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: 4 – 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use written methods to multiply decimals				
Lesson 2 *Recap: Division methods by an integer* I can divide by a decimal				
Lesson 3 I can multiply and divide by 0.1, 0.01 and 0.001 etc I can multiply and divide by multiples of 0.1, 0.01 and 0.001 etc				
Lesson 4 *Review* – I can add, subtract, multiply and divide using negative numbers (including powers)				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use written methods to multiply a decimal by an integer and/or a decimal				
Lesson 2 *Recap: Division methods by an integer* I can divide by a decimal				
Lesson 3 I can multiply and divide by 0.1, 0.01 and 0.001 etc I can multiply and divide by multiples of 0.1, 0.01 and 0.001 etc				
Lesson 4 I can add and subtract using negative numbers				
Lesson 5 I can multiply and divide using negative numbers				

Assessment – Check Out Test

Unit 2 – Types of Number

Duration: 2 – 4 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Review/Check: I can identify factors, multiples, primes, squares, cubes and roots* *Starter: I can express a number as a product of its prime factors* I can work out the HCF and LCM using Venn Diagrams for 2 or more numbers				
Lesson 2 I can solve worded problems using the HCF and LCM I can identify the numbers needed when given the HCF and LCM				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify factors, multiples, primes, squares, cubes and roots I can use index notation				
Lesson 2 and 3? I can express a number as a product of its prime factors I can find the HCF and LCM using Venn diagrams of 2 or more numbers				
Lesson 4 I can solve worded problems using the HCF and LCM **Challenge: I can identify the numbers needed when given the HCF and LCM**				

Assessment – Check Out Test

<table>
<tr><td>**Unit 3 - Expressions**

Duration: 6 – 8 lessons</td><td>National Curriculum Content:

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</table>

To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Review: Simplify expressions by collecting like terms, using products and quotients and expanding single brackets [inc. 7(x + 5) – 2(3x + 6)]* I can expand double brackets I can expand three sets of brackets				
Lesson 2 and 3 *Review: Factorise expressions (letters and/or numbers as factors)* I can factorise quadratic expressions in the form $x^2 + bx + c$ I can factorise quadratic expressions in the form $ax^2 + bx + c$ where a > 1				
Lesson 4 I can factorise involving the difference of two squares [inc. $36x^2 – 81y^2$]				
Lesson 5 I can complete the square for a quadratic expression where a = 1 and b is even or odd				
Lesson 6 I can complete the square for a quadratic expression where a > 1				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Review: Simplify expressions by collecting like terms, using products and quotients and expanding single brackets [inc. 7(x + 5) – 2(3x + 6)]* I can expand double brackets				
Lesson 2 *Review: Expanding double brackets* I can expand three sets of brackets				
Lesson 3 I can factorise expressions (letters and/or numbers as factors)				
Lesson 4 I can factorise quadratic expressions in the form $x^2 + bx + c$				
Lesson 5 I can factorise quadratic expressions in the form $ax^2 + bx + c$				
Lesson 6 I can factorise quadratic expressions involving the difference of two squares				
Lesson 7 I can complete the square for a quadratic expression where a=1 and b is even **Challenge: I can complete the square for a quadratic expression where a=1 and b is odd**				
Lesson 8 **Challenge: I can complete the square for a quadratic expression where a > 1**				

Assessment – Check Out Test

Unit 4 - Units of Measure

Duration: 4 lessons

National Curriculum Content:
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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Review: Convert between metric units of length, mass and capacity* I can convert between metric and imperial units				
Lesson 2 I can convert between metric units of area I can convert between metric units of volume				
Lesson 3 I can investigate the relationship between units of capacity and units of volume I can convert between units of capacity and volume				
Lesson 4 I can convert between metric and imperial units of area and volume				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Review: Convert between metric units of length, mass and capacity* I can convert between metric and imperial units				
Lesson 2 I can convert between metric units of area I can convert between metric units of volume				
Lesson 3 I can investigate the relationship between units of capacity and units of volume I can convert between units of capacity and volume				
Lesson 4 **Challenge: I can convert between metric and imperial units of area and volume**				

Assessment – Check Out Test

Unit 5 - Fractions

Duration: 5 – 7 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Adding and subtracting fractions and mixed numbers with different denominators* *Multiply fractions by integers and fractions, including mixed numbers* *Divide fractions by integers and fractions, including mixed numbers*				
Lesson 2 *Starter: Multiplication and division laws of indices* I can simplify algebraic fractions, involving indices and factorising of quadratics				
Lesson 3 *Starter: Expand brackets and simplify* I can add and subtract algebraic fractions with numerical and algebraic denominators				
Lesson 4 I can multiply and divide algebraic fractions with numerical and algebraic denominators, involving indices and factorising of quadratics				
Lesson 5 *Recap: Convert fraction to decimal using division* I can convert recurring decimals to fractions I can prove recurring decimals equal a given fraction				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can add and subtract fractions and mixed numbers with different denominators				
Lesson 2 I can multiply and divide fractions and mixed numbers				
Lesson 3 *Starter: Multiplication and division laws of indices* I can simplify algebraic fractions using laws of indices and factorising				
Lesson 4 *Starter: Factorising quadratic expressions, including DOTS* I can simplify algebraic fractions, involving factorising quadratic expressions				
Lesson 5 *Starter: Expand brackets and simplify* I can add and subtract algebraic fractions with numerical denominators **Challenge: I can add and subtract fractions with algebraic denominators**				
Lesson 6 **Challenge: I can multiply algebraic fractions, involving factorising quadratics** **I can divide algebraic fractions, involving factorising quadratics**				
Lesson 7 *Starter: I can convert fractions to decimals using division* I can convert recurring decimals to fractions **Challenge: I can prove a recurring decimal equals a given fraction**				

Assessment – Check Out Test

Unit 6 – Solving Equations

Duration: 4/5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Recap: I can solve linear equations – two-step, with brackets, brackets and simplifying, unknowns on both sides.* I can solve linear equations with fractions (numerical and algebraic denominators) I can solve equations with fractions and unknowns on both sides				
Lesson 3 I can form and solve linear equations from a context				
Lesson 4 I can solve equations by adding and subtracting fractions (numerical denominators only)				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve linear equations – two-step, with brackets, brackets and simplifying, unknowns on both sides.				
Lesson 2 I can solve linear equations with fractions (numerical and algebraic denominators)				
Lesson 3 I can solve equations with fractions and unknowns on both sides				
Lesson 4 I can form and solve linear equations from a context				
Lesson 5 **Challenge: I can solve equations by adding and subtracting fractions (numerical denominators only)**				

Assessment – Check Out Test

Unit 7 - Angles

Duration: 5 – 7 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Solve multi-step problems in complex shapes using angles facts and giving reasons, including algebra*				
Lesson 2 I can calculate missing angles between parallel lines in multi-step problems, giving reasons, including algebra				
Lesson 3 I can calculate the sum of interior angles of any polygon I can calculate the size of interior and exterior angles of regular polygons I can calculate the number of sides of a polygon when given the exterior or interior angle				
Lesson 4 I can solve multi-step problems involving angles in regular polygons, including algebra				
Lesson 5 I can prove properties of polygons and angles using geometry facts, giving reasons				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve multi-step problems in complex shapes using angles facts and giving reasons, including algebra				
Lesson 2 and 3 I can calculate missing angles between parallel lines in multi-step problems, giving reasons, including algebra				
Lesson 4 and 5 I can calculate the sum of interior angles of any polygon I can calculate the size of interior and exterior angles of regular polygons I can calculate the number of sides of a polygon when given the exterior or interior angle				
Lesson 6 **Challenge: I can solve multi-step problems involving angles in regular polygons, including algebra**				
Lesson 7 **Challenge: I can prove properties of polygons and angles using geometry facts, giving reasons**				

Assessment – Check Out Test

Unit 8 - Ratio

Duration: 4 – 6 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Simplify ratios, including in different units* I can write ratios in the form 1 : n I can compare values using ratio				
Lesson 2 I can share a quantity by a given ratio I can solve problems by sharing in a given ratio				
Lesson 3 I can use and understand the relationship between ratios and fractions I can solve problems using ratios and fractions				
Lesson 4 I can solve multi-step problems in context using ratios				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can simplify ratios, including in different units I can write ratios in the form 1:n I can compare values using ratio				
Lesson 2 I can use equivalent ratios to solve worded problems				
Lesson 3 I can share a quantity by a given ratio (2 or 3 parts)				
Lesson 4 I can solve problems by sharing in a given ratio				
Lesson 5 I can use and understand the relationship between ratios and fractions I can solve problems using ratios and fractions				
Lesson 6 **Challenge: I can solve multi-step problems in context using ratios**				

Assessment – Check Out Test

Unit 9 – Perimeter and Area

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Area of triangles, rectangles, parallelogram and trapeziums* I can calculate the area of compound shapes within a context				
Lesson 2 *Recap: Parts of a circle, Area and Circumference of circles* I can calculate the area, arc length and perimeter of sectors				
Lesson 3 I can calculate the angles or radius of a sector when given the area or perimeter of a sector				
Lesson 4 *Recap: Surface area of cuboids, triangular prisms and cylinders* I can calculate the surface area of pyramids, spheres and cones				
Lesson 5 I can solve problems involving surface area, such as calculating the height or radius when given the surface area, including with algebra.				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Area of triangles, rectangles, parallelogram and trapeziums* I can calculate the area of compound shapes within a context				
Lesson 2 *Recap: Parts of a circle, Area of circles* I can calculate the area of sectors I can calculate the radius or angle of a sector when given the area				
Lesson 3 *Recap: Circumference of circles* I can calculate the arc length and perimeter of sectors I can calculate the radius or angle of a sector when given the arc length or perimeter				
Lesson 4 *Recap: Surface area of cuboids and triangular prisms* I can calculate the surface area of cylinder, cones, pyramids and spheres.				
Lesson 5 **Challenge: I can solve problems involving surface area, such as calculating the height or radius when given the surface area, including with algebra.**				

Assessment – Check Out Test

Unit 10 – Sampling, Representing and Interpreting Data

Duration: 4-6 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

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 sample I can explain and carry out simple random sampling method I can identify when a sample is bias I can explain and use stratified random sampling				
Lesson 2 I can construct, interpret and compare pie charts				
Lesson 3 I can construct and interpret data (by identifying trends and variation) in time series graphs				
Lesson 4 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 5 or 6

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 sample I can explain and carry out simple random sampling method I can identify when a sample is bias				
Lesson 2 I can explain and use stratified random sampling				
Lesson 3 I can construct pie charts				
Lesson 4 I can interpret and compare pie charts				
Lesson 5 I can construct and interpret data (by identifying trends and variation) in time series graphs				
Lesson 6 I can complete and interpret two-way tables I can construct two-way tables to solve worded problems				

Assessment – Check Out Test

Unit 11 – Accuracy and Bounds

Duration: 4 – 6 lessons

To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Rounding to decimal places and significant figures* I can estimate answers to multi-step and worded questions by rounding to 1 significant figure, including square and cube roots. I understand the difference between truncation and rounding. I can truncate a number to a given degree of accuracy				
Lesson 2 I can identify upper and lower bounds of a given value. I can use inequality notation to write down the error interval for a given degree of accuracy				
Lesson 3 and 4 I can calculate using upper and lower bounds, including within a context				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Rounding to decimal places* I can round to a given number of significant figures				
Lesson 2 I can estimate answers to multi-step and worded questions by rounding to 1 significant figure, **including square and cube roots**.				
Lesson 3 I understand the difference between truncation and rounding. I can truncate a number to a given degree of accuracy				
Lesson 4 I can identify upper and lower bounds of a given value. I can use inequality notation to write down the error interval for a given degree of accuracy				
Lesson 5 and 6 I can calculate using upper and lower bounds, including within a context				

Assessment – Check Out Test

Unit 12 - Formulae

Duration: 4-6 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Substituting into formulae to work out value of the subject* I can identify parts of a formula (subject, constant, variable) I can write a formula from a worded context				
Lesson 2 *Recap: Substituting into formulae to work out the value of one of the variables* I can rearrange formulae where the subject appears once, including with powers and roots and within a context				
Lesson 3 and 4 *Recap: Factorising expressions* I can rearrange formulae where the subject appears more than once, including within a context				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Substituting into formulae to work out value of the subject* I can identify parts of a formula (subject, constant, variable) I can write a formula from a worded context				
Lesson 2 *Recap: Substituting into formulae to work out the value of one of the variables* I can rearrange formulae where the subject appears once				
Lesson 3 I can rearrange formulae involving powers and roots				
Lesson 4 and 5 *Recap: Factorising expressions* I can rearrange formulae where the subject appears more than once				
Lesson 6 I can rearrange formulae within a context				

Assessment – Check Out Test

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Unit 13 - Percentages

Duration: 7 – 9 lessons

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National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Converting fractions, decimals and percentages* I can order and compare fractions, decimals and percentages				
Lesson 2 *Recap: Non-calculator methods for percentages of amounts and increasing/decreasing by a percentage* I can use multipliers to increase or decrease by a percentage I can solve problems involving repeated percentage change using multipliers				
Lesson 3 I can express one quantity as a percentage of another, in different units I can calculate percentage change				
Lesson 4 I can calculate the original amount after a percentage increase or decrease, with and without multipliers				
Lesson 5 *Recap: Simple Interest* I can calculate compound growth, using multipliers I can compare values using simple and compound growth				
Lesson 6 I can calculate compound decay (depreciation), using multipliers I can compare values using simple and compound decay (depreciation)				
Lesson 7 I can calculate the time period within compound growth and decay problems, using trial and improvement methods				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Converting fractions, decimals and percentages* I can order and compare fractions, decimals and percentages				
Lesson 2 *Recap: Non-calculator methods for percentages of amounts* I can increase/decrease an amount by a given percentage				
Lesson 3 I can use multipliers to increase or decrease by a percentage I can solve problems involving repeated percentage change using multipliers				
Lesson 4 I can express one quantity as a percentage of another, in different units				
Lesson 5 I can calculate percentage change				
Lesson 6 I can calculate the original amount after a percentage increase or decrease, with and without multipliers				
Lesson 7 *Recap: Simple Interest* I can calculate compound growth, using multipliers **Challenge: I can compare values using simple and compound growth**				
Lesson 8 I can calculate compound decay (depreciation), using multipliers **Challenge: I can compare values using simple and compound decay (depreciation)**				
Lesson 9 **Challenge: I can calculate the time period within compound growth and decay problems, using trial and improvement methods**				

Assessment – Check Out Test

Unit 14 – 2D and 3D Shapes

Duration: 2 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Line, angle, diagonal and symmetrical properties of triangles and quadrilaterals* I can accurately construct nets of 3D solids and identify a solid from its net				
Lesson 2 I can draw plans and elevations for complex solids I can draw, using isometric paper, the 3D solid from its plan and elevations				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Line, angle, diagonal and symmetrical properties of triangles and quadrilaterals* I can accurately construct nets of 3D solids and identify a solid from its net				
Lesson 2 I can draw plans and elevations for complex solids I can draw, using isometric paper, the 3D solid from its plan and elevations				

Assessment – Check Out Test

Unit 15 – Scatter Graphs

Duration: 2 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

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) I can recognise types of correlation I can describe the relationship between variables using correlation I can draw and use lines of best fit to interpret data I can predict possible values that do not fit the scale of the scatter graph I can identify outliers on a scatter graph and explain them				

Assessment – Check Out Test

To achieve a grade 5 or 6

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) I can recognise types of correlation I can describe the relationship between variables using correlation				
Lesson 2 I can draw and use lines of best fit to interpret data I can predict possible values that do not fit the scale of the scatter graph I can identify outliers on a scatter graph and explain them				

Assessment – Check Out Test

Unit 16 - Proportion

Duration: 4 – 8 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Solving worded direct proportion problems using unitary method* *I can identify graphs of direct proportion* 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 I can complete a table of values to represent direct proportion				
Lesson 2 I can construct a formula to represent direct proportion, by finding the constant of proportionality, involving powers and roots I can use the formula to solve direct proportion problems, involving powers and roots I can complete a table of values to represent direct proportion, involving powers and roots				
Lesson 3 *Recap: Solving worded inverse proportion problems using unitary method* *I can identify graphs of inverse proportion* 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 I can complete a table of values to represent inverse proportion				
Lesson 4 I can construct a formula to represent inverse proportion, by finding the constant of proportionality, involving powers and roots I can use the formula to solve inverse proportion problems, involving powers and roots I can complete a table of values to represent inverse proportion, involving powers and roots				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Solving worded direct proportion problems using unitary method* I can solve problems involving best buy, best value for money and currency exchange				
Lesson 2 I can identify graphs of direct proportion I can complete a table values and construct a graph for direct proportion				
Lesson 3 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 4 I can construct a formula to represent direct proportion, by finding the constant of proportionality, involving powers and roots I can use the formula to solve direct proportion problems, involving powers and roots				
Lesson 5 I can solve worded problems involving inverse proportion I can identify graphs of inverse proportion I can complete a table values and construct a graph for inverse proportion				
Lesson 6 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 7 **Challenge: I can construct a formula to represent inverse proportion, by finding the constant of proportionality, involving powers and roots** **I can use the formula to solve inverse proportion problems, involving powers and roots**				
Lesson 8 I can complete a table of values to represent direct or inverse proportion, with and without powers and roots				

Assessment – Check Out Test

Unit 17 – Analysing Data

Duration: 8 – 11 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Calculating mean, median, mode and range* *I can identify the upper and lower quartiles and calculate the inter-quartile range* I can explain when it is more appropriate to use one average over another I can compare distributions using an appropriate average.				
Lesson 2 I can identify the mode and median and calculate the range from frequency tables (including for grouped data)				
Lesson 3 *Recap: I can calculate the mean from a frequency table* I can estimate the mean from a grouped frequency table				
Lesson 4 I can construct, interpret and make comparisons using box plots				
Lesson 5 I can construct a cumulative frequency curve I can estimate the median and quartiles and interpret information from a cumulative frequency curve				
Lesson 6 I can construct a histogram from unequal grouped data				
Lesson 7 I can interpret information from histograms				
Lesson 8 I can identify the class interval containing the median I can estimate the value of the median from a histogram				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Recap: Calculating mean, median, mode and range* I can identify the upper and lower quartiles and calculate the inter-quartile range I can explain when it is more appropriate to use one average over another I can compare distributions using an appropriate average.				
Lesson 3 I can identify the mode and median and calculate the range from frequency tables (including for grouped data)				
Lesson 4 I can calculate the mean from a frequency table I can estimate the mean from a grouped frequency table				
Lesson 5 I can construct and interpret box plots				
Lesson 6 I can compare data represented in box plots				
Lesson 7 and 8 I can construct a cumulative frequency curve I can estimate the median and quartiles and interpret information from a cumulative frequency curve				
Lesson 9 I can calculate frequency density I can construct a histogram from unequal grouped data				
Lesson 10 I can complete a frequency table from a given histogram I can interpret information from histograms				
Lesson 11 **Challenge:** **I can identify the class interval containing the median** **I can estimate the value of the median from a histogram**				

Assessment – Check Out Test

Unit 18 – Pythagoras' Theorem

Duration: 4 – 6 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can investigate the relationship between the side lengths in right-angled triangles* I can calculate the hypotenuse of a right-angled triangle using Pythagoras' Theorem I can calculate a shorter side of a right-angled triangle using Pythagoras' Theorem				
Lesson 2 Starter: I can prove whether a triangle is right-angle or not I can calculate the distance between two coordinates I can solve problems within a context				
Lesson 3 I can calculate side lengths in more complex, multi-step, diagrams				
Lesson 4 I can use Pythagoras' Theorem to calculate lengths with 3D shapes				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Starter: I can investigate the relationship between the side lengths in right-angled triangles* I can calculate the hypotenuse of a right-angled triangle using Pythagoras' Theorem 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 3 I can calculate the distance between two coordinates I can solve problems within a context				
Lesson 4 I can calculate side lengths in more complex, multi-step, diagrams				
Lesson 5 and 6 I can use Pythagoras' Theorem to calculate lengths with 3D shapes				

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 and 3D)	
Spring		• Sequences	
		• Bearings and Scales	
		• Surds	
		• 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: 4 – 5 lessons

To achieve a grade 7, 8 or 9

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

Assessment – Check Out Test

To achieve a grade 5 or 6

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

Assessment – Check Out Test

<table>
<tr><td colspan="2">

Unit 20 – Indices

Duration: 5 – 8 lessons
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National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: 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 I can estimate the answers for powers and roots (e.g. $\sqrt{95}$) *Recap: Simplify using laws of indices for multiplication, division, using brackets (including multi-step and fractions) and the power 0, including with algebra* *[e.g. $5a^3 \times 4a^6$]*				
Lesson 2 *Starter: I can investigate the effect of negative indices* I can simplify and evaluate integers and fractions using negative indices I can express a fraction in index form				
Lesson 3 *Starter: I can investigate the effect of fractional indices* I can simplify and evaluate using (any) fractional indices, (including mixed numbers and written as decimals)				
Lesson 4 I can simplify and evaluate using a combination of negative and fractional indices				
Lesson 5 I can solve equations involving indices [e.g. $49^x = 7$ and $2^{x+3} = 4^{2x}$]				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: 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 I can estimate the answers for powers and roots (e.g. √95)				
Lesson 2 I can simplify by using laws of indices for multiplication, division and using brackets (including multi-step and fractions), including with algebra [e.g. $5a^3$ x $4a^2$] I can understand the effect of the power 0				
Lesson 3 *Starter: I can investigate the effect of negative indices* I can simplify and evaluate using negative indices				
Lesson 4 I can simplify and evaluate fractions using negative indices I can express a fraction in index form (using negative indices)				
Lesson 5 *Starter: I can investigate the effect of fractional indices* I can simplify and evaluate using fractional indices (unit fractions) I can express a given value in index form (using fractional indices)				
Lesson 6 I can simplify and evaluate more complex fractions indices [e.g. $27^{2/3}$]				
Lesson 7 **Challenge: I can simplify and evaluate using a combination of negative and fractional indices**				
Lesson 8 I can solve equations involving indices [e.g. $49^x = 7$] **Challenge: I can solve more complex equations involving indices [e.g. $2^{x+3} = 4^{2x}$]**				

Assessment – Check Out Test

	National Curriculum Content:
Unit 21 – Plotting, Sketching and Recognising Graphs **Duration: 5 – 7 lessons**	• •

To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 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, x-intercept (roots), line of symmetry and the turning point)				
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 I can plot graphs of exponential functions				
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)				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can plot straight line graphs in the form y = mx + c, and when rearranged, using a table of values				
Lesson 2 and 3 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, x-intercept (roots), line of symmetry and the turning point)				
Lesson 4 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 5 I can plot graphs of reciprocal functions using a table of values I can identify features of a reciprocal function				
Lesson 6 **Challenge: I can plot graphs of exponential functions**				
Lesson 7 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)				

Assessment – Check Out Test

Unit 22 – Compound Measures

Duration: 2 – 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can solve problems involving speed, distance and time, using the appropriate units for each measure I can solve problems involving density, mass and volume, using the appropriate units for each measure				
Lesson 2 I can solve problems involving pressure, force and area, using the appropriate units for each measure I can solve problems involving population, population density and area, using the appropriate units for each measure				

Assessment – Check Out Test

To achieve a grade 5 or 6

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

Assessment – Check Out Test

Unit 23 – Solving Quadratics

Duration: 5 – 7 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can understand and use the quadratic graphs to identify/estimate solutions to equations* I can plot straight lines to solve more complex quadratic equations [e.g. $x^2 + 3x + 5 = 6$ or $x^2 - 5x = 2 = 2x - 2$]				
Lesson 2 *Recap: Factorising quadratic expressions* I can solve quadratic equations by factorising				
Lesson 3 *Recap: Completing the Square for a quadratic expression* I can solve quadratic equations by completing the square (calc and non-calc methods) I can identify the turning point (minimum/maximum value) after completing the square				
Lesson 4 I can solve equations by using the quadratic formula				
Lesson 5 *Starter: Identify when to use different methods for solving quadratics* I can form and solve quadratic equations from worded problems, also involving geometry				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can understand and use the quadratic graphs to identify/estimate solutions to equations **Challenge: I can plot straight lines to solve more complex quadratic equations [e.g. $x^2 + 3x + 5 = 6$]**				
Lesson 2 and 3 *Recap: Factorising quadratic expressions (including a>1 and DOTS)* I can solve quadratic equations by factorising, including equations that ≠ 0				
Lesson 4 and 5 Recap: *Completing the Square for a quadratic expression* I can solve quadratic equations by completing the square, (calc and non-calc methods) I can identify the turning point (minimum/maximum value) after completing the square				
Lesson 6 I can solve equations by using the quadratic formula				
Lesson 7 *Starter: Identify when to use different methods for solving quadratics* **Challenge: I can form and solve quadratic equations from worded problems, also involving geometry**				

Assessment – Check Out Test

Unit 24 - Probability

Duration: 2/3 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Probability of event happening or not happening* I can identify mutually exclusive outcomes I can calculate the probability of mutually exclusive events happening				
Lesson 2 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 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 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Probability of event happening, or not happening* 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 2 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 3 I can estimate the number of times an event will happen using expected frequency (decimals and fractions)				

Assessment – Check Out Test

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can identify and label the hypotenuse, adjacent and opposite sides of a right angled triangle* I can investigate where the trigonometric ratios derive from 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 any length of a right-angled triangle I can use the trigonometric ratios to calculate angles within a right angled triangle				
Lesson 3 I can solve multi-step problems using trigonometry I can solve problems involving angles of elevation and depression				
Lesson 4 and 5 I can calculate missing lengths and angles using trigonometry within 3D shapes				
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				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I can identify and label the hypotenuse, adjacent and opposite sides of a right angled triangle* I can investigate where the trigonometric ratios derive from I can identify the trigonometric ratios (SOH CAH TOA)				
Lesson 2 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 and 7 **Challenge: I can calculate missing lengths and angles using trigonometry within 3D shapes**				
Lesson 8 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: 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Generating sequences from n^{th} term, linear and non-linear* *Recap: Find the nth term of a linear sequence; decide if a term is in a sequence; identify position of a term in a sequence* Starter: I can explain the difference between arithmetic and geometric sequences I can calculate the value of the common ratio for a geometric sequence I can derive the general rule for a geometric sequence I can use the general rule ar^{n-1} to generate terms in the sequence				
Lesson 2 **Challenge: I can work out the nth term of a geometric sequence**				
Lesson 3 and 4 *Starter: I can explain the difference between linear and non-linear sequences* I can work out the nth term of a quadratic sequence				
Lesson 5 **Challenge: I can work out the nth term of a cubic sequence**				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Generating sequences from n^{th} term, linear and non-linear* I can find the nth term of a linear sequence I can decide if a term is in a sequence I can identify position of a term in a sequence				
Lesson 2 and 3 *Starter: I can explain the difference between arithmetic and geometric sequences* I can calculate the value of the common ratio for a geometric sequence I can derive the general rule for a geometric sequence I can use the general rule ar^{n-1} to generate terms in the sequence				
Lesson 4 *Starter: I can explain the difference between linear and non-linear sequences* I can work out the nth term of simple quadratic sequences [such as $n^2 + 5$]				
Lesson 5 **Challenge: I can work out the nth term of more complex quadratic sequences [such as $n^2 + 4n - 5$]**				

Assessment – Check Out Test

Unit 27 - Bearings

Duration: 2/3 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can accurately draw and measure bearings				
Lesson 2 *Starter: 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.* I can solve problems using scale drawings and bearings				

Assessment – Check Out Test

To achieve a grade 5 or 6

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

Unit 28 – Surds

Duration: 5 – 7 lessons

National Curriculum Content:
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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can simplify a single surd in the form √a I can simplify surds by multiplying and dividing I understand the effect of squaring a surd				
Lesson 2 I can add and subtract using surds				
Lesson 3 I can expand and simplify two sets and three sets of brackets involving surds				
Lesson 4 I can rationalise the denominator (single surd as a denominator) I can rationalise the denominator (involving conjugate surds e.g. $\frac{3}{2-\sqrt{3}}$)				
Lesson 5 *Recap: Area of 2D shapes, Pythagoras' Theorem, Trigonometry* I can solve geometric problems using surds				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can simplify a single surd in the form √a				
Lesson 2 I can simplify surds by multiplying and dividing I understand the effect of squaring a surd				
Lesson 3 I can add and subtract using surds				
Lesson 4 I can expand and simplify double brackets involving surds **Challenge: I can expand and simplify three sets of brackets involving surds**				
Lesson 5 I can rationalise the denominator (single surd as a denominator)				
Lesson 6 **Challenge: I can rationalise the denominator (involving conjugate surds e.g. $\frac{3}{2-\sqrt{3}}$)**				
Lesson 7 *Recap: Area of 2D shapes, Pythagoras' Theorem, Trigonometry* **Challenge: I can solve geometric problems using surds**				

Assessment – Check Out Test

<table>
<tr><td colspan="2">**Unit 29 – Straight Line Graphs**

Duration: 5 – 7 lessons</td><td>National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Midpoint of two coordinates; Deciding if a point is on a straight line* I can work out the equation of a straight line using y = mx + c I can work out the equation of a straight line given a coordinate on the line and the gradient				
Lesson 2 *Starter: I can calculate the gradient given two coordinates* I can work out the equation of a straight line when given two coordinates				
Lesson 3 *Recap: Understand the effect the gradient has on steepness of a straight line* I can identify parallel lines from their equations, including those that need to be rearranged I can work out the equation of a parallel line when given a coordinate and gradient OR two coordinates of the original straight line				
Lesson 4 *Recap: Reciprocals, definition of perpendicular* I can investigate the relationship between the gradient and perpendicular lines I can identify the gradient of a perpendicular line I can identify perpendicular lines from their equations, including those that need to be rearranged				
Lesson 5 I can work out the equation of a perpendicular line when given a coordinate and gradient OR two coordinates of the original straight line				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Midpoint of two coordinates; Deciding if a point is on a straight line* *Recap: I can identify the equations of horizontal and vertical straight line graphs* *I can identify the lines y=x and y=-x* I can work out the equation of a straight line using y = mx + c				
Lesson 2 I can work out the equation of a straight line given a coordinate on the line and the gradient				
Lesson 3 *Starter: I can calculate the gradient given two coordinates* I can work out the equation of a straight line when given two coordinates				
Lesson 4 *Recap: Understand the effect the gradient has on steepness of a straight line* I can identify parallel lines from their equations, including those that need to be rearranged				
Lesson 5 I can work out the equation of a parallel line when given a coordinate and gradient OR two coordinates of the original straight line				
Lesson 6 *Recap: Reciprocals, definition of perpendicular* **Challenge:** **I can investigate the relationship between the gradient and perpendicular lines** **I can identify the gradient of a perpendicular line** **I can identify perpendicular lines from their equations, including those that need to be rearranged**				
Lesson 7 **Challenge: I can work out the equation of a perpendicular line when given a coordinate and gradient OR two coordinates of the original straight line**				

Assessment – Check Out Test

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Unit 30 - Volume

Duration: 5 – 7 lessons

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<u>National Curriculum Content</u>:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Volume of cuboids and prisms, including cylinders.* *Calculate missing sides when given the volume of cuboids and prisms, including cylinders* I can solve problems in context using volume of compound solids				
Lesson 2 I can investigate the formula for the volume of a cone and the volume of a pyramid. I can calculate the volume of pyramids and cones I can calculate side lengths when given the volume of a pyramid or cone				
Lesson 3 I can investigate the formula for the volume of a sphere *Recap: Area of a sector* I can calculate the volume of sphere, hemispheres and parts of spheres I can calculate the radius of a sphere when given the volume				
Lesson 4 I can calculate the volume of composite solids I can solve problems involving volumes of two different solids				
Lesson 5 I can calculate the volume of a frustum				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Volume of cuboids and prisms, including cylinders.* *Calculate missing sides when given the volume of cuboids and prisms, including cylinders* I can solve problems in context using volume of compound solids				
Lesson 2 and 3 I can investigate the formula for the volume of a cone and the volume of a pyramid. I can calculate the volume of pyramids and cones I can calculate side lengths when given the volume of a pyramid or cone				
Lesson 4 and 5 I can investigate the formula for the volume of a sphere *Recap: Area of a sector* I can calculate the volume of sphere, hemispheres and parts of spheres I can calculate the radius of a sphere when given the volume				
Lesson 6 I can calculate the volume of composite solids **Challenge: I can solve problems involving volumes of two different solids**				
Lesson 7 I can calculate the volume of a frustum				

Assessment – Check Out Test

Unit 31 - Vectors

Duration: 6 – 7 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Intro: I can use and understand vector notation* *I can draw arrowed lines to represent column vectors* *I can identify column vectors represented by arrowed lines* I can calculate with column vectors (add, subtract and multiply by a scalar) I can recognise when column vectors are parallel and identify them I can solve problems when calculating with column vectors (involving algebra and ratios)				
Lesson 3 I can identify vectors in simple vector geometry problems I can identify vectors involving midpoints				
Lesson 4 I can identify vectors in geometry problems involving ratios				
Lesson 5 I can prove when two vectors are parallel				
Lesson 6 I can prove, using vectors, if 3 points lie on a straight line				

Assessment – Check Out Test

To achieve a grade 5 or 6

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 I can identify vectors in geometry problems involving ratios				
Lesson 6 **Challenge: I can prove when two vectors are parallel**				
Lesson 7 **Challenge: I can prove, using vectors, if 3 points lie on a straight line**				

Assessment – Check Out Test

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Unit 32 – Graphical Simultaneous Equations

Duration: 3 – 4 lessons

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National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: I understand and can explain what is meant by simultaneous equations* *I can identify the solution to linear simultaneous equations* *Recap: plotting straight line graphs in the form y = mx + c and ax + by = c* I can solve simultaneous equations by plotting straight line graphs				
Lesson 2 and 3 *Recap: Solving quadratic equations graphically when y = 0* I can plot an appropriate straight line to solve simultaneous equations that involving quadratic and a linear equation [e.g. $x^2 + 5 = 3$ or $x^2 + 3x + 2 = 4x – 1$] I can plot an appropriate straight line to solve more complex simultaneous equations that involving quadratic and a linear equation [e.g. Equation of y = $x^2 + 5x$ is plotted, draw a suitable straight line, use the graph to find the solutions to $x^2 + 6x + 5 = 0$]				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 *Starter: I understand and can explain what is meant by simultaneous equations* *I can identify the solution to linear simultaneous equations* *Recap: plotting straight line graphs in the form y = mx + c and ax + by = c* I can solve simultaneous equations by plotting straight line graphs				
Lesson 3 *Recap: Solving quadratic equations graphically when y = 0* I can plot an appropriate straight line to solve simultaneous equations that involving quadratic and a linear equation [e.g. $x^2 + 5 = 3$ or $x^2 + 3x + 2 = 4x - 1$]				
Lesson 4 **Challenge: I can plot an appropriate straight line to solve more complex simultaneous equations that involving quadratic and a linear equation** **[e.g. Equation of $y = x^2 + 5x$ is plotted, draw a suitable straight line, use the graph to find the solutions to $x^2 + 6x + 5 = 0$]**				

Assessment – Check Out Test

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Unit 33 – Transformations

Duration: 5 – 6 lessons

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National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can reflect shapes on a coordinate axes. I can describe reflections by identifying the equation of the mirror line 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 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 3 I can enlarge a shape by a <u>positive</u> (integer and fraction/decimal) scale factor and a given centre of enlargement I can describe an enlargement stating the scale factor and the centre of enlargement				
Lesson 4 I can enlarge a shape by a <u>negative</u> (integer and fraction/decimal) scale factor and a given centre of enlargement I can describe an enlargement stating the scale factor and the centre of enlargement				
Lesson 5 I can carry out combinations of transformations I can describe the <u>single</u> transformation after combinations after occurred				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: equations of horizontal and vertical straight line graphs and 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 *Recap: 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 a <u>positive</u> (integer and fraction/decimal) scale factor and a given centre of enlargement I can describe an enlargement stating the scale factor and the centre of enlargement				
Lesson 5 **Challenge: I can enlarge a shape by a <u>negative</u> (integer and fraction/decimal) scale factor and a given centre of enlargement** **I can describe an enlargement stating the scale factor and the centre of enlargement**				
Lesson 6 I can carry out combinations of transformations I can describe the <u>single</u> transformation after combinations after occurred				

Assessment – Check Out Test

Unit 33 – Combined Probabilities and Probability Diagrams

Duration: 4 – 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Constructing and calculating probabilities from sample space diagrams and probabilities from two way tables* I can construct and calculate probabilities from frequency trees				
Lesson 2 *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 I can calculate the probability of combined events using the "OR and AND" rule				
Lesson 3 I can construct tree diagrams for independent events and dependent events I can calculate the probability of combined events happening from a tree diagram (fractions and decimals)				
Lesson 4 I can use the product rule for identifying the number of outcomes or combinations of outcomes				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Constructing and calculating probabilities from sample space diagrams and probabilities from two way tables* I can construct and calculate probabilities from frequency trees				
Lesson 2 *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 **Challenge: I can calculate the probability of combined events using the "OR and AND" rule**				
Lesson 3 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 4 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 5 I can use the product rule for identifying the number of outcomes or combinations of outcomes				

Assessment – Check Out Test

Unit 35 – Similarity

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can calculate the scale factor of two similar shapes* *I can use the scale factor to calculate missing sides within similar shapes* I can calculate side lengths of similar triangles combined, including within a context				
Lesson 2 *Starter: 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 investigate the relationship between linear scale factors and area scale factors I can solve problems involving similar shapes and area				
Lesson 4 I can investigate the relationship between linear scale factors and volume scale factors I can solve problems involving similar shapes and volume				
Lesson 5 I can solve multi-step problems involving the length, area and volume scale factors combined				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can calculate the scale factor of two similar shapes* I can use the scale factor to calculate missing sides within similar shapes I can calculate side lengths of similar triangles combined, including within a context				
Lesson 2 *Starter: I can identify similar shapes using AAA or sides in the same proportion* I can give reasons why two shapes are similar **Challenge: I can prove when two triangles are similar – giving reasons**				
Lesson 3 **Challenge: I can investigate the relationship between linear scale factors and area scale factors** **I can solve problems involving similar shapes and area**				
Lesson 4 **Challenge: I can investigate the relationship between linear scale factors and volume scale factors** **I can solve problems involving similar shapes and volume**				
Lesson 5 **Challenge: I can solve multi-step problems involving the length, area and volume scale factors combined**				

Assessment – Check Out Test

Year 11	Hours	Unit	Mathematical Content and Overview
Autumn		• Standard Form	
		• Different Types of Graphs	
		• Solving Simultaneous Equations	
		• Non-right angled trig	
		• Venn Diagrams	
		• Mock Exam Revision	
		• Mock Exams and Review	
		• Inequalities and Regions	
		• Circle Theorems	
		• Iteration	
		• Congruence	
Spring		• Real Life Graphs	
		• Functions	
		• Transformations of Graph	
		• Proof	
		• Mock Exam Revision	
		• Mock Exams and Review	
		•	
		•	
		•	
Summer		•	
		•	
		•	
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		•	

Unit 36 – Standard Form

Duration: 4 – 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Starter: Laws of indices* *Recap: Converting ordinary numbers into standard form and vice versa* I can multiply and divide using standard form, without a calculator I can calculate with powers and roots using standard form				
Lesson 2 I can add and subtract using standard form, without a calculator				
Lesson 3 I can solve problems by calculating with standard form within a real life context and using geometric properties				
Lesson 4 I can calculate using standard form using a calculator				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can convert ordinary numbers into standard form and vice versa				
Lesson 2 *Recap: Laws of indices* I can multiply and divide using standard form, without a calculator I can calculate with powers and roots using standard form				
Lesson 3 **Challenge: I can add and subtract using standard form, without a calculator**				
Lesson 4 I can calculate using standard form using a calculator				
Lesson 5 I can solve problems by calculating with standard form within a real life context and using geometric properties, with and without a calculator				

Assessment – Check Out Test

Unit 37 – Different Types of Graphs

Duration: 5 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can identify and sketch the graphs of sin x, cos x and tan x				
Lesson 2 I can identify which angles are equivalent using the trigonometric graphs I can solve equations involving sin, cos or tan, with and without a graph				
Lesson 3 I can investigate and plot the equation of a circle I can sketch the equation of a circle I can work out the equation of a circle when given the radius				
Lesson 4 I can work out the equation of a tangent to a circle when given the equation and a point				
Lesson 5 **Challenge: I can work out the equation of a circle when the centre is not the origin**				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can identify and sketch the graphs of sin x, cos x and tan x				
Lesson 3 I can identify which angles are equivalent using the trigonometric graphs **Challenge: I can solve equations involving sin, cos or tan, with and without a graph**				
Lesson 4 I can investigate and plot the equation of a circle I can sketch the equation of a circle I can work out the equation of a circle when given the radius				
Lesson 5 **Challenge: I can work out the equation of a tangent to a circle when given the equation and a point**				

Assessment – Check Out Test

Unit 38 – Solving Simultaneous Equations

Duration: 4 – 6 lessons

<u>National Curriculum Content</u>:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: Solving simultaneous equations graphically* I can solve simultaneous equations, algebraically, when one or both equations need to be changed.				
Lesson 2 I can form and solve simultaneous equations from a worded context using algebra				
Lesson 3 *Recap: Solving simultaneous equations graphically, involving a quadratic* *Recap: Solving quadratic equations by factorising or using the formula* I can solve simultaneous equations, algebraically, when at least one equation is a quadratic				
Lesson 4 *Recap: Equation of a circle* I can solve simultaneous equations, algebraically, when one of the equations is the equation of a circle.				

Assessment – Check Out Test

To achieve a grade 5 or 6

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 or using the formula* I can solve simple simultaneous equations where one equation is quadratic and one is linear [e.g. $y = x^2 + 5x - 7$ and $y = 3x + 4$]				
Lesson 6 *Recap: Equation of a circle* **Challenge: I can solve simultaneous equations, algebraically, when one of the equations is the equation of a circle.**				

Assessment – Check Out Test

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Unit 39 – Non-right Angled Trigonometry

Duration: 5 – 6 lessons

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<u>National Curriculum Content</u>:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Investigation: I can derive the formula for the sine rule??* I can use the sine rule to calculate missing lengths and angles in non-right-angled triangles				
Lesson 2 *Investigation: I can derive the formula for the cosine rule??* I can use the cosine rule to calculate missing lengths and angles in non-right-angled triangles				
Lesson 3 I can identify when to use the sine or cosine rule I can solve multi-step problems using the sine and cosine rule				
Lesson 4 *Investigation: I can derive the formula for the area of any triangle using sine* I can calculate the area of any triangle I can calculate a length or the angle when given the area of a triangle				
Lesson 5 *Recap: Area of a sector* I can calculate the area of a segment				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use the sine rule to calculate missing lengths and angles in non-right-angled triangles				
Lesson 2 I can use the cosine rule to calculate missing lengths in non-right-angled triangles				
Lesson 3 I can use the cosine rule to calculate missing lengths in non-right-angled triangles				
Lesson 4 I can identify when to use the sine or cosine rule I can solve multi-step problems using the sine and cosine rule				
Lesson 5 I can calculate the area of any triangle **Challenge: I can calculate a length or the angle when given the area of a triangle**				
Lesson 6 *Recap: Area of a sector* **Challenge: I can calculate the area of a segment**				

Assessment – Check Out Test

Unit 40 – Venn Diagrams

Duration: 5 – 6 lessons

<u>National Curriculum Content</u>:

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To achieve a grade 7, 8 or 9

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 I can construct and complete Venn Diagrams when given specific elements				
Lesson 2 I can shade and identify intersections, unions and complements on Venn Diagrams, including 3-part Venn Diagrams				
Lesson 3 I can construct and complete Venn Diagrams from worded contexts, including 3-part, using given values and percentages				
Lesson 4 I can work out the probability of an event represented in a Venn diagram using intersection, union and complement notation				
Lesson 5 I can solve problems using Venn Diagrams, including algebraically				

Assessment – Check Out Test

To achieve a grade 5 or 6

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, **including 3-part Venn Diagrams**				
Lesson 4 I can construct and complete Venn Diagrams from worded contexts, including 3-part, using given values and percentages				
Lesson 5 I can work out the probability of an event represented in a Venn diagram using intersection, union and complement notation				
Lesson 6 **Challenge: I can solve problems using Venn Diagrams, including algebraically**				

Assessment – Check Out Test

Unit 41 – Inequalities and Regions

Duration: 6 – 8 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can represent inequalities on a number line and write an inequality from a given number line (including compound inequalities)* *I can solve inequalities (two-step, brackets, fractions, unknowns both sides)* I can identify integer values which satisfy a given inequality including ones that need solving or rearranging [e.g. 16 < 4x < 28 or -2 < 2x + 3 < 5]				
Lesson 2 *Recap: plotting straight line graphs: x=a, y=b, y=mx+c and ax+by=c* I can plot and shade the region to satisfy an inequality (one line needs to be constructed) I can plot and shade the region to satisfy an inequality (more than one line needs to be constructed)				
Lesson 3 *Recap: find equation of straight line graphs: x=a, y=b, y=mx+c and ax+by=c* I can write the inequality(ies) that represent a shaded region on a graph				
Lesson 4 and 5 *Recap: Solve quadratic equations by factorising. Sketch quadratic curves identifying roots/solutions* I can solve quadratic inequalities				
Lesson 6 I can form and solve inequalities from worded contexts				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap: I can represent inequalities on a number line and write an inequality from a given number line (including compound inequalities)* I can solve inequalities (two-step, brackets, fractions, unknowns both sides)				
Lesson 2 *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 3 *Recap: plotting straight line graphs: x=a, y=b, y=mx+c and ax+by=c* I can plot and shade the region to satisfy an inequality (one line needs to be constructed)				
Lesson 4 I can plot and shade the region to satisfy an inequality (more than one line needs to be constructed)				
Lesson 5 *Recap: find equation of straight line graphs: x=a, y=b, y=mx+c and ax+by=c* **Challenge: I can write the inequality(ies) that represent a shaded region on a graph**				
Lesson 6 and 7 *Recap: Solve quadratic equations by factorising. Sketch quadratic curves identifying roots/solutions* **Challenge: I can solve quadratic inequalities**				
Lesson 8 I can form and solve inequalities algebraically from worded contexts				

Assessment – Check Out Test

Unit 42 – Circle Theorems

Duration: 8 – 9 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can investigate and identify angle properties within circles				
Lesson 2 I can identify and use "angles in a semi-circle = 90°" I can identify and use "the angle at the centre is twice that at the circumference"				
Lesson 3 I can identify and use "angles subtended by the same arc in the same segment are equal" I can identify and use "opposite angles in a cyclic quadrilateral add to 180°"				
Lesson 4 I can identify and use "angle formed by radius and a tangent = 90°" I can identify and use "tangents from the same points are equal in length"				
Lesson 5 I can identify and use the "alternate segment theorem"				
Lesson 6 I can solve geometric problems involving a combination of circle theorems				
Lesson 7 and 8 I can prove the different circle theorems				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can investigate and identify angle properties within circles				
Lesson 2 I can identify and use "angles in a semi-circle = 90°" I can identify and use "the angle at the centre is twice that at the circumference"				
Lesson 3 I can identify and use "angles subtended by the same arc in the same segment are equal" I can identify and use "opposite angles in a cyclic quadrilateral add to 180°"				
Lesson 4 I can identify and use "angle formed by radius and a tangent = 90°" I can identify and use "tangents from the same points are equal in length"				
Lesson 5 I can identify and use the "alternate segment theorem"				
Lesson 6 and 7 I can solve geometric problems involving a combination of circle theorems				
Lesson 8 and 9 **Challenge: I can prove the different circle theorems**				

Assessment – Check Out Test

Unit 43 – Iteration

Duration: 3 – 4 lessons

National Curriculum Content:
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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can prove an equation has a solution between two given values (using substitution) I can rearrange an equation to make <u>one</u> of the x's the subject				
Lesson 2 and 3 I can use a derived iterative formula to find solutions to a given equation				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can prove an equation has a solution between two given values (using substitution) I can rearrange an equation to make <u>one</u> of the x's the subject				
Lesson 3 and 4 **Challenge: I can use a derived iterative formula to find solutions to a given equation**				

Assessment – Check Out Test

Unit 44 – Congruence

Duration: lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

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

Assessment – Check Out Test

To achieve a grade 5 or 6

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

Unit 45 – Real Life Graphs

Duration: 4 – 8 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 *Recap Lesson* *I can plot and interpret conversion graphs* *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* *I can construct a distance-time graph*				
Lesson 2 *Starter: I can <u>describe</u> the velocity and acceleration from a given graph* *Recap: gradient of a line* I can calculate the rate of acceleration from a velocity-time graph *Recap: Area of a trapezium* I can calculate the distance travelled from a velocity-time graph				
Lesson 3 I can calculate the rate of acceleration and the distance travelled from a (curved) velocity-time graph				
Lesson 4 I can sketch/construct a velocity-time graph from a worded context				

Assessment – Check Out Test

To achieve a grade 5 or 6

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 *Starter: I can <u>describe</u> the velocity and acceleration from a given graph* *Recap: gradient of a line* **Challenge: I can calculate the rate of acceleration from a velocity-time graph**				
Lesson 6 **Challenge: I can calculate the rate of acceleration from a (curved) velocity-time graph**				
Lesson 7 **Challenge: I can calculate the distance travelled from a velocity-time graph**				
Lesson 8 **Challenge: I can sketch/construct a velocity-time graph from a worded context**				

Assessment – Check Out Test

Unit 46 – Functions

Duration: lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 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)] I can solve equations using function notation e.g. f(x) = 3x – 2, find the value of x when f(x) = 16				
Lesson 2 and 3 *Starter: I can explain what is meant by a composite function* I can substitute values into composite functions I can express composite function algebraically				
Lesson 4 *Recap: Rearrange formulae* I can find the inverse of a simple function (with or without function machines) I can find the inverse of a complex function where *x* appears more than once				
Lesson 5 I can solve equations combining composite and inverse functions				

Assessment – Check Out Test

To achieve a grade 5 or 6

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 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)]				
Lesson 2 I can solve equations using function notation e.g. f(x) = 3x – 2, find the value of x when f(x) = 16				
Lesson 3 *Starter: I can explain what is meant by a composite function* I can substitute values into composite functions				
Lesson 4 **Challenge: I can express composite function algebraically**				
Lesson 5 *Recap: Rearrange formulae* I can find the inverse of a simple function (with or without function machines)				
Lesson 6 **Challenge: I can find the inverse of a complex function where *x* appears more than once**				

Assessment – Check Out Test

Unit 47 – Transformations of Graphs

Duration: 6 lessons

To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 and 2 I can use a graphical calculator to investigate translations of functions I can sketch the graph after it has been translated. I can describe, in words, the translation that has occurred from function notation I can identify the function that has been used after a graph has been translated				
Lesson 3 and 4 I can use a graphical calculator to investigate reflections of functions I can sketch the graph after it has been reflected. I can describe, in words, the reflection that has occurred from function notation I can identify the function that has been used after a graph has been reflected				
Lesson 5 I can sketch the graph after a combination of translations and reflections I can describe, in words, the translation and/or reflection that has occurred from function notation I can identify the function that has been used after a graph has been translated and reflected				
Lesson 6 I can use a graphical calculator to investigate the effect of multiplying a function, af(x) or f(bx). I can describe, in words, the "stretch" or "squash" that has occurred from function notation I can identify the function that has been used after a graph has been "stretched" or "squashed"				

Assessment – Check Out Test

Unit 48 – Proof

Duration: 3 lessons

National Curriculum Content:

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To achieve a grade 7, 8 or 9

KPIs / LOs	Teaching Resources	Student Activities / Tasks	Independent Learning	Drop Off Area
Lesson 1 I can use and identify algebraic notation for specific types of numbers I can prove that two algebraic statements are equivalent to each other using expanding, simplifying and factorising				
Lesson 2 and 3 I can prove, algebraically, that two statements in a worded context are true [e.g. Prove that $(5n+1)^2 - (5n-1)^2$ is a multiple of 4 for all positive values of n]				

Assessment – Check Out Test