Area by Counting Squares	To describe the difference between perimeter and area and count unit squares to find the area of rectilinear shapes.
Area of Rectangles and Squares	To calculate the area of a rectangle given the length and width. To find possible side lengths to create a specified area within a rectangle.
Area of a Parallelogram	To use models to show how the area of a parallelogram is related to the area of a rectangle. To identify the base and height of parallelograms. To state the formula for the area of a parallelogram. To use the area to find the base length or height of a parallelogram.
Area of Triangles	To find the area of right-angled triangles. To find the area of triangles. To use models to show how the area of a triangle is related to the area of a rectangle. identify the base and height in triangles. To state the formula for the area of a triangle.
Area and Perimeter	To describe the difference between perimeter and area and calculate the area and perimeter of rectangles and triangles by recalling and using the correct formulae.
Compound Area	To determine the area of a compound shape by calculating.

| | Area of a Trapezia | | To identify the parallel sides and the perpendicular height of a trapezium. To use the area formula involving the parallel lengths and the perpendicular heigh of the trapezium. To find an unknown length of a trapezium using the formula when given its area. To solve word problems involving the area of a trapezium. |
| | Converting Units for Area | | To convert between metric units of measurements of area. |

Transformations

Lesson Set Objectives	To identify properties of, and describe the results of, translations, rotations and reflections applied to given figures. To interpret and use fractional {and negative} scale factors for enlargements. To describe the changes and invariance achieved by combinations of rotations, reflections and translations. To describe translations as 2-D vectors.

Previous skills, themes or concepts	Co-ordinates The Equation of a Straight Line Angles	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Transformations' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Transformations'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Transformations'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Transformations'.

This lesson set includes the following lessons:		Lesson Objectives	
	Introduction to Translation		To recognise the co-ordinate transformation that represents a translation and recognise that the dimensions of a shape do not change when being translated.
	Describing Translations		To describe the translation of an object on a grid using a translation vector.
	Introduction to Reflection		To use a line on a grid to reflect a point, line segment, or shape, and find the reflection line for a figure.
	Carrying Out and Describing Reflections		To calculate the image of a shape in the 2-D plane under a linear transformation that reflects in a line or axis.
	Introduction to Rotation		To rotate an object $\frac{1}{4}$ of a turn, $\frac{1}{2}$ of a turn, $\frac{3}{4}$ of a turn, and a full turn clockwise or counter clockwise.
	Describing Rotation		To describe rotations using a centre on a Cartesian grid.
	Carrying Out Rotation		To rotate points, line segments, and shapes about points given the centre of rotation and the measure and direction of the angle of rotation. To identify the image of a point, line segment, or shape after a given rotation.
	Scale Factors		To explore the relationship between scale factors and multiplication. To use scale factors to find unknown lengths on similar shapes. To find scale factors when given similar shapes.
	Introduction to Enlargement		To enlarge shapes using scale factors.
	Carrying Out and Describing Enlargement About a Point		To construct an enlargement given a scale factor and a centre of enlargement. To calculate scale factors and centres of enlargement for given enlargement.
	Enlargement with Fractional and Decimal Scale Factors		To construct an enlargement given a fractional or decimal scale factor and a centre of enlargement. To calculate fractional and decimal scale factors and centres of enlargement for given enlargement.
	Negative Enlargement About a Point		To construct an enlargement given a negative scale factor and a centre of enlargement. To calculate negative scale factors and centres of enlargement for given enlargement.
	Combining Transformations		To combine rotations, reflections, translations, and enlargements into a single transformation.

Surface Area

Lesson Set Objectives	To use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D. To calculate surface areas of spheres, pyramids, cones and composite solids.

Previous skills, themes or concepts	Perimeter and Area Properties of 2-D and 3-D Shapes Formula, Expressions and Inequalities Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Surface Area' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Surface Area'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Surface Area'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Surface Area'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Introduction to Surface Area	☐ To define surface area.
☐ Surface Area of a Cuboid	☐ To find the surface area of cubes and rectangular prisms.
☐ Surface Area of Prisms	☐ To find the total surface area of a given prism.
☐ Surface Area of a Cylinder	☐ To identify the net of a cylinder as two circles and a rectangle. To calculate the lateral surface area of a cylinder using its height and radius (or diameter). To calculate the total surface area of a cylinder using its height and radius (or diameter). To calculate the radius of a cylinder given its surface or lateral area and its height. To calculate the height of a cylinder given its surface or lateral area and either of the radius of the base, the circumference of the base, the area of the base.
☐ Surface Area of a Cone	☐ To identify the total surface area of a cone is the sum of its lateral surface area and the area of its base. To calculate the lateral surface area of a cone. To calculate the total surface area of a cone. To calculate a missing length of a cone when given its lateral surface area or total surface area.
☐ Surface Area of a Sphere	☐ To use the formula for the surface area of a sphere to calculate its surface area given its radius or diameter (or vice versa). To calculate the surface area of a hemisphere or any other fraction of a sphere. To solve real-world problems involving the surface area of a sphere.

Volume

Lesson Set Objectives	To change freely between related standard units. To use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D. To calculate exactly with fractions, and multiples of π. To calculate volumes of spheres, pyramids, cones and composite solids.			
Previous skills, themes or concepts	Area and Perimeter Properties of 2-D and 3-D Shapes Formula, Expressions and Inequalities Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Volume' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Volume'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Volume'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Volume'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Introduction to Volume	☐ To define volume as the amount of space that an object takes up. To count cubes to measure volume. To compare volumes of shapes using unit cubes. To use cm³ to describe the volume of a shape.
☐ Volume of Cubes and Cuboids	☐ To identify that the cube is a rectangular prism with equal dimensions. To find the volume of a cube. To solve word problems on the volumes of cubes. To find the edge length of a cube given its volume.
☐ Volume of Prisms	☐ To recall the formula for finding the volume of a triangular prism. To find the volumes of triangular prisms. To solve real-world problems by finding the volumes of triangular prisms.
☐ Volume of a Pyramid	☐ To find the volume of a pyramid with known side lengths (where the height of the pyramid can be calculated) when the pyramid base is one of the following: a triangle, a quadrilateral, a regular polygon with more than 4 sides (pentagon, hexagon, etc.), an arbitrary polygon with a given area. To calculate a missing length of a pyramid when given its volume. To use knowledge of the volume of a pyramid to solve problems presented as real-life systems.
☐ Volume of a Cylinder	☐ To calculate the volume of a cylinder using its height and radius (or diameter). To calculate the height of a cylinder given its volume and one of the two other measurements. To calculate the radius of a cylinder given its volume and one of the two other measurements.
☐ Volume of Square Based Pyramids and Cones	☐ To find the volume of a cone with known side lengths and radius (slant height or perpendicular height given). To find the volume of a cone where the area of the base is given and the perpendicular height can be calculated. To calculate a missing length of a cone when given its volume. To use knowledge of the volume of a cone to solve problems presented as real-life systems.
☐ Volume of a Sphere	☐ To use the formula for the volume of a sphere to find the volume of a sphere given its radius (or diameter) and vice versa. To find the volume of a hemisphere or of other fractions of a sphere. To solve real-world problems involving volumes of spheres.
☐ Converting Between Volume and Capacity	☐ To convert between metric units of measurements for volume and capacity e.g. cm³ and ml.
☐ Converting Units for Volume	☐ To convert between metric units of measurements of volume.

Compound Measures

Lesson Set Objectives	To use compound units such as speed, unit pricing and density to solve problems.				
Previous skills, themes or concepts	Time, Timetables, Mileage Charts and Money Metric Conversions Formula, Expressions and Inequalities Perimeter and Area Volume Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Compound Measures' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Compound Measures'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Compound Measures'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Compound Measures'.

This lesson set includes the following lessons:	Lesson Objectives
Speed Formulas	To recall and rearrange the formula for speed.
Speed, Distance and Time	To calculate speed in different units. To calculate distance and time in different units.
Speed, Distance and Time Graphs	To convert between speed values using meters per second (m/s), kilometres per hour (km/h), miles per hour (mph), and combinations of these.
Converting Units for Speed	To apply the formula speed = $distance/time$ to real life scenarios on a distance time graph.
Introduction to Pressure	To explore the effect that force and area have on pressure.
Force, Pressure and Area	To use the formula $p = F/A$ to calculate pressures, forces, and areas.
Density, Mass and Volume	To use the equation relating density, mass, and volume to find one of the quantities, in the correct units, given the other two and identify possible units that can be used for density and convert between them. To use the dimensions of a 3-D object to find its volume and hence solve problems using the density equation.
Converting Units in Compound Measures	To use dimensional analysis to convert from one unit of measurement to another unit of measurement.

Circles

Lesson Set Objectives	To calculate exactly with fractions, and multiples of π. To identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. To calculate arc lengths, angles and areas of sectors of circles.				
Previous skills, themes or concepts	Formula, Expressions and Inequalities Perimeter and Area Changing the Subject	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Circles' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Circles'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Circles'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Circles'.

This lesson set includes the following lessons:	Lesson Objectives
Circle Terminology	To identify the centre of a circle. To draw a circle accurately given its radius or diameter. To identify a circle's radius, diameter, and chords. To classify a line within a circle as a radius, a diameter, or a chord. To solve problems involving the diameter or radius of a circle.
Introduction to Pi	To define 'pi'; describe the relationship between circles and pi.
Rational and Irrational Numbers	To define what makes a number rational or irrational, in particular. if a number can be written in the form p/q, then it is rational. if it is a repeating decimal number (e.g., 0.66666…), then it is rational. If it is a terminating decimal number (e.g., 0.259574), then it is rational. If a decimal number is neither terminating nor repeating (e.g. π), then it is irrational.
Circumference	To measure the circumference of a circle in a variety of ways. To deduce that the circumference divided by the diameter is always equal to π. To state the formulas for the circumference of a circle. To calculate the circumference of a circle by approximating π as 3.14.
Arc Length and Perimeter of Sectors	To calculate the length of a sector's arc. To calculate the perimeter of a sector. To calculate the radius of a sector when given the measure of the arc and the length of the arc (or the perimeter).
Area of Circles	To use the formula πr^2 to calculate the area of a circle and solve problems involving the area of circles.
Area of an Annulus	To calculate the area of an annulus by subtracting the area of the inner circle from the area of the outer circle.
Area of a Semi Circle	To calculate the area of quarter-circles and semicircles and solve problems involving the area quarter-circles, and semi-circles.
Area of a Sector	To calculate the area of a sector. To solve related problems involving areas and perimeters of sectors.

Pythagoras

Lesson Set Objectives	To use Pythagoras' Theorem in similar triangles to solve problems involving right-angled triangles. To apply Pythagoras' Theorem to find angles and lengths in right-angled triangles {and, where possible, general triangles} in 2 {and 3} dimensional figures.		

Previous skills, themes or concepts	Angles Properties of 2-D and 3-D Shapes Substitution Formula, Expressions and Inequalities Changing the Subject Similarity and Congruence Coordinates	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Pythagoras' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Pythagoras'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Pythagoras'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Pythagoras'.

This lesson set includes the following lessons:	Lesson Objectives
Identifying the Hypotenuse	To identifying the hypotenuse of a right-angled triangle and recall that this is the longest side of a right-angled triangle.
Calculating the Length of the Hypotenuse	To use the Pythagorean theorem to find the length of the hypotenuse of a right-angled triangle.
Calculating the Length of a Shorter Side	To use the Pythagorean theorem to find the length of a shorter side of a right-angled triangle.
Pythagorean Triples	To establish that there are an infinite number of Pythagorean triples.
Pythagoras in 2-D Shapes	To solve geometric problems using the Pythagorean theorem.
Two Step Pythagoras Problems	To recognise and solve problems that require two iterations of the Pythagorean theorem.
Distance Between Two Points	To calculate the distance between two points on a cartesian plane.
Pythagoras in Context	To use the Pythagorean theorem to solve geometric and real-life problems.
Identifying a Right-Angled Triangle	To apply the Pythagorean theorem to prove if a triangle is right angled or not.
Pythagoras Problem Solving	To recall how to calculate the distance between two points, proof of if a triangle is right angled or not and apply the Pythagoras theorem to a bearing.
3-D Pythagoras	To solve geometric problems using the 2-D Pythagoras theorem applied to 3-D systems.

Congruence and Similarity

Lesson Set Objectives	To use scale factors, scale diagrams and maps. To use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles. To identify and construct congruent triangles, and construct similar shapes by enlargement, with and without co-ordinate grids. To apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs. To compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios). To apply the concepts of congruence and similarity, including the relationships between lengths, {areas and volumes} in similar figures.		

Previous skills, themes or concepts	Properties of 2-D and 3-D Shapes Perimeter and Area Volume	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Congruence and Similarity' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Congruence and Similarity'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Congruence and Similarity'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Congruence and Similarity'.

This lesson set includes the following lessons:	Lesson Objectives
Conditions for Congruency	To use the triangle congruence criteria SSS, SAS, ASA, and RHS to find unknown angles or sides in geometry problems.
Recognising Similar and Congruent Shapes	To recognise that if two polygons are similar, then they contain angles of equal measure and corresponding sides that are in proportion. To use proportionality of sides to prove similarity.
Congruency Proof	To use deductive proof and the triangle congruence criteria SSS, SAS, ASA, and RHS to prove two triangles are congruent in geometric problems.
Calculating Lengths of Similar Shapes	To use similarity to calculate unknown angle measures, scale factors, unknown side lengths, and perimeters.
Similar Triangles	To use similarity to calculate unknown angle measures, scale factors, unknown side lengths, and perimeters of triangles. To use the similarity of two triangles to form and solve linear equations.
Similarity with Area and Volume	To calculate dimensions, areas, and volumes given two similar solids.

Vectors

Lesson Set Objectives	To describe translations as 2-D vectors. To apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors; {use vectors to construct geometric arguments and proofs}.			
Previous skills, themes or concepts	Transformations Pythagoras Properties of 2-D and 3-D Shapes	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Vectors' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Vectors'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Vectors'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Vectors'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Introduction to Vectors	☐ To interpret vector notation.
☐ Column Vectors	☐ To describe the translation from a point to another using a vector. To find the position of a shape after it has been translated by a given vector.
☐ Calculations with Column Vectors	☐ To add and subtract two or more vectors together using purely graphical methods. To add and subtract two or more vectors together given the component forms of the vectors using vector notation. To multiply vectors by a scalar.
☐ Calculate the Magnitude of a Vector	☐ To work out the magnitude of a vector given in component form using notation. To work out the magnitude of a vector shown on a grid.
☐ Combining Vectors	☐ To use vector geometry to add vectors in diagrams.
☐ Vector Proof	☐ To recognise that two vectors are parallel if and only if one is a multiple of the other. To prove that two vectors are parallel. To answer proof questions involving ratio.

Right-Angled Trigonometry

Lesson Set Objectives	To use trigonometric ratios in similar triangles to solve problems involving right-angled triangles. To compare lengths, using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios). To apply trigonometric ratios to find angles and lengths in right-angled triangles {and, where possible, general triangles} in 2 {and 3} dimensional figures. To know the exact values of sin(θ) and cos(θ) for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of tan(θ) for θ = 0°, 30°, 45°, 60°.			
Previous skills, themes or concepts	Pythagoras Properties of 2-D and 3-D Shapes Angles Bearings	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Right-Angled Trigonometry' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Right-Angled Trigonometry'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Right-Angled Trigonometry'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Right-Angled Trigonometry'.

This lesson set includes the following lessons:	Lesson Objectives
☐ Labelling the Triangle	☐ To label the sides and angle of a right triangle.
☐ Introduction to Trigonometric Ratios	☐ To discover trigonometric ratios in right angled triangles.
☐ Identifying the Correct Ratio	☐ To identify the correct trigonometric ratio needed to find a missing angle or side in a right-angled triangle.
☐ Finding a Side	☐ To find a missing side length in a right triangle (given a figure) using the sine, cosine, and tangent ratios where the unknown is at the top of the ratio. To find a missing side length in a right triangle (given a figure) using the sine, cosine, and tangent ratios where the unknown is at the bottom of the ratio.
☐ Finding an Angle	☐ To find an unknown angle measure in a right triangle (given a figure) using the sine, cosine, and tangent ratios, and their inverse functions.
☐ Exact Trig Values	☐ To know the exact values of sin(θ) and cos(θ) for θ = 0°, 30°, 45°,60° and 90°. To know the exact value of tan(θ) for θ = 0°, 30°, 45° and 60°. To write down the exact trig values for certain angles. To use the exact trig values to solve problems.
☐ Trigonometry in Context	☐ To draw a figure from a question and determine an unknown angle in a right triangle. To interpret and solve real-life and applied problems using right triangle trigonometry.
☐ Trigonometry and Pythagoras Mix	☐ To use Pythagorean theorem and trigonometry on right angled triangles.
☐ Trigonometry in 3-D Solids	☐ To find planar right triangles in 3-D figures to solve trigonometric problems. To combine trigonometry and the Pythagorean theorem to solve problems involving angles and lengths in three dimensions. To solve 3-D trigonometry problems in real-world contexts.
☐ Graphs of Trigonometric Functions	☐ To graph and recognise trigonometric functions sin(x), cos(x) and tan(x).
☐ Solving Trigonometric Equations	☐ To apply knowledge of trigonometric graphs to solve trigonometric equations.

Non-Right-Angled Trigonometry

Lesson Set Objectives	To know and apply the sine rule, $\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$, and cosine rule, $a^2 = b^2 + c^2 \, 2bc \cos(A)$, to find unknown lengths and angles. To know and apply Area $= \frac{1}{2} \, ab \, \sin(C)$ to calculate the area, sides or angles of any triangle}.

Previous skills, themes or concepts	Perimeter and Area Circles Right-Angled Trigonometry Formula, Expressions and Inequalities Changing the Subject Angles Bearings	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Non-Right-Angled Trigonometry' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Non-Right-Angled-Trigonometry'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Non-Right-Angled Trigonometry'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Non-Right-Angled Trigonometry'.

This lesson set includes the following lessons:	Lesson Objectives
▪ Labelling the Triangle	▪ To label a triangle for the sine and cosine rule.
▪ The Sine Rule	▪ To use the sine rule to find a missing side length or angle of a triangle and in conjunction with other triangle facts to find a missing side length or angle.
▪ The Cosine Rule	▪ To use the cosine rule to find a missing side length or angle of a triangle and in conjunction with other triangle facts to find a missing side length or angle.
▪ Sine or Cosine Rule	▪ To draw a diagram to represent a real-world problem and establish whether it can be solved by using the law of sines, the law of cosines, or a combination of both.
▪ Area of a Triangle	▪ To calculate the area of a triangle given two of its lengths and an included angle. To calculate unknown lengths or angle measures given the area of a triangle. To calculate areas of parallelograms and other compound shapes using the formula.
▪ Area of a Segment	▪ To calculate the area of a segment using $\frac{1}{2} \, ab \, \sin(C)$.
▪ Sine and Cosine Rule in Context	▪ To solve real-world problems using the law of sines, the law of cosines, or a combination of both, including finding unknown lengths and angle measures. To solve problems described using directions (north, east, south, and west) and problems given in a wider geometric context (including problems involving circles); this also includes finding areas of triangles or parallelograms.

Circle Theorems

Lesson Set Objectives	{To apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results}.

Previous skills, themes or concepts	Circles Angles	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Circle Theorems' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Circle Theorems'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Circle Theorems'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Circle Theorems'.

This lesson set includes the following lessons:	Lesson Objectives
▪ Tangent Radius Theorem	▪ To apply the tangent radius theorem.
▪ Angle at the Centre Theorem	▪ To apply the angle at the centre theorem.
▪ Angles in a Semi Circle Theorem	▪ To apply the angles in a semi-circle theorem.
▪ Angles in the Same Segment Theorem	▪ To apply the angles from the same point circle theorem.
▪ Angles in a Cyclic Quadrilateral Theorem	▪ To apply the angles in a cyclic quadrilateral circle theorem.
▪ Alternate Segment Theorem	▪ To apply the alternate segment circle theorem.
▪ Chord Bisector Theorem	▪ To apply the chord bisector circle theorem.
▪ Tangents from the Same Point Theorem	▪ To apply the tangents from the same point circle theorem.
▪ Circle Theorem Mixed Questions	▪ To identify and apply the correct circle theorem.
▪ Application of Circle Theorems	▪ To apply more than one circle theorem to calculate an angle.
▪ Circle Theorem Proofs	▪ To use geometric proof for circle theorems.

RATIO AND PROPORTION

The EDClass teaching staff will use a combination of professional judgement, diagnostic assessment, the information provided by school staff through the admissions process and learner feedback to create a personalised, flexible and challenging learning pathway that offers eLearning, video clips, recorded sessions and live learning lessons for all learners regarding their mathematical needs found within the ratio and proportion strand of maths.

☐ Ratio	☐ Proportion

MATHS

RATIO AND PROPORTION

KS3 Ratio and Proportion Objectives	To extend and formalise knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically. To interpret when the structure of a numerical problem requires proportional reasoning. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems. To begin to model situations mathematically and express the results using a range of formal mathematical representations. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.
KS4 Ratio and Proportion Objectives	To use mathematical language and properties precisely. To extend and formalise knowledge of ratio and proportion, in working with measures and geometry, and in working with proportional relations algebraically and graphically. To interpret when the structure of a numerical problem requires proportional reasoning. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial contexts. To make and use connections between different parts of mathematics to solve problems. To model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how solutions may have been affected by any modelling assumptions. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret solutions in the context of the given problem.

Ratio

Lesson Set Objectives	To use ratio notation, including reduction to simplest form. To use scale factors, scale diagrams and maps. To divide a given quantity into 2 parts in a given part: part or part: whole ratio; express the division of a quantity into 2 parts as a ratio. To understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction. To draw and measure line segments and angles in geometric figures, including interpreting scale drawings. To identify and work with fractions in ratio problems. To convert between related compound units (speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts.

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Ratio Compound Measures Metric Conversions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Ratio' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Ratio'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Ratio'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Ratio'.

This lesson set includes the following lessons:

- ☐ Ratio Notation
- ☐ Simplifying Ratio
- ☐ 1 : n
- ☐ Scaling up Ratio
- ☐ Ratio and Fraction Equivalence
- ☐ Sharing into a Ratio
- ☐ Ratio Part to Whole

Lesson Objectives

- ☐ To use ratio to describe the relationship between two quantities, expressed with ratio notation.
- ☐ To simplify ratios whether they are part-to-part ratios or three-part ratios. To simplify a ratio, working with different units.
- ☐ To recall that a unit ratio is in the form $n : 1$ or $1 : n$. To find a unit ratio describing a given real-world situation. To solve problems using unit ratios. To simplify to a unit ratio, working with different units.
- ☐ To scale up a ratio and appreciate that this is the inverse of simplifying a ratio.
- ☐ To use ratio to describe the relationship between two quantities, expressed as a fraction. To compare ratios by comparing fractions.
- ☐ To share a quantity in a given ratio.
- ☐ To solve problems involving sharing a quantity given the relationship between the shares.

	Ratio Part to Other Part			To solve problems involving sharing a quantity given the relationship between the shares.
	Comparing Ratios			To find the ratio $a : c$ given $a : b$ and $b : c$.
	Scale Drawings, Maps and Scales			To explore the relationship between the scale, drawing length, and real length. To find real lengths from a scale drawing. To solve problems involving scale drawings.

Proportion

Lesson Set Objectives	To relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions. To solve problems involving direct and inverse proportion, including graphical and algebraic representations. To understand that x is inversely proportional to y is equivalent to x is proportional to $^1/_y$; {construct and} interpret equations that describe direct and inverse proportion. To interpret the gradient of a straight-line graph as a rate of change; recognise and interpret graphs that illustrate direct and inverse proportion.

Previous skills, themes or concepts	Ratio Changing the Subject Solving Equations and Inequalities Substitution Metric Conversions	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Proportion' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Proportion'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Proportion'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Proportion'.

This lesson set includes the following lessons:	Lesson Objectives
Proportion Definition	To define proportion and give examples of direct proportion in real-life contexts.
Introduction to Proportion	To find missing values in a table when given the constant of proportionality or its graph. To find the equation of the line that represents the relationship between the two variables using its table. To spot variables which are in direct proportion from a table of values.
Direct Proportion Tables	To determine if ratios are in proportion. To find an unknown in a ratio when two ratios are in proportion. To complete a table that shows equivalent ratios or two proportional quantities. To solve problems of proportionality in real-world contexts.
Direct Proportion	To use proportion and ratio notation to adjust recipes for different amounts.
Best Buys	To use ratio notation to find the cost of a single unit. To use ratio notation to find the cost of the lowest common multiple. To find the best value of two or more offers. To solve real-life problems to find the best value for different offers.
Exchange Rates	To use ratio notation to convert between exchange rates.
Metric Measures to Imperial Conversions	To convert between imperial and metric units when given their equivalences.
Enlargement	To construct an enlargement given a scale factor. To calculate scale factors of enlargement for given enlargements.
Conversion Graphs	To progresses from working with proportions in the form 1 : n to finding conversion factors from a real-life graph.
Inverse Proportion Definition	To define inverse proportion and give examples of direct proportion in real-life contexts. To use ratio notation to model values that are inversely proportional.
Inverse Proportion Tables and Graphs	To complete a table that shows inverse proportional quantities.
Direct and Inverse Proportion Problems	To solve problems of proportionality in real-world contexts. To solve a range of problems combining inverse and direct proportion.
Direct and Inverse Proportion Graphs	To identify a graph that shows direct proportion. To use interpolation and extrapolation on graph that shows direct proportion.
Algebraic Direct Proportion	To derive a formula to model direct proportion and use it to calculate unknown values.
Algebraic Inverse Proportion	To derive a formula to model inverse proportion and use it to calculate unknown values.

PROBABILITY AND STATISTICS

The EDClass teaching staff will use a combination of professional judgement, diagnostic assessment, the information provided by school staff through the admissions process and learner feedback to create a personalised, flexible and challenging learning pathway that offers eLearning, video clips, recorded sessions and live learning lessons for all learners regarding their mathematical needs found within the probability and statistics strand of maths.

Averages and Range	Data, Tables, Charts and Diagrams	Scatter Graphs	Population and Samples	Probability	Describing Distribution

MATHS

PROBABILITY AND STATISTICS

KS3 Probability and Statistics Objectives	To use language and properties precisely to analyse probability and statistics. To explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express arguments formally. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems. To begin to model situations mathematically and express the results using a range of formal mathematical representations. To select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.
KS4 Probability and Statistics Objectives	To use mathematical language and properties precisely. To explore what can and cannot be inferred in statistical and probabilistic settings, and express arguments formally. To assess the validity of an argument and the accuracy of a given way of presenting information. To extend and formalise knowledge of ratio and proportion, in working with measures and geometry, and in working with proportional relations algebraically and graphically. To interpret when the structure of a numerical problem requires proportional reasoning. To develop mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems. To develop use of formal mathematical knowledge to interpret and solve problems, including in financial contexts. To make and use connections between different parts of mathematics to solve problems.

Averages and Range

Lesson Set Objectives	To describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).

Previous skills, themes or concepts	Key Stage 2 Programme of Study: Statistics	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Averages and Range' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Averages and Range'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Averages and Range'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Averages and Range'.

This lesson set includes the following lessons:	Lesson Objectives
Introduction to Averages	To recognise the term average and what it represents.
The Mean	To finding the mean of a list of values and understand that this is a process of 'evening out'.
The Mode	To recognise that the mode is one of the measures of central tendency. To explore that a data set can have a unique mode, more than one mode, or no mode (when no value appears more than another). To calculate the mode of a data set.
The Median	To recognise that the median is one of the measures of central tendency. To order data to calculate the median. To calculate the median of a data set with an odd number of values. To calculate the median of a data set with an even number of values, recognizing that it is calculated by finding the mean of the middle two values.
Introduction to the Range	To interpret the range of a data set can be used as a measure of spread.
Range	To find the range of a data set.

	Comparing Data Sets		To compare the measures of central tendency and measures of spread of multiple data sets presented as both tables and graphs. To calculate the measures of central tendency and measures of spread of multiple data sets in real-world scenarios and use these to solve problems.
	Choosing an Appropriate Average		To explore the differences between the mean, median, and mode and use the differences in these values to analyse and compare the spread of the data. To calculate the measures of central tendency of a real-world scenario and use the differences between the values to solve problems. To explain why certain measures of central tendency may not be suitable for certain data sets.
	Reverse Mean Problems		To calculating missing data when given the mean.
	Problem Solving with Averages		To find the largest element of a set when given the smallest element and the range. To find the smallest element of a set when given the largest element and the range. To find an unknown value in a data set if given the value of its median. To calculate an unknown value in a data set given its mode. To solve problems involving the mean of a data set.

Data, Tables, Charts and Diagrams

Lesson Set Objectives	To construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data. To reflect on how solutions may have been affected by any modelling assumptions.

| Previous skills, themes or concepts | Key Stage 2 Programme of Study: Statistics

Averages and the Range

Percentages

Calculations with Fractions

Fraction, Decimal and Percentage Conversion | Assessment used within this topic | The maths diagnostic assessments incorporate questions on the topic of 'Data, Tables, Charts and Diagrams' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Data, Tables, Charts and Diagrams'. | Resilience | Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Data, Tables, Charts and Diagrams'.
Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Data, Tables, Charts and Diagrams'. |

This lesson set includes the following lessons:

Lesson Objectives

	Pictograms		To answer questions about data in a pictogram. To compare categories in a pictogram. To complete a pictogram.
	Tally Charts		To use tally marks to complete a tally chart. To interpret data presented in a tally chart. To complete a graph using data presented in a tally chart.
	Frequency Tables		To construct a frequency table from a set of qualitative data. To construct a frequency table from a set of quantitative data. To read frequency tables. To calculate percentages from frequency tables.
	Mean from a Frequency Table		To calculate the mean from a frequency table.
	Mixed Averages from Frequency Tables		To calculate the mean, median and mode from a frequency table.
	Line Graphs		To draw a line graph by plotting data and joining data points with line segments. To decide on appropriate scales when drawing line graphs. To describe trends on line graphs and predict future data. To solve comparison, sum and difference problems using line graphs.
	Bar Charts		To interpret data represented in a bar chart. To compare categories in a bar chart. To complete a bar chart.
	Dual Bar Charts		To use a key to identify bars in bar chart with multiple related bars. To interpret data in bar charts with multiple related bars and answer questions.
	Frequency Trees		To record and organise information given as frequencies in a frequency tree diagram.
	Venn Diagrams		To interpret information is represented in a Venn diagram. To find missing information in a Venn diagram. To use a Venn diagram to solve real-world problems. To organise data into a Venn diagram.
	Interpreting Two Way Tables		To interpret two-way tables containing data on two categorical variables collected from the same subjects.
	Completing Two Way Tables		To construct a two-way table to represent given statistical data.
	Stem and Leaf Diagrams		To construct a stem-and-leaf plot from a given data set, with stems of varying numbers of digits and/or decimal portions of the original data values. To analyse and interpret data given as a stem-and-leaf plot. To determine the total number of values in a given stem-and-leaf plot by counting the leaves. To construct a back-to-back stem-and-leaf plot from given data sets, with stems of varying numbers of digits. To analyse and interpret data given as a back-to-back stem-and-leaf plot.
	Averages from Stem and Leaf Diagrams		To read data and calculate averages from a stem and leaf diagram.
	Mean from Charts and Diagrams		To calculate the mean from data displayed in charts and diagrams.
	Median from Charts and Diagrams		To calculate the median from data displayed in charts and diagrams.
	Pie Charts		To analyse pie charts by considering what fraction of the whole each segment represents. To apply that angles around a point, add up to °.
	Interpreting Pie Charts		To analyse pie charts by considering what percentage of the whole each segment represents. To interpret data in pie charts to answer questions.
	Drawing Pie Charts		To draw a pie chart by measuring angles of sectors. To find the measure of the angle in a sector by finding the percentage of 360°. To represent a data set on a pie chart.

	Representing Data Mix		To calculate the averages and the range from data displayed in charts and diagrams.
	Discrete and Continuous Data		To identify discrete data. To identify continuous data.
	Grouped Data		To identify and understand grouped data notation.
	Cumulative Frequency		To complete an ascending cumulative frequency table from a grouped frequency table.
	Estimating Averages from a Grouped Frequency Table		To recognise that, for grouped data, you can only calculate an estimate for the mean if you do not know the source data. To calculate the midpoints of classes in a grouped frequency table. To form an extended frequency table to help calculate an estimate for the mean. To calculate an estimate for the mean of grouped data.

Scatter Graphs

Lesson Set Objectives	To describe simple mathematical relationships between 2 variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs. To use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation. To draw estimated lines of best fit, make predictions, interpolate and extrapolate apparent trends whilst knowing the dangers of so doing.

Previous skills, themes or concepts	Co-ordinates Data, Tables, Charts and Diagrams	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Scatter Graphs' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Scatter Graphs'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Scatter Graphs'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Scatter Graphs'.

This lesson set includes the following lessons:		Lesson Objectives	
	Introduction to Scatter Graphs		To extract information from a scatter graph.
	Correlation		To determine if two different variables have a linear or nonlinear relationship. To describe the relationship between two different variables in terms of positive and negative correlation.
	Describing Relationships		To describe how two different variables can be related.
	Line of Best Fit		To describe how strongly correlated two different variables are based on the proximity to a line of best fit on a scatter graph or a scatter graph without a line of best fit. To draw a correct line of best fit.
	Interpreting Scatter Graphs		To estimate the solution to a problem using a line of best fit.

Population and Samples

Lesson Set Objectives	To apply systematic listing strategies, {including use of the product rule for counting}. To infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling. To apply statistics to describe a population.

Previous skills, themes or concepts	Data, Tables, Charts and Diagrams Proportion Solving Equations and Inequalities	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Population and Samples' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Population and Samples'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Population and Samples'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Population and Samples'.

This lesson set includes the following lessons:		Lesson Objectives	
	Population, Samples, Types of Data and Bias		To recognise when a primary or secondary data source has been used. To define population, sample, census and bias. To state the kind of given statistical data, whether qualitative or quantitative. To state whether quantitative data is continuous or discrete.
	Capture-Recapture		To solve proportions to estimate population size.
	Product Rule for Counting		To find the number of outcomes in a probability problem with a condition. To solve real-world problems involving counting outcomes with restrictions.

Probability

Lesson Set Objectives	To record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale. To understand that the probabilities of all possible outcomes sum to 1. To enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams. To generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities. To apply systematic listing strategies. To apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to 1. To use a probability model to predict the outcomes of future experiments; understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size. To calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions. {To calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams}.

Previous skills, themes or concepts	Calculations with Fractions Fraction, Decimal and Percentage Conversion Percentages Data, Tables, Charts and Diagrams	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Probability' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Probability'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Probability'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Probability'.

This lesson set includes the following lessons:

Lesson Objectives

- Probability Scales
  - To recognise that the probability of an event must be between 0 and 1 (inclusive) and that all probabilities of the outcomes of an event must add up to 1. To use a numerical value to describe the probability of an event that is certain, impossible, or 50–50. To recognise that the probability of an event can be given as a fraction, a decimal, or a percentage.

- Mutually Exclusive
  - To identify mutually exclusive and non-mutually exclusive events when given sufficient probabilities or a representative Venn diagram. To find missing probabilities using the conditions for mutually exclusive and non-mutually exclusive events.

- Equally Likely Events
  - To develop an understanding of the distinction between equally likely and unequally likely events and their associated probabilities.

- Probability Notation
  - To recognise and use probability notation.

- Listing Outcomes
  - To list possible outcomes to determine probability.

- Experimental and Theoretical Probability
  - To recall that relative frequency is the number of times an event happens divided by the total number of outcomes that took place in an experiment. To explain that increasing the number of trials makes experimental probability more precise.

- Relative Frequency
  - To complete a sample space diagram and analyse the frequency and probability of outcomes.

- Completing Sample Space Diagrams
  - To draw a sample space diagram and analyse the frequency and probability of outcomes.

- Drawing Sample Space Diagrams
  - To record, describe and analyse the frequency and probability of outcomes using frequency trees.

- Probability from Frequency Trees
  - To calculate combined probabilities by listing all possible outcomes for 2 or more events.

- Two Way Tables
  - To use two-way tables to calculate probabilities. To find conditional probabilities using two-way tables.

- Probability from Venn Diagrams
  - To find probabilities of events using information presented in a Venn diagram. To calculate conditional probabilities using Venn diagrams.

- Venn Diagrams and Set Notation
  - To use set notation to describe the complement, union, and intersection of sets as well as the number of elements or probabilities of an event. To determine the number of elements in a set, the complement of a set, the union of sets and the intersection of sets.

- Probability from Venn Diagrams Using Set Notation
  - To use set notation to describe the complement, union, and intersection of sets as well as the number of elements or probabilities of an event. To determine the number of elements in a set, the complement of a set, the union of sets, the intersection of sets and use this to calculate probabilities.

- Introduction to Probability Trees
  - To identify possible outcomes from a probability tree.

- Completing a Probability Tree Diagram
  - To fill the branches of a tree diagram with appropriate probability values, given sufficient information.

- Independent Probability Trees
  - To draw and interpret a tree diagram representing multiple successive experiments. To use tree diagrams to compute probabilities by multiplying and adding probabilities on the branches.

- Dependent Probability Trees
  - To draw tree diagrams given conditional probabilities. To construct probability trees for consecutive selections without replacements. To calculate conditional probabilities using tree diagrams.

Describing Distributions

Lesson Set Objectives	To construct and interpret diagrams for grouped discrete data and continuous data i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use. To interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: appropriate graphical representation involving discrete, continuous and grouped data, {including box plots}; appropriate measures of central tendency (including modal class) and spread {including quartiles and inter-quartile range}.

Previous skills, themes or concepts	Averages and Range Data, Tables, Charts and Diagrams Perimeter and Area	Assessment used within this topic	The maths diagnostic assessments incorporate questions on the topic of 'Describing Distributions' to test and evaluate a learner's prior learning and knowledge gaps. Questions, tasks and a one-to-one assessment take place within this lesson set, to assess a learner's knowledge and understanding of 'Describing Distributions'.	Resilience	Support is provided throughout this lesson set to assist a learner's development in their knowledge of 'Describing Distributions'. Resilience is developed through independent practice, assessment, one-to-one support sessions and live lessons covering the lesson set objectives for 'Describing Distributions'.

This lesson set includes the following lessons:

- ☐ Cumulative Frequency
- ☐ Box Plots
- ☐ Comparing Box Plots
- ☐ Introduction to Histograms
- ☐ Interpreting Histograms
- ☐ Constructing Histograms

Lesson Objectives

- ☐ To draw an ascending cumulative frequency graph given a grouped frequency table. To make estimations about data using an ascending cumulative frequency graph.
- ☐ To construct a box-and-whisker plot of a data set (with and without an outlier) when given the lowest or highest values, the lower or upper quartiles, and the median. To identify the upper and lower quartiles, the range, the median, and the IQR from a given box-and-whisker plot. To construct a box-and-whisker plot from a raw data set.
- ☐ To compare and contrast the centre and spread of two data sets when given their box-and-whisker plots within the same grid.
- ☐ To recognise when it is appropriate to use a histogram (or a frequency polygon) to represent data. To compute the frequency density of a class from a grouped frequency table. To calculate the frequency of a class when given a histogram.
- ☐ To calculate the total frequency from a histogram with unequal class widths. To calculate an estimate of frequency within a given range for a histogram with unequal class widths. To estimate the mean average from a histogram with unequal class widths.
- ☐ To construct histograms when given a grouped frequency table. To construct a frequency polygon by connecting the points at each class midpoint on top of a histogram.