Year 9	Unit
Autumn	• Decimals
	• Types of Number
	• Expressions
	• Units of Measure
	• Fractions
	• Solving Equations
	• Revision, Assessment and Review
	• Angles
Spring	• Ratio
	• Perimeter and Area
	• Sampling, Representing and Interpreting Data
	• Accuracy and Bounds
	• Formulae
	• Percentages
	• Revision, Assessment and Review
	• 2D and 3D Shapes
Summer	• Scatter Graphs
	• Proportion
	• Analysing Data
	• Pythagoras' Theorem
	• Revision, Terminal Exams and Review
	• Functional Skills Project

Unit 1 - Decimals

Duration: 5 – 7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Add and Subtract integers and decimals. Multiply 2 and 3 digit integers* I can multiply a decimal by an integer or a decimal				
Lesson 2 *Starter: Multiply and divide by 10, 100 and 1000* I can multiply and divide by multiples of 10, 100 and 1000 I can multiply and divide by 0.1, 0.01 and 0.001 **Challenge: I can multiply and divide by multiples of 0.1, 0.01 and 0.001**				
Lesson 3 *Starter: Divide integers and decimals by an integer* I can use written methods to divide by a decimal				
Lesson 4 **Challenge: I can add and subtract using decimals and negative numbers**				
Lesson 5 **Challenge: I can multiply and divide using decimal and negative numbers**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use the column method to add and subtract integers and decimals				
Lesson 2 I can use written methods to multiply 2 and 3 digit integers				
Lesson 3 I can multiply and divide by 10, 100 and 1000 **CHALLENGE: I can multiply and divide by multiples of 10, 100 and 1000**				
Lesson 4 I can multiply a decimal by an integer I can use written methods to multiply 2 decimals				
Lesson 5 I can multiply and divide by 0.1, 0.01 and 0.001 **CHALLENGE: I can multiply and divide by multiples of 0.1, 0.01 and 0.001**				
Lesson 6 I can use written methods to divide integers and decimals by an integer				
Lesson 7 **CHALLENGE: I can use written methods to divide by decimals**				

Assessment – Check Out Test

Unit 2 – Types of Number

Duration: 6 – 8 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 – Review I can identify factors, multiples, prime numbers, square and cube numbers and their associated roots (including negative square roots)				
Lesson 2 *Starter: Index Notation* I can express a number as a product of its prime factors including in index form				
Lesson 3 & 4 I can find the HCF and LCM using Venn Diagrams **Challenge: I can find the HCF and LCM for 3 numbers** **Challenge: I can identify the numbers when given the HCF and LCM**				
Lesson 5 I can solve worded problems using HCF and LCM				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify factors, multiples and prime numbers				
Lesson 2 I can identify square numbers and their roots				
Lesson 3 I can identify cube numbers and their roots				
Lesson 4 I can identify HCF and LCM using lists				
Lesson 5 I can use index notation				
Lesson 6 I can construct a prime factor tree I can express a number as a product of its prime factors **(in index form)**				
Lesson 7 **Challenge: I can find the HCF and LCM using Venn Diagrams**				
Lesson 8 **Challenge: I can solve worded problems using HCF and LCM**				

Assessment – Check Out Test

Unit 3 - Expressions

Duration: 6 – 9 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can simplify expressions by collecting like terms including indices				
Lesson 2 *Starter: index notation* I can use the multiplication and division laws for indices				
Lesson 3 I can simplify expressions using multiplication and division including indices				
Lesson 4 I can expand brackets by a number and/or letter I can expand brackets and simplify expressions [e.g. 2(x + 5) + 3(2x – 4)]				
Lesson 5 I can expand double brackets **Challenge: I can expand three brackets**				
Lesson 6 I can factorise expressions by a number and/or letter				
Lesson 7 I can factorise quadratic expressions in the form $ax^2 + bx + c$ (where a = 1) **Challenge: I can factorise quadratic expressions in the form $ax^2 + bx + c$ (where a > 1)**				
Lesson 8 I can factorise using the difference of two squares (including $ax^2 – by^2$)				
Lesson 9 **Challenge: I can complete the square for a quadratic expression**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can simplify expressions by collecting like terms (addition and subtraction) **Challenge: I can simplify expressions by collecting like terms involving indices**				
Lesson 2 *Starter: Index Notation* I can simplify expressions using multiplication and division				
Lesson 3 I can expand brackets by a number or a letter I can expand brackets by numbers and letters combined				
Lesson 4 **Challenge: I can expand double brackets**				
Lesson 5 I can factorise linear expressions (numbers as factors) **Challenge: I can factorise expressions (letters as factors)**				
Lesson 6 **Challenge: I can factorise quadratic expressions in the form $ax^2 + bx + c$ (a = 1 only)**				

Assessment – Check Out Test

Unit 4 - Units of Measure

Duration: 5-7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can identify metric units. I can identify imperial units* I can convert metric units of length, mass and capacity				
Lesson 2 *Starter: I can convert between units of time* I can convert between units of capacity and volume I can solve worded problems involving metric units				
Lesson 3 I can convert between metric and imperial units				
Lesson 4 I can convert between metric units of area and volume				
Lesson 5 **Challenge: I can convert between metric and imperial units of area and volume**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Starter: I can identify metric units. I can identify imperial units* I can convert between metric units of length, mass and volume				
Lesson 3 I can convert between units of time I can solve worded problems involving metric units				
Lesson 4 **Challenge: I can convert between units of capacity and volume (including worded questions)**				
Lesson 5 I can convert between metric and imperial units (conversion given)				
Lesson 6 **Challenge: I can convert between metric units of area**				
Lesson 7 **Challenge: I can convert between metric units of volume**				

Assessment – Check Out Test

Unit 5 - Fractions

Duration: 7/8 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can understand and use equivalent fractions. I can simplify fractions to their simplest form.* I can add and subtract fractions with different denominators				
Lesson 2 *Starter: I can convert between mixed numbers and improper fractions* I can add and subtract mixed numbers				
Lesson 3 *Starter: I can calculate fractions of amounts* I can multiply fractions by integers and fractions I can multiply mixed numbers				
Lesson 4 *Starter: I can divide a whole number by a fraction* I can divide a fraction by a whole number of a fraction I can divide mixed numbers				
Lesson 5 *Starter: I can recall standard fraction, decimal and percentage conversions* I can convert fractions to decimals and percentages				
Lesson 6 **Challenge: I can convert recurring decimals to fractions**				
Lesson 7 **I can add and subtract algebraic fractions (numerical denominators only)**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand and use equivalent fractions I can simplify fractions to their simplest form				
Lesson 2 I can convert mixed numbers and improper fractions				
Lesson 3 I can add and subtract fractions with the same denominator I can add and subtract fractions with different denominators.				
Lesson 4 **Challenge: I can add and subtract mixed numbers**				
Lesson 5 I can calculate fractions of amounts				
Lesson 6 I can multiply a fraction by an integer I can multiply a fraction by a fraction				
Lesson 7 I can divide an integer by a fraction **Challenge: I can divide a fraction by an integer or a fraction**				
Lesson 8 I can recall standard fraction, decimal and percentage conversions I can convert fractions to decimals and percentages				

Assessment – Check Out Test

Unit 6 – Solving Equations

Duration: 5/6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can solve linear equations where the unknown appears once* I can solve linear equations involving brackets (inc. 2(x + 3) + 4(2x + 5) = 36)				
Lesson 2 I can solve linear equations involving fractions (numerical denominators and expressions as denominators)				
Lesson 3 I can solve linear equations with unknowns on both sides				
Lesson 4 **Challenge: I can solve equations with fractions and unknowns on both sides**				
Lesson 5 *Starter: I can set up linear equations from "I think of a number…" statements* I can set up and solve linear equations from a context				
Lesson 6 **Challenge: I can solve equations by adding and subtracting algebraic fractions (numerical denominators only)**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can use function machines to calculate inputs and outputs* I can solve linear equations with the unknown appears once				
Lesson 2 I can solve linear equations involving brackets (inc. 2(x + 3) + 4(2x + 5) = 36)				
Lesson 3 I can solve linear equations involving fractions (numerical denominators)				
Lesson 4 **Challenge: I can solve linear equations with unknowns on both sides**				
Lesson 5 I can set up linear equations from "I think of a number…" statements **Challenge: I can set up and solve linear equations from a context**				

Assessment – Check Out Test

Unit 7 - Angles

Duration: 6/7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can calculate missing angles (straight line, around a point, vertically opposite)* I can calculate missing angles in triangles and quadrilaterals (given their properties)				
Lesson 2 and 3 *Starter: I can identify alternate and corresponding angles between parallel lines* I can calculate missing angles between parallel lines giving reasons				
Lesson 4 and 5 I can calculate the sum of interior angles in any regular polygon I can calculate the size of each interior angle of a regular polygon I can calculate the size of each exterior angle of a regular polygon				
Lesson 6 I can calculate the number of sides of a polygon when given the exterior or interior angle				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can measure and draw angles				
Lesson 2 I can calculate missing angles (straight line, around a point, vertically opposite)				
Lesson 3 I can calculate missing angles in triangles, including special triangles				
Lesson 4 I can calculate missing angles in quadrilaterals, including special quadrilaterals				
Lesson 5 I can identify alternate and corresponding angles between parallel lines I can calculate missing angles between parallel lines giving reasons				
Lesson 6 *Starter: I can identify and name regular polygons* I can calculate the size of each exterior angle of a regular polygon I can calculate the size of each interior angle of a regular polygon				
Lesson 7 **Challenge: I can calculate the sum of interior angles in a regular polygon**				

Assessment – Check Out Test

Unit 8 - Ratio

Duration: 4 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can simplify ratios in their simplest form* I can simplify ratios written in different units I can write ratios in the form 1:n or n:1 I can compare using ratios				
Lesson 2 I can share a quantity into 2 or more parts				
Lesson 3 I can solve worded problems using ratio				
Lesson 4 I can understand the link between ratios and fractions and use this to solve problems				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can use and understand ratio notation* I can simplify ratios in their simplest form I can simplify ratios written in different units				
Lesson 2 and 3 I can share a quantity into 2 or more parts				
Lesson 4 I can solve worded problems using ratio				

Assessment – Check Out Test

Unit 9 – Perimeter and Area

Duration: 6 – 8 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate the area of triangles, rectangles parallelograms, trapeziums and compound shapes (within a context)				
Lesson 2 *Starter: I can identify and define the parts of a circle. I can calculate the area of a circle* I can calculate the area of sectors when given the angle and radius				
Lesson 3 *Starter: I can calculate the circumference of a circle* I can calculate the arc length of sectors when given the angle and radius				
Lesson 4 **Challenge: I can calculate the angle of a sector when given the radius and either the area or arc length** **I can calculate the radius of a sector when given the angle and either the area or arc length**				
Lesson 5 *I can calculate the surface area of cuboids* I can calculate the surface area of prisms (including cylinders)				
Lesson 6 I can calculate the surface area of pyramids, spheres and cones				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can calculate perimeter and areas by counting squares* I can calculate the perimeter and area of triangles and rectangles				
Lesson 2 I can calculate the area of parallelograms and trapeziums				
Lesson 3 I can calculate the perimeter and area of compound shapes				
Lesson 4 *Starter: I can identify and define the parts of a circle* I can calculate the area of a circle **(including semi-circles and quarter-circles)**				
Lesson 5 I can calculate the circumference of a circle **Challenge: I can calculate the arc length and perimeter of semi-circles and quarter-circles**				
Lesson 6 I can calculate the surface area of cuboids				
Lesson 7 I can calculate the surface area of triangular prisms				
Lesson 8 **Challenge: I can calculate the surface area of cylinders**				

Assessment – Check Out Test

Unit 10 – Sampling, Representing and Interpreting Data

Duration: 7 – 10 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can define the population of a study and explain the difference between population and a sample I can explain and carry out simple random sampling method I can identify when a sample is biased.				
Lesson 2 *Starter: I can construct and interpret pictograms* I can construct and interpret bar charts, including composite and multiple bar charts				
Lesson 3 *Starter: I can design and complete data tables, including for grouped data* I can construct and interpret frequency polygons				
Lesson 4 I can construct pie charts				
Lesson 5 I can interpret and compare data represented in pie charts				
Lesson 6 I can construct time series graphs I can interpret time series graphs by describing/identifying trends and variation				
Lesson 7 I can complete and interpret two-way tables I can construct two-way tables to solve worded problems				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify the difference between a population and a sample I can identify when a sample is biased. I can explain what simple random sampling method is.				
Lesson 2 I can design and complete data tables (including grouped data)				
Lesson 3 I can construct and interpret pictograms				
Lesson 4 I can construct and interpret bar charts				
Lesson 5 I can construct and interpret multiple and composite bar charts				
Lesson 6 I can construct and interpret frequency polygons				
Lesson 7 I can construct pie charts				
Lesson 8 I can interpret pie charts				
Lesson 9 I can complete and interpret two-way tables				
Lesson 10 I can construct time series graphs **Challenge: I can interpret time series graphs by describing/identifying trends and variation**				

Assessment – Check Out Test

Unit 11 – Accuracy and Bounds

Duration: lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can round to the nearest 10, 100, 1000 whole and stated number of decimals places* I can round whole numbers and decimals >1 to a stated number of significant figures I can round decimals <1 to a stated number of significant figures				
Lesson 2 *Starter: I can identify and use the approximate and inequality symbols* I can estimate answers by rounding to one significant figure I can check the results of calculations using rounding				
Lesson 3 I understand the difference between truncating a number and round a number I can write down the value of a number after it has been truncated				
Lesson 4 I can identify upper and lower bounds of a number that has been rounded (including to decimal places and significant figures)				
Lesson 5 I can use inequality notation to identify the error interval for a number or measurement rounded or truncated				
Lesson 6 **Challenge: I can solve worded problems involving calculating with upper and lower bounds**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can round to the nearest 10, 100, 1000 and whole number* I can round to a stated number of decimal places				
Lesson 2 I can round whole numbers to a stated number of significant figures I can round decimals > 1 to a stated number of significant figures				
Lesson 3 **Challenge: I can round decimals <1 to a stated number of significant figures**				
Lesson 4 *Starter: I can identify and use the approximate and inequality symbols* I can estimate answers by rounding to one significant figure I can check the results of calculations using rounding				
Lesson 5 I can identify upper and lower bounds of a number that has been rounded (to the nearest 10, 100, 1000 and whole number)				
Lesson 6 **Challenge: I can identify the error interval using inequality notation**				

Assessment – Check Out Test

Unit 12 - Formulae

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can recognise the difference between an expression, equation and formula* I can construct expressions and formulae from worded contexts				
Lesson 2 *Starter: I can substitute positive and negative values into expressions* I can substitute positive and negative values into formulae, including powers and roots to work out the value of the subject I can substitute positive and negative values into formulae, including powers and roots to work out the value of one of the variables				
Lesson 3 I can rearrange formulae where the subject appears once, including with powers and roots				
Lesson 4 *Starter: I can factorise expressions (letters as the factor)* I can rearrange formulae where the subject appears more than once				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can recognise the difference between an expression, equation and formula* I can construct expressions and formulae from worded contexts				
Lesson 2 I can substitute positive and negative values into expressions				
Lesson 3 I can substitute positive and negative values into simple formulae				
Lesson 4 I can rearrange formula to change the subject, where the subject appears once (with and/or without function machines)				
Lesson 5 **Challenge: I can rearrange formulae involving powers**				

Assessment – Check Out Test

Unit 13 - Percentages

Duration: 7/8 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap - I can convert percentages to fractions and decimals and vice versa* I can order fractions, decimals and percentages using conversion				
Lesson 2 *Recap - I can express one quantity as a percentage of another (including different units)* I can compare two quantities using percentages				
Lesson 3 *Recap - I can calculate percentages of amounts / I can increase/decrease an amount by a percentage* I can express percentage change as a decimal multiplier I can use percentage multipliers to increase or decrease by a percentage				
Lesson 4 I can calculate the original amount after a percentages increase/decrease (including using multipliers)				
Lesson 5 *Starter: I can explain what interest is* I can solve problems using simple interest				
Lesson 6 *Starter: I can explain the difference between simple and compound interest* I can solve problems using compound interest (growth) and depreciation (decay)				
Lesson 7 I can compare investment outcomes based on simple or compound interest rates				
Lesson 8 **Challenge: I can use trial and improvement methods to calculate the time period for compound growth and decay problems**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Understand percentage as "number of parts of 100".* I can convert percentages to fractions and decimals and vice versa				
Lesson 2 I can order fractions, decimals and percentages using conversion				
Lesson 3 I can express one quantity as a percentage of another I can compare two quantities using percentages				
Lesson 4 I can calculate percentages of amounts				
Lesson 5 I can increase/decrease an amount by a percentage				
Lesson 6 *Starter: I can explain what interest is* I can solve problems using simple interest				
Lesson 7 *Challenge Starter: I can explain the difference between simple and compound interest* **Challenge: I can solve problems using compound interest [simple percentages]**				

Assessment – Check Out Test

Unit 14 – 2D and 3D Shapes

Duration: 4-7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can name and identify polygons and parts of a circle* I can Identify types and properties of triangles (including symmetries) I can identify types and properties of quadrilaterals (including symmetries and diagonals)				
Lesson 2 *Starter: I can identify properties of 3D solids* I can sketch, and accurately construct, the net of 3D solids I can identify a 3D solid from its net				
Lesson 3 I can construct 3D shapes using isometric paper				
Lesson 4 I can draw plans and elevations for simple and complex 3D solids I can draw, using isometric paper, the 3D solid from its plans and elevations				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *I can name and identify the names of polygons* *I can name and identify parts of a circle* I can identify types and properties of triangles (including symmetries)				
Lesson 2 I can identify types and properties of quadrilaterals (including symmetries)				
Lesson 3 *Starter: I can name and identify 3D solids* I can identify properties of 3D solids (edges, faces, vertices)				
Lesson 4 I can sketch nets of 3D solids I can identify a 3D solid from its net				
Lesson 5 I can construct 3D solids using isometric papers				
Lesson 6 I can I can draw plans and elevations of 3D solids				
Lesson 7 **Challenge: I can draw, using isometric paper, the 3D solids from its plans and elevations**				

Assessment – Check Out Test

Unit 15 – Scatter Graphs

Duration: lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can accurately plot scatter diagrams (drawing axes, choosing and using appropriate scale)				
Lesson 2 *Starter: I can explain what a variable is* I can recognise types of correlation I can describe the relationship between variables using correlation				
Lesson 3 I can draw a line of best fit I can use a line of best fit to interpret data from scatter graphs I can predict possible values that do not fit the scale of the scatter graph I can identify outliers on a scatter graph				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can plot coordinates in four quadrants* I can accurately plot scatter diagrams (using appropriate scale)				
Lesson 2 *Starter: I can explain what a variable is* I can recognise types of correlation I can describe the relationship between variables using correlation				
Lesson 3 I can draw a line of best fit I can use a line of best fir to interpret data from scatter graphs				
Lesson 4 **Challenge: I can predict possible values that do not fit within the scale of the scatter graph**				

Assessment – Check Out Test

Unit 16 - Proportion

Duration: 6 - 9 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / Los	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can solve proportion problems involving recipes* I can solve proportion problems using the unitary method				
Lesson 2 I can solve problems involving best buy and best value for money				
Lesson 3 I can identify graphs of direct proportion I can complete a table of values and construct a graph for direct proportion				
Lesson 4 and 5 I can construct a formula to represent direct proportion, by finding the constant of proportionality I can use the formula to solve direct proportion problems				
Lesson 6 I can solve worded problems involving inverse proportion				
Lesson 7 I can identify graphs of inverse proportion I can complete a table of values and construct a graph for inverse proportion				
Lesson 8 I can construct a formula to represent inverse proportion, by finding the constant of proportionality I can use the formula to solve inverse proportion problems				
Lesson 9 **Challenge: I can construct and use formulae for direct proportion involving powers and roots**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve simple proportion problems, including recipes (e.g. 3 apples cost 60p, how much do 6 apples cost?)				
Lesson 2 I can solve harder proportion problems, using the unitary method				
Lesson 3 I can solve problems involving best buy and best value for money				
Lesson 4 **Challenge: I can complete a table of values and construct a graph for direct proportion**				
Lesson 5 I can solve worded problems involving inverse proportion				
Lesson 6 **Challenge: I can complete a table of values and construct a graph for inverse proportion**				

Assessment – Check Out Test

Unit 17 – Analysing Data

Duration: 6 – 7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *I can define, calculate and identify the mode, median, mean and range from a list of data* I can compare data sets using the mean, median, mode and range I can explain when it is more appropriate to use one average over another.				
Lesson 2 I can calculate the range and identify the mode and median from frequency tables (grouped and ungrouped)				
Lesson 3 I can calculate the mean from frequency tables				
Lesson 4 I can calculate estimates for the mean from grouped frequency tables I can explain why averages of grouped data are estimates				
Lesson 5 **Challenge: I can calculate the lower and upper quartile from a list of data** **I can calculate the interquartile range from a list of data**				
Lesson 6 **Challenge: I can construct, interpret and make comparisons using box plots**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can define, identify and calculate the mode, median, mean and range from a list of data				
Lesson 3 I can make comparisons between data sets using the median and range **Challenge: I can explain when it is more appropriate to use one average over another**				
Lesson 4 I can construct, complete and interpret frequency tables (including grouped)				
Lesson 5 I can calculate the range and identify the mode and median from frequency tables (grouped and ungrouped)				
Lesson 6 I can calculate the mean from frequency tables				
Lesson 7 **Challenge: I can calculate estimates for the mean from grouped frequency tables**				

Assessment – Check Out Test

Unit 18 – Pythagoras' Theorem

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can identify square numbers and square roots* I can investigate the relationship between sides lengths in right-angled triangles				
Lesson 2 *Starter: I can identify the hypotenuse of a right-angled triangle* I can calculate the hypotenuse of a right-angled triangle using Pythagoras' Theorem				
Lesson 3 I can calculate a shorter side of a right-angled triangle using Pythagoras' Theorem I can prove whether a triangle is right-angle or not				
Lesson 4 I can calculate side lengths in more complex diagrams				
Lesson 5 **Challenge: I can use Pythagoras' Theorem to calculate lengths within 3D shapes**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify and calculate square numbers and square roots				
Lesson 2 I can investigate the relationship between side lengths in right-angled triangles				
Lesson 3 *Starter: I can identify the hypotenuse of a right-angled triangle* I can calculate the hypotenuse of a right-angled triangle using Pythagoras' Theorem				
Lesson 4 I can calculate a shorter side of a right-angled triangle using Pythagoras' Theorem **Challenge: I can prove whether a triangle is right-angle or not**				
Lesson 5 **Challenge: I can calculate side lengths in more complex diagrams**				

Assessment – Check Out Test

Year 10	Hours	Unit	Mathematical Content and Overview
Autumn		• Constructions and Loci	
		• Indices	
		• Plotting, Sketching and Recognising Graphs	
		• Compound Measures	
		• Solving Quadratics	
		• Probability	
		• Revision, Assessment and Review	
		• Trigonometry (right-angled only)	
Spring		• Sequences	
		• Bearings and Scales	
		• Fractions Review	
		• Straight Line Graphs	
		• Volume	
		• Vectors	
		• Revision, Assessment and Review	
		• Graphical Simultaneous Equations	
Summer		• Transformations	
		• Combined Probabilities and Probability Diagrams	
		• Similarity	
		• Revision, Terminal Exams and Review	
		• Work Experience	

Unit 19 – Constructions and Loci

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can construct triangles using ASA, SAS and SSS* I can construct the perpendicular bisector of a line I can construct the angle bisectors of a line I can construct the perpendicular to a line at a point				
Lesson 2 *Starter: I understand the term 'equidistant'* I can construct figures and identify loci of points				
Lesson 3 I can solve simple problems using construction of one loci I can shade an area to represent a required region				
Lesson 4 and 5 I can solve more complex real-life problems using the construction of more than one locus I can shade an area to represent a required region in multi-step problems				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can construct triangle using SAS, ASA and SSS				
Lesson 3 I can construct a perpendicular bisector I can construct an angle bisector				
Lesson 4 and 5 *I understand the term 'equidistant'* I can identify and construct the loci of points I shade an area to represent a required region				

Assessment – Check Out Test

Unit 20 – Indices

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Starter: I can use and understand index notation* I can simplify by using laws of indices for multiplication, division and using brackets (including multi-step and fractions) I can understand the effect of power of 0				
Lesson 3 *Starter: I can use and recognise powers of 2, 3, 4 and 5 with their corresponding roots* I can calculate with integer powers and exact roots with and without a calculator. **Challenge: I can estimate answers for powers and roots (e.g. √95)**				
Lesson 4 I can use and evaluate negative indices				
Lesson 5 **Challenge: I can use and evaluate fractional indices (unit fractions)**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can recap square and cube numbers and their roots* I can calculate with integer powers (2 and 3) without a calculator I can calculate with any integer power and exact roots with a calculator				
Lesson 2 I can simplify by using laws of indices for multiplication and division				
Lesson 3 I can simplify by using laws of indices involving brackets				
Lesson 4 **Challenge: I can use and evaluate negative indices**				

Assessment – Check Out Test

Unit 21 – Plotting, Sketching and Recognising Graphs

Duration: 5/6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can plot and identify horizontal and vertical line graphs* I can plot straight line graphs in the form y=mx + c (and when rearranged) using a table of values				
Lesson 2 I can plot graphs of quadratic functions using a table of value I can explain how a negative coefficient of x^2 effects the graph I can identify features of a parabola (y-intercept)				
Lesson 3 I can plot graphs of cubic functions using a table of values I can explain how a negative coefficient of x^3 effects the graph I can identify features of the curve (y-intercept)				
Lesson 4 I can plot graphs of reciprocal functions using a table of values I can identify features of a reciprocal function				
Lesson 5 I can identify types of graphs and match them to their corresponding equation I can **sketch** graphs based on their equations (without a table of values)				
Lesson 6 **Challenge: I can plot graphs of exponential functions**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can plot and identify horizontal and vertical line graphs				
Lesson 2 I can plot straight line graphs using a table of values in the form y=mx+c				
Lesson 3 I can plot graphs of quadratic functions using a table of values I can explain how a negative coefficient of x^2 effects the graph I can identify features of a parabola (y-intercept)				
Lesson 3 I can plot graphs of cubic functions using a table of values **Challenge: I can explain how a negative coefficient of x^3 effects the graph** **Challenge: I can identify features of the curve (y-intercept)**				
Lesson 4 I can plot graphs of reciprocal functions using a table of values **Challenge: I can identify features of a reciprocal function**				
Lesson 5 **Challenge: I can identify types of graphs and match them to their corresponding equation** **Challenge: I can sketch graphs based on their equations (without a table of values)**				

Assessment – Check Out Test

Unit 22 – Compound Measures

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can recap metric conversions of length, mass, capacity, area and volume* I can define the relationship between speed, distance and time I can solve problems involving speed, distance and time I can use appropriate units for speed, distance and time				
Lesson 2 I can define the relationship between density, mass and volume I can solve problems involving density, mass and volume I can use appropriate units for density, mass and volume				
Lesson 3 I can define the relationship between pressure, force and area I can solve problems involving pressure, force and area I can use appropriate units for pressure, force and area				
Lesson 4 I can solve problems using rates of pay and unit pricing				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can convert between metric units of length, mass and capacity*				
Lesson 2 I can define the relationship between speed, distance and time I can solve problems involving speed, distance and time **Challenge: I can use appropriate units for speed, distance and time**				
Lesson 3 I can define the relationship between density, mass and volume I can solve problems involving density, mass and volume **Challenge: I can use appropriate units for density, mass and volume**				
Lesson 4 **Challenge:** **I can define the relationship between pressure, force and area** **I can solve problems involving pressure, force and area** **I can use appropriate units for pressure, force and area**				
Lesson 5 **Challenge: I can solve problems using rates of pay and unit pricing**				

Assessment – Check Out Test

Unit 23 – Solving Quadratics

Duration: 3 – 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap factorising quadratic expressions (including a>1 and DOTS)*				
Lesson 2 I can understand and use the quadratic graphs to identify/estimate solutions to equations				
Lesson 3 and 4 I can solve quadratic equations by factorising				
Lesson 5 **Challenge Recap: I can complete the square** **Challenge: I can solve quadratic equations by completing the square**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap factorising expressions* I can factorise quadratic expressions in the form $ax^2 + bx + c$				
Lesson 2 I can use quadratic graphs to identify/estimate solutions to equations				
Lesson 3 **Challenge: I can solve quadratic equations by factorising**				

Assessment – Check Out Test

Unit 24 - Probability

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate the probability of an event happening (or not happening)				
Lesson 2 *I understand that probabilities add up to 1* I can identify mutually exclusive events I can calculate the probability of mutually exclusive events happening				
Lesson 3 I can calculate relative frequency and use this to estimate the probability of an event happening I can explain how to make an experiment more accurate/reliable				
Lesson 4 I can estimate the number of times an event will happen using expected frequency (decimals and fractions)				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can use and represent events on the probability scale* *I can use words to describe the probability of an event happening* I can calculate the probability of an event happening (using FDPs)				
Lesson 2 *Starter: I understand that probabilities add up to 1* I can calculate the probability of combined events happening I can calculate the probability of an event not happening				
Lesson 3 I can identify mutually exclusive outcomes I can calculate the probability of mutually exclusive events happening				
Lesson 4 I can estimate the probability of an event happening based on results from an experiment				
Lesson 5 **Challenge: I can estimate the number of times an event will happen using expected frequency (decimals and fractions)**				

Assessment – Check Out Test

Unit 25 – Trigonometry

Duration: 4 – 6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Starter: I can identify and label the hypotenuse, adjacent and opposite sides of a right angled triangle* I can identify the trigonometric ratios (SOH CAH TOA) I can identify which ratio to use depending on the properties of the triangle given I can use the trigonometric ratios to calculate the length of one of the sides of a triangle I can use the trigonometric ratios to calculate the length the hypotenuse of a triangle				
Lesson 3 I can use the trigonometric ratios to calculate angles within a right angled triangle				
Lesson 4 I can solve multi-step problems using trigonometry				
Lesson 5 I can solve problems involving angles of elevation and depression				
Lesson 6 I can work out exact trigonometric values I can calculate missing sides and angles in a right angled triangle using exact trigonometric values.				
Lesson 7 **Challenge: I can calculate missing sides and angles using trigonometry in 3D solids**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify and label the hypotenuse, adjacent and opposite sides of a right angled triangle I can identify the trigonometric ratios (SOH CAH TOA) I can identify which ratio to use depending on the properties of the triangle given				
Lesson 2 I can use the trigonometric ratios to calculate the length of one of the sides of a triangle **Challenge: I can use the trigonometric ratios to calculate the length the hypotenuse of a triangle**				
Lesson 3 I can use the trigonometric ratios to calculate angles within a right angled triangle				
Lesson 4 **Challenge: I can work out exact trigonometric values** **I can calculate missing sides and angles in a right angled triangle using exact trigonometric values.**				

Assessment – Check Out Test

Unit 26 – Sequences

Duration: 4 – 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can generate, continue and give rules for term-to-term sequences* I can generate sequences given the n^{th} term (including simple quadratic)				
Lesson 2 I can work out the n^{th} term of a linear sequence				
Lesson 3 I can solve geometric problems using the n^{th} term I can determine whether a number is in sequence given the n^{th} term I can determine the position of a number within a sequence using the n^{th} term				
Lesson 4 I can identify special sequences and solve problems using these (square numbers, cube numbers, triangular numbers, geometric sequences, Fibonacci)				
Lesson 5 **Challenge: I can work out the n^{th} term of simple quadratic sequences**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can generate, continue and identify rules for term-to-term sequences				
Lesson 2 I can generate sequences given the n^{th} term **Challenge: I can generate simple quadratic sequences given the n^{th} term**				
Lesson 3 I can calculate the n^{th} term of an increasing linear sequence **Challenge: I can calculate the n^{th} term of a decreasing linear sequence**				
Lesson 4 I can identify special sequences and solve problems using these (square numbers, cube numbers, triangular numbers, Fibonacci)				

Assessment – Check Out Test

Unit 27 – Bearings and Scales

Duration: 3 - 7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can convert distances on a map to actual distances and vice versa using simple scales* I can use map scales in ratio notation to convert between distances on a map and actual distances I can work out the map scale in ratio notation when given two corresponding values				
Lesson 2 I can accurately measure and draw bearings				
Lesson 3 I can solve problems using scale drawings and bearings (measuring and drawing)				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can convert distances on a map to actual distances and vice versa using a scale				
Lesson 2 I can construct scale drawings given actual measurements and a scale				
Lesson 3 **Challenge: I can use map scales in ratio notation to convert between distances on a map and actual distances**				
Lesson 4 I can accurately draw and measure angles using a protractor				
Lesson 5 I can accurately measure bearings				
Lesson 6 I can accurately draw bearings				
Lesson 7 **Challenge: I can solve problems using scale drawings and bearings**				

Assessment – Check Out Test

Unit 28 – Fractions Review

Duration: 5 – 7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can add and subtract fractions with different denominators (including mixed numbers)				
Lesson 2 *Starter: I can calculate fractions of amounts* I can multiply fractions by an integer or another fraction, including mixed numbers				
Lesson 3 I can divide fractions by an integer or another fraction, including mixed numbers				
Lesson 4 I can solve worded problems involving calculating with fractions and mixed numbers				
Lesson 5 I can convert between fractions, decimals and percentages				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can add and subtract fractions with the same denominator* I can add and subtract fractions with different denominators				
Lesson 2 **Challenge: I can add and subtract mixed numbers**				
Lesson 3 I can calculate fractions of amounts				
Lesson 4 I can multiply I can multiply a fraction by an integer I can multiply a fraction by a fraction				
Lesson 5 **Challenge: I can multiply mixed numbers**				
Lesson 6 I can divide an integer by a fraction **Challenge: I can divide a fraction by an integer or a fraction**				
Lesson 7 I can convert fractions to decimals and percentages				

Assessment – Check Out Test

Unit 29 – Straight Line Graphs

Duration: 5/6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate the midpoint of two coordinates I can decide whether a point is on a straight line using y=mx+c				
Lesson 2 *Starter: I can identify the equations of horizontal and vertical straight line graphs* *I can identify the lines y=x and y=-x* I can identify the parts of a straight line in the equation y=mx+c I can work out the equation of a straight line using y=mx +c				
Lesson 3 I can work out the equation of a straight line given a coordinate and the gradient				
Lesson 4 I can calculate the gradient of a straight line given two coordinates I can work out the equation of a straight line given two coordinates				
Lesson 5 *Starter: I understand how the value of the gradient effects the steepness of the line* I can identify parallel lines from their equations **Challenge: I can identify perpendicular lines from their equations**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate the midpoint of two coordinates I can determine whether a point is on a straight line in the form y=mx + c				
Lesson 2 I can identify and plot the equations of horizontal and vertical straight line graphs I can identify and plot the lines y=x and y=-x				
Lesson 3 I can work out the gradient of a straight line graphically I can identify the y-intercept graphically				
Lesson 4 I can investigate how straight line graphs change depending on the equation I can identify the gradient from the equation y=mx+c I can identify the y-intercept from the equation y=mx+c				
Lesson 5 I can work out the equation of a straight line graph in the form y=mx+c				
Lesson 6 *Starter: I understand how the value of the gradient effects the steepness of the line* **Challenge: I can identify parallel lines from their equations**				

Assessment – Check Out Test

Unit 30 - Volume

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can calculate the volume of cubes, cuboids and triangular prisms* *I can calculate missing sides when given the volume of cubes, cuboids and triangular prisms.* I can calculate the volume of composite solids formed from cuboids and triangular prisms				
Lesson 2 *Starter: I can calculate the area of a trapezium and the area of a circle* I can calculate the volume of a trapezoidal prism I can calculate the volume of a cylinder I can calculate the radius or height of a cylinder when given the volume				
Lesson 3 I can calculate the volume of pyramids, spheres and cones (formulae given)				
Lesson 4 I can calculate the volume of composite solids (formed from cuboids, prisms, cylinders, spheres, hemispheres, cones and pyramids)				
Lesson 5 I can calculate the volume of a frustum				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can calculate the area of squares, rectangles and triangles* I can calculate the volume of cubes, cuboids and triangular prisms I can calculate missing sides when given the volume of cubes, cuboids **and triangular prisms.**				
Lesson 2 *Starter: I can calculate the area of compound shapes made from rectangles and triangles* I can calculate the volume of composite solids formed from cuboids and triangular prisms				
Lesson 3 *Starter: I can calculate the area of a trapezium* I can calculate the volume of a trapezoidal prism				
Lesson 4 *Starter: I can calculate the area of a circle* I can calculate the volume of a cylinder (and parts of cylinders) **Challenge: I can calculate the radius or height of a cylinder when given its volume**				
Lesson 5 **Challenge: I can calculate the volume of pyramids, spheres and cones (formulae given)**				

Assessment – Check Out Test

Unit 31 - Vectors

Duration: 4 – 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use vector notation I can draw arrowed lines to represent column vectors I can identify column vectors represented by arrowed lines				
Lesson 2 I can calculate with column vectors (add, subtract and multiply by a scalar) I can recognise when column vectors are parallel and identify them				
Lesson 3 I can solve problems when calculating with column vectors (involving algebra and ratios)				
Lesson 4 I can identify vectors in simple vector geometry problems I can identify vectors involving midpoints				
Lesson 5 **Challenge: I can identify vectors in geometry problems involving ratios**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use vector notation I can draw arrowed lines to represent column vectors I can identify column vectors represented by arrowed lines				
Lesson 2 I can add and subtract using column vectors **(involving some algebra)**				
Lesson 3 I can calculate with column vectors including multiplication **Challenge: I can identify when column vectors are parallel**				
Lesson 4 **Challenge: I can identify vectors in simple vector geometry problems** **I can identify vectors involving midpoints**				

Assessment – Check Out Test

Unit 32 – Graphical Simultaneous Equations

Duration: 3/4 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand what is meant by simultaneous equations I can identify the solution to simultaneous equations graphically *Recap for next lesson: I can plot straight line graphs in the form y = mx + c*				
Lesson 2 *Recap: I can plot straight line graphs in the form ax ± by = c* I can solve simultaneous equations by plotting straight line graphs				
Lesson 3 **Challenge: I can solve simultaneous equations graphically (by plotting a line), involving quadratics (e.g. $x^2 + 5 = 3x + 1$)**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand what is meant by simultaneous equations I can identify the solution to simultaneous equations graphically				
Lesson 2 *Recap: I can plot straight line graphs in the form y = mx + c*				
Lesson 3 **Challenge: I can plot straight line graphs in the form ax ± by = c**				
Lesson 4 I can solve simultaneous equations by plotting straight line graphs				

Assessment – Check Out Test

Unit 33 – Transformations

Duration: 8 – 10 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can reflect shapes in horizontal, vertical and diagonal mirror lines.* *I can plot horizontal and vertical line graphs and the lines y=x and y=-x* I can reflect shapes on a coordinate axes I can describe reflections by identifying the equation of the mirror line				
Lesson 2 I can rotate a shape on a coordinate grid around a centre of rotation I can describe a rotation identifying the angle and direction of turn and the centre of rotation				
Lesson 3 *Starter: I can recap column vector notation* I can translate a shape on a coordinate grid using a column vector I can describe a translation by stating the column vector used				
Lesson 4 I can enlarge a shape by an integer or fractional scale factor and a centre of enlargement				
Lesson 5 I can describe an enlargement stating the scale factor and the centre of enlargement				
Lesson 6 **Challenge: I can enlarge a shape by a negative scale factor**				
Lesson 7 I can carry out combinations of transformations				
Lesson 8 I can describe the single transformation after combinations after occurred				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify lines of reflective symmetry I can identify the order of rotational symmetry **Challenge: I can complete a diagram to create patterns for a specific amount of reflective symmetry or rotational symmetry**				
Lesson 2 I can reflect shapes in horizontal, vertical and diagonal mirror lines *Recap: I can plot horizontal and vertical line graphs and the lines y=x and y=-x* I can reflect shapes on a coordinate axes				
Lesson 3 I can describe a reflection by stating the equation of the mirror line				
Lesson 4 I can rotate a shape on a coordinate grid around a centre of rotation				
Lesson 5 I can describe a rotation identifying the angle and direction of turn and the centre of rotation				
Lesson 6 *Starter: I can recap column vector notation* I can translate a shape using left/right/up/down and using a column vector				
Lesson 7 I can describe a translation by giving a column vector				
Lesson 8 I can enlarge a shape by a given scale factor I can identify the scale factor between two enlargements.				
Lesson 9 I can enlarge a shape using a positive integer scale factor and a centre of enlargement **Challenge: I can enlarge a shape given a fractional scale factor and centre of enlargement.**				
Lesson 10 **Challenge: I can carry out combinations of transformations**				

Assessment – Check Out Test

Unit 34 – Combined Probabilities and Probability Diagrams

Duration: 6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can write lists to identify outcomes and calculate probabilities from these lists* I can construct and complete sample space diagrams I can calculate probabilities from a sample space diagram				
Lesson 2 I can construct frequency trees I can calculate probabilities from frequency trees				
Lesson 3 *Starter: I can calculate the probability of combined independent events happening "OR" rule* I can calculate the probability of combined independent events happening "AND" rule				
Lesson 4 *Starter: Multiplying decimals and multiplying fractions* I can construct tree diagrams for independent events I can calculate the probability of combined independent events happening from a tree diagram (fractions and decimals)				
Lesson 5 I can construct tree diagrams for dependent events I can calculate the probability of combined dependent events happening from a tree diagram (fractions and decimals)				
Lesson 6 **Challenge: I can use the product rule for identifying the number of outcomes or combinations of outcomes**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can write lists to identify outcomes and calculate probabilities from these lists				
Lesson 2 I can construct and complete sample space diagrams I can calculate probabilities from a sample space diagram				
Lesson 3 I can construct frequency trees I can calculate probabilities from frequency trees				
Lesson 4 I can construct tree diagrams to identify outcomes				
Lesson 5 I can calculate the probability of combined independent events happening “OR” rule				
Lesson 6 **Challenge: I can calculate the probability of combined independent events happening “AND” rule**				

Assessment – Check Out Test

Unit 35 – Similarity

Duration: 3 – 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can explain when shapes are similar* I can calculate the scale factor of two similar shapes I can use the scale factor to calculate missing sides within similar shapes				
Lesson 2 I can identify similar shapes using AAA or sides in the same proportion I can give reasons why two shapes are similar I can prove when two triangles are similar – giving reasons				
Lesson 3 I can calculate side lengths of similar triangles combined				
Lesson 4 **Challenge: I can calculate the area of similar shapes using the scale factor**				
Lesson 5 **Challenge: I can calculate the volume of similar shapes using the scale factor**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can explain when shapes are similar* I can calculate the scale factor of two similar shapes I can use the scale factor to calculate missing sides within similar shapes				
Lesson 2 I can identify similar shapes using AAA or sides in the same proportion I can give reasons why two shapes are similar				
Lesson 3 **Challenge: I can calculate side lengths of similar triangles combined**				

Assessment – Check Out Test

Year 11	Hours	Unit	Mathematical Content and Overview
Autumn		• Standard Form	
		• Solving Simultaneous Equations	
		• Trigonometry Review	
		• Venn Diagrams	
		• Mock Exam Revision	
		• Mock Exams and Review	
		• Inequalities and Regions	
		• Angles Review	
		• Congruence	
		• Real Life Graphs	
Spring		• Functions	
		• Mock Exam Revision	
		• Mock Exams and Review	
		•	
		•	
		•	
Summer		•	
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Unit 36 – Standard Form

Duration: 6/7 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Recap index notation* I can convert numbers into standard form				
Lesson 2 I can convert standard form into ordinary numbers				
Lesson 3 *Starter: Recap index laws of multiplication and division* I can multiply and divide using standard form				
Lesson 4 **Challenge: I can add and subtract using standard form**				
Lesson 5 I can calculate with powers and roots using standard form				
Lesson 6 I can solve standard form calculations using a calculator				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Recap index notation* I can convert numbers into standard form				
Lesson 2 I can convert standard form into ordinary numbers				
Lesson 3 I can simplify using multiplication and division laws of indices				
Lesson 4 I can multiply and divide using standard form				
Lesson 5 **Challenge: I can calculate with powers and roots using standard form**				
Lesson 6 **Challenge: I can add and subtract using standard form (by converting to ordinary numbers)**				
Lesson 7 I can solve standard form calculations using a calculator				

Assessment – Check Out Test

Unit 37 – Solving Simultaneous Equations

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve simultaneous equations in worded contexts				
Lesson 2 *Recap: Solving simultaneous equations graphically* I can solve simultaneous equations, algebraically, when one of the variables is the same I can solve simultaneous equations, algebraically, when one equation needs to be changed.				
Lesson 3 I can solve simultaneous equations, algebraically, when both equations need to be changed.				
Lesson 4 I can form and solve simultaneous equations from a worded context using algebra				
Lesson 5 *Starter: Recap solving quadratic equations by factorising* **Challenge: I can solve simple simultaneous equations where one equation is quadratic and one is linear [e.g. $y = x^2 + 5x - 7$ and $y = 3x + 4$]**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve simultaneous equations in worded contexts				
Lesson 2 I can solve simultaneous equations, algebraically, when one of the variables are the same				
Lesson 3 I can solve simultaneous equations, algebraically, when one equation needs to be changed				
Lesson 4 **Challenge: I can solve simultaneous equations, algebraically, when both equations need to be changed**				

Assessment – Check Out Test

Unit 38 –Trigonometry Review

Duration: 4-6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate missing sides using trigonometric ratios				
Lesson 2 I can calculate angles using trigonometric ratios				
Lesson 3 I can solve multi-step problems using the trigonometric ratios				
Lesson 4 *Recap: Exact trig values* I can calculate sides and angles using exact trig values				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can calculate missing sides using trigonometric ratios [each ratio in turn then mixed]				
Lesson 3 and 4 I can calculate missing angles using trigonometric ratios [each ratio in turn then mixed]				
Lesson 5 I can work out exact trig values				
Lesson 6 **Challenge: I can calculate sides and angles using exact trig values**				

Assessment – Check Out Test

Unit 39 – Venn Diagrams

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand set notation I can identify the elements within given conditions				
Lesson 2 I can construct and complete Venn Diagrams when given specific elements I can calculate the probability of an event represented in a Venn Diagram (given in words)				
Lesson 3 I can shade and identify intersections, unions and complements on Venn Diagrams				
Lesson 4 I can construct and complete Venn Diagrams from worded contexts.				
Lesson 5 I can work out the probability of an event represented in a Venn diagram using intersection, union and complement notation				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand set notation I can identify elements within given conditions				
Lesson 2 I can calculate the amount of elements within a required set on a Venn diagram				
Lesson 3 I can complete partially constructed Venn Diagrams				
Lesson 4 I can work out the probability of an event represented in a Venn Diagram (given in words)				
Lesson 5 **Challenge: I can shade and identify intersections, unions and complements on Venn Diagrams**				

Assessment – Check Out Test

Unit 40 – Inequalities and Regions

Duration: 4 – 6 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap inequality notation* I can represent inequalities on a number line (including compound inequalities) I can write inequalities from a given number line (including compound inequalities)				
Lesson 2 *Starter: I can solve equations (two-step, brackets, unknowns both sides)* I can solve inequalities (two-step, brackets, fractions, unknowns both sides)				
Lesson 3 *Starter: Identify integer values which satisfy a given inequality e.g x>3 or 5<x<10* I can identify integer values which satisfy a given inequality which needs solving or rearranging [e.g. 16 < 4x < 28 or -2 < 2x + 3 < 5]				
Lesson 4 I can form and solve inequalities algebraically from worded contexts				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use inequality notation I can write an inequality [e.g. write an inequality for x is greater than 4]				
Lesson 2 I can represent inequalities on a number line I can write an inequality from a number line				
Lesson 3 I can represent compound inequalities on a number line I can write a compound inequality from a number line				
Lesson 4 I can identify integer values which satisfy a given inequality [e.g. x>3 or 5<x<10] I can identify integer values which satisfy a given inequality which needs solving or rearranging [e.g. 16 < 4x < 28]				
Lesson 5 *Recap: Solving two-step equations including with brackets* I can solve two-step inequalities including with brackets				
Lesson 6 **Challenge: I can solve inequalities with unknowns on both sides**				

Assessment – Check Out Test

Unit 41 – Angles Review

Duration: 4 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify angles formed in parallel lines, in multi-step problems, giving reasons				
Lesson 2 I can calculate the interior and exterior angles of polygons I can calculate the sum of interior angles of polygons				
Lesson 3 I can calculate the number of sides of a polygon when given the interior or exterior angle				
Lesson 4 I can solve multi-step problems using angles between polygons				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve multi-step angle problems using angle facts				
Lesson 2 I can identify angles formed in parallel lines, giving reasons				
Lesson 3 **Challenge: I can identify angles formed in parallel lines, in multi-step problems, giving reasons**				
Lesson 4 **Challenge: I can calculate the interior and exterior angles of polygons** **I can calculate the sum of interior angles of polygons**				

Assessment – Check Out Test

Unit 42 – Congruence

Duration: 3 lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *I can identify congruent shapes* I can identify the congruency condition for triangles (SAS, ASA, SSS, RHS) I can decide whether triangles are congruent stating one of the conditions				
Lesson 2 and 3 I can prove whether triangles are congruent (giving reasons) in more complex diagrams				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand what is meant by congruent I can identify and create congruent shapes				
Lesson 2 and 3 I can identify the congruency conditions for triangles (SAS, ASA, SSS, RHS) I can decide whether two separate triangles are congruent by stating one of the conditions				

Assessment – Check Out Test

Unit 43 – Real Life Graphs

Duration: lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can plot and interpret conversion graphs				
Lesson 2 *Recap calculating the gradient* I can describe what is happening at different stages of a distance-time graph I can interpret distance-time graphs I can calculate the speed from a distance-time graph				
Lesson 3 I can construct a distance-time graph				
Lesson 4 I can describe what is happening at different stages of non-linear graphs within context I can interpret information from non-linear real life graphs				
Lesson 5 **Challenge: I can calculate the rate of acceleration from speed-time graphs**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can interpret conversion graphs				
Lesson 2 I can plot conversion graphs				
Lesson 3 I can describe what is happening at different stages of a distance-time graph I can interpret information from distance-time graphs				
Lesson 4 I can construct distance-time graphs				
Lesson 5 **Challenge: I can calculate the speed from a distance-time graph**				
Lesson 6 I can describe what is happening at different stages of non-linear graphs within the context I can interpret information from non-linear real life graphs				

Assessment – Check Out Test

Unit 44 – Functions

Duration: lessons

National Curriculum Content:

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To achieve a grade 4 or 5

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can calculate inputs and outputs using function machines* I can create a sequence using function machines I can write a function to represent a sequence				
Lesson 2 I can express an equation as a function machine I can write an equation to represent a function machine				
Lesson 3 **Challenge: I can understand function notation in the form f(x)** **I can substitute values into functions to calculate outputs [e.g. f(x) = 3x + 5, find f(3)]**				

Assessment – Check Out Test

To achieve a grade 1, 2 or 3

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can calculate inputs and outputs using function machines				
Lesson 2 I can create a sequence using a function machine **Challenge: I can write a function (as a function machine) to represent a sequence**				
Lesson 3 I can express an equation as a function machine **Challenge: I can write an equation to represent a function machine**				

Assessment – Check Out Test