

Year 9

Unit A: Basic calculation skills		Prerequisite for Units			
Required previous learning Y7/8 Maths		Y9 - F. Fractions Y9 - G. Further algebraic expressions GCSE - 3 Angles GCSE - 13 Powers and roots			
	Learning outcomes		Initial learning	Secure learning	Greater depth
Basic calculations	<ul style="list-style-type: none"> To identify the correct operations required and use written calculations to solve worded problems To calculate with all four operations of arithmetic using positive and negative numbers 	1.01a			
Order of operations	<ul style="list-style-type: none"> To apply the hierarchy of operations to accurately work out calculations involving two or more operations 	1.01a			
		1.03a			
Inverse operations	<ul style="list-style-type: none"> To identify and write the inverses for operations and apply these to check the results of calculations and develop the skills required to solve equations 	1.04a			

Required previous learning

Y7/8 Maths

Prerequisite for Units

Y9 - C Algebraic expressions

Y9 - D Functions and sequences

Y9 - F Fractions

Y9 - N Pythagoras' theorem

GCSE - 2 Area

Unit B: Whole number theory

	Learning outcomes		Initial learning	Secure learning	Greater depth
Review of number properties	<ul style="list-style-type: none"> To recall and understand key definitions of types of number To consolidate understanding of basic place value 	1.02a			
Prime numbers and prime factors	<ul style="list-style-type: none"> To apply knowledge of factors and primes to express a number as a product of its prime factors To simplify a collection of numbers that have been multiplied together by writing them in index form 	1.02b			
Multiples and factors	<ul style="list-style-type: none"> To use the 'listing method' to find the highest common factor and lowest common multiple of a set of numbers To use prime factors to find the highest common factor and lowest common multiple of a set of numbers 	1.02c			

Required previous learning
Y9 - B Whole number theory

Unit C: Algebraic expressions

Prerequisite for Unit
Y9 - G Further algebraic expressions

	Learning outcomes		Initial learning	Secure learning	Greater depth
Algebraic notation	<ul style="list-style-type: none"> To understand and work with correct, formal algebraic language and notation To form algebraic expressions from worded instructions and geometric problems To substitute given values into algebraic expressions and evaluate the result To simplify products and quotients and apply the index laws to simplify 	6.01a			
Simplifying expressions	<ul style="list-style-type: none"> To simplify algebraic expressions by collecting like terms To simplify products and quotients 	6.01b			
		6.01c			
Multiplying out brackets	<ul style="list-style-type: none"> To expand the product of a single term and binomial 	6.01d			
Factorising expressions	<ul style="list-style-type: none"> To factorise expressions by taking out common factors and recognise that the HCF must be used for an expression to be fully factorised 	6.01e			
Using algebra to solve problems	<ul style="list-style-type: none"> To form expressions from word problems in a variety of contexts, including number problems, and use algebra to solve them 	6.01a			
		6.02a			
		6.02b			

Required previous learning

Y9 - B Whole number theory

Unit D: Functions and sequences**Prerequisite for Unit**

GCSE - 4 Straight-line graphs

	Learning outcomes		Initial learning	Secure learning	Greater depth
Sequences and patterns	<ul style="list-style-type: none"> To generate terms of a sequence from a term-to-term rule 	6.06a			
Finding the n th term	<ul style="list-style-type: none"> To generate terms of a sequence from a position-to-term rule and find the nth term of a linear sequence 	6.06a			
Functions	<ul style="list-style-type: none"> To generate terms of a sequence using a function 	6.05a			
		6.06a			
Special sequences	<ul style="list-style-type: none"> To identify special sequences To find the nth term of a quadratic sequence 	6.06b			

Required previous learning

Y7/8 Maths

Unit E: Properties of shapes and solids**Prerequisite for Units**

Y9 - L Algebraic formulae

GCSE - 2 Area

GCSE - 3 Angles

GCSE - 6 Three-dimensional shapes

	Learning outcomes		Initial learning	Secure learning	Greater depth
Types of shapes	<ul style="list-style-type: none"> To know the names and features of common polygons and polyhedrals To know how to describe and label common features (congruent shapes, parallel sides, etc.) of plane figures 	8.01a			
		8.01b			
		8.01c			
		8.01e			
		8.05a			
Symmetry	<ul style="list-style-type: none"> To identify and describe line and rotational symmetry in plane figures 	8.04c			
Triangles	<ul style="list-style-type: none"> To know and use properties of triangles, including their interior angle sum 	8.03d			
		8.04a			
Quadrilaterals	<ul style="list-style-type: none"> To know and use properties of quadrilaterals, including their interior angle sum 	8.03d			
		8.04b			
Properties of 3D objects	<ul style="list-style-type: none"> To know and use properties of three-dimensional solids 	8.01a			
		8.01b			
		8.06a			

Required previous learningY9 - [A Basic calculation skills](#)

Y9 - B Whole number theory

Unit F: Fractions**Prerequisite for Units**

Y9 - K Percentages

GCSE - 10 Calculations with ratio

GCSE - 21 Direct and inverse proportion

	Learning outcomes		Initial learning	Secure learning	Greater depth
Equivalent fractions	<ul style="list-style-type: none"> To apply knowledge of factors and multiples to simplify fractions and identify equivalent fractions 	1.02c			
		2.01a			
		2.04a			
		2.04b			
Operations with fractions	<ul style="list-style-type: none"> To apply the four operations to fractions To apply knowledge of the four operations to solving problems involving fractions 	1.01a			
		1.03a			
		2.01b			
		3.03a			
Finding fractions of a quantity	<ul style="list-style-type: none"> To calculate fractions of amounts To express one number as a fraction of another 	2.01c			

Required previous learningY9 - [A Basic calculation skills](#)

Y9 - C Algebraic expressions

Unit G: Further algebraic expressions**Prerequisite for units**

Y9 - H Equations

GCSE - 7 Surds

	Learning outcomes		Initial learning	Secure learning	Greater depth
Multiplying two binomials	<ul style="list-style-type: none"> To know what a quadratic expression is To be able to expand the product of two binomials 	6.01d			
Factorising quadratic expressions	<ul style="list-style-type: none"> To be able to factorise expressions of the form $x^2 + bx + c$ 	6.01e			
Completing the square	<ul style="list-style-type: none"> To complete the square on a quadratic expression 	6.01f			
Algebraic fractions	<ul style="list-style-type: none"> To simplify and manipulate algebraic fractions 	6.01g			
Apply your skills	<ul style="list-style-type: none"> To form algebraic expressions to solve problems 	6.02a			

Required previous learning

Y9 -G Further algebraic expressions

Unit H: Equations**Prerequisite for Units**

Y9 - L Algebraic formulae
 GCSE - 5 Graphs of equations and functions
 GCSE - 15 Plane vector geometry
 GCSE - 18 Similarity
 GCSE - 25 Algebraic inequalities

	Learning outcomes		Initial learning	Secure learning	Greater depth
Linear equations	<ul style="list-style-type: none"> Solve linear equations To understand that identities are equations for which there are an infinite number of solutions as they are true for all values x can take 	6.01a			
		6.03a			
Quadratic equations	<ul style="list-style-type: none"> To solve quadratic equations To understand that different types of equations have a different possible number of solutions 	6.01e			
		6.03b			
Simultaneous equations	<ul style="list-style-type: none"> To solve linear simultaneous equations To solve linear and quadratic simultaneous equations 	6.03c			
		6.03d			
Using graphs to solve equations	<ul style="list-style-type: none"> To know how to read and interpret graphs in various contexts To be able to use graphs to find approximate solutions to equations 	6.03d			
Finding approximate solutions by iteration	<ul style="list-style-type: none"> To use iterative methods to find approximate solutions to equations 	6.03e			
Using equations and graphs to solve problems	<ul style="list-style-type: none"> To use equations and graphs to solve problems 	6.03d			

Required previous learning

Y7/8 Maths

Unit I: Decimals**Prerequisite for Units**

Y9 - J Units and measurement

Y9 - K Percentages

Y9 - M Approximation and estimation

	Learning outcomes		Initial learning	Secure learning	Greater depth
Revision of decimals and fractions	<ul style="list-style-type: none"> To apply knowledge of place value to convert between decimals and fractions and order fractions and decimals 	2.02a			
		2.04a			
		2.04b			
Calculating with decimals	<ul style="list-style-type: none"> To apply knowledge of rounding to estimate answers to calculations that involve decimals To be able to add, subtract, multiply and divide decimals To use a calculator to complete more complicated calculations that involve decimals 	2.02b			
		2.02c			
Converting recurring decimals to exact fractions	<ul style="list-style-type: none"> To convert recurring decimals to fractions 	2.02a			

Required previous learning

Y9 - I Decimals

Unit J: Units and measurement**Prerequisite for Units**

Y9 - L Algebraic formulae

GCSE - 22 Collecting and displaying data

	Learning outcomes		Initial learning	Secure learning	Greater depth
Standard units of measurement	<ul style="list-style-type: none"> To be able to convert metric units for capacity, mass and length To be able to convert metric units of area and volume To understand units of time are not metric To be able to convert units of time and solve related problems To be able to convert currencies using scale factors 	10.01a			
Compound units of measurement	<ul style="list-style-type: none"> To be able to convert compound measurements To be able to use formulae for compound units: speed = distance/time, density = mass/volume, pressure = force/area, and to find any one of the variables given values for the other two 	10.01b			
Maps, scale drawings and bearings	<ul style="list-style-type: none"> To be able to read and use scales on maps including both line/bar scales and ratio scales To be able to form scales to construct scale drawings to fit a given dimension To be able to read and use bearings in scale drawings To understand the connection between a bearing of B from A and A from B on a given line segment 	5.01a			
		10.01c			

Required previous learning

Y9 - F Fractions

Y9 - I Decimals

Unit K: Percentages**Prerequisite for Units**

GCSE - 11

Basic probability and experiments

GCSE - 20

Discrete growth and decay

	Learning outcomes		Initial learning	Secure learning	Greater depth
Review of percentages	<ul style="list-style-type: none"> To be able to convert between fractions, decimals and percentages 	2.03a			
		2.04a			
		2.04b			
Percentage calculations	<ul style="list-style-type: none"> To use fractions, multipliers or calculators to work out percentages of amounts To be able to express a quantity as a percentage of another 	2.03b			
Percentage change	<ul style="list-style-type: none"> To calculate percentage increase or decrease To calculate the original amount given the value after an increase or decrease 	2.03c			

Required previous learning

Y9 - E Properties of shapes and solids

Y9 - H Equations

Y9 - J Units and measurement

Unit L: Algebraic formulae**Prerequisite for Units**

GCSE - 1 Perimeter

GCSE - 4 Straight-line graphs

GCSE - 21 Direct and inverse proportion

	Learning outcomes		Initial learning	Secure learning	Greater depth
Writing formulae	<ul style="list-style-type: none"> To be able to write formulae to represent real life contexts 	6.02a			
Substituting values into formulae	<ul style="list-style-type: none"> To be able to substitute numerical values into formulae 	6.02b			
Changing the subject of a formula	<ul style="list-style-type: none"> To be able to rearrange formulae to change the subject 	6.02c			
Working with formulae	<ul style="list-style-type: none"> To be able to use formulae from the topic of kinematics To be able to work with formulae in a variety of contexts 	6.02d			
		6.02e			

Required previous learning

Y9 - I Decimals

Unit M: Approximation and estimation

Prerequisite for Units

GCSE - 8 Trigonometry

GCSE - 14 Standard form

	Learning outcomes		Initial learning	Secure learning	Greater depth
Rounding	<ul style="list-style-type: none">To be able to round to the nearest positive integer power of ten and apply this to some real-life examplesTo round values to a specified number of decimal placesTo round values to a specified number of significant figuresTo truncate values and understand when this is useful to apply in context	4.01a			
Approximation and estimation	<ul style="list-style-type: none">To apply the ability to round to one significant figure in order to estimate answers to more complex calculations without using a calculator	4.01a			
		4.01b			
Limits of accuracy	<ul style="list-style-type: none">To use inequalities and identify the lower and upper bounds for measurements and use these within calculations to find maximum and minimum solutionsCalculate the upper and lower bounds of a calculation (for discrete and continuous quantities)	4.01c			

Required previous learning

Y9 - B Whole number theory

Unit N: Pythagoras' theorem**Prerequisite for Units**

GCSE - 19 Circle theorems

	Learning outcomes		Initial learning	Secure learning	Greater depth
Understanding Pythagoras' theorem	<ul style="list-style-type: none"> Know and use Pythagoras' theorem to find any missing length in a right-angled triangle 	10.05a			
Using Pythagoras' theorem	<ul style="list-style-type: none"> To use Pythagoras' theorem to show whether a triangle is right-angled or not To apply Pythagoras' theorem to 2D problems 	10.05a			
Pythagoras in three dimensions	<ul style="list-style-type: none"> To apply Pythagoras' theorem to 3D problems 	10.05a			
Using Pythagoras' theorem to solve problems	<ul style="list-style-type: none"> Apply Pythagoras' theorem to 2D problems Link Pythagoras' theorem to real-life skills for industry 	10.05a			