

The Beacon Centre

Maths

This curriculum allows students to access a range of different aspects of Maths to develop their skills in problem solving, fluency and reasoning in preparation for GCSE examination and life post-school. It aims to demonstrate the links that Maths has to the real world and many career options through rich learning experiences both inside and outside of the classroom. The subject and topics on offer support the values and ethos of the whole school aiming to re-engage disenfranchised young people, building their self-esteem, confidence and resilience, enabling Social, Moral, Spiritual and cultural development and promoting British values. This Maths curriculum is designed to motivate and engage students to realise their academic potential.

Long Term overview of the topics that each class will study during each half term.				
	Key Stage 3b	Key Stage 3a	Year 10	Year 11
Autumn 1	Number and calculations Expressions and equations	Number and calculations Expressions and equations	Number and calculations Factors and multiples	Graphs Pythagoras and Trigonometry
Autumn 2	Factors and multiples Perimeter, area and Volume	Factors and multiples Perimeter, area and Volume	Fractions, decimals and percentages 1 Expressions	Area and Volume 2 Expressions and Equations 2
Spring 1	Fractions, decimals and percentages Graphs	Fractions, decimals and percentages Graphs	Charts and averages Equations 1	Fractions, decimals and percentages 2 Vectors
Spring 2	Charts and averages Probability	Charts and averages Probability	Area and Volume 1 Ratio	Revision
Summer 1	Shapes and Angles Transformations	Shapes and Angles Transformations	Shapes and Angles Probability	Revision
Summer 2	Ratio Sequences	Ratio Sequences	Transformations Constructions	Exams

Potential qualifications that can be achieved in this subject area:

GCSE, ASDAN Accelerating Progress: Mathematics, Functional Skills, Entry Level Certificate

Class: Key Stage 3b

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Number & Calculations:</p> <ul style="list-style-type: none"> • Types of number • Written calculations (+ - x ÷) • Multiply and divide by 10, 100, 1000 • Indices and roots • Negative numbers • Order of operations - BIDMAS • Money calculations • Time calculations <p>Expressions & Equations:</p> <ul style="list-style-type: none"> • Writing expressions • Substitution • Simplifying expressions • Expanding single brackets • Solving linear equations 	<p>Factors & Multiples:</p> <ul style="list-style-type: none"> • Prime numbers • Listing factors and multiples • HCF & LCM • Prime factorisation • Rounding • Using a scientific calculator <p>Perimeter, Area & Volume</p> <ul style="list-style-type: none"> • Measuring and drawing lines • Perimeter • Perimeter and area by counting squares • Area of rectangles • Area of triangles • Area of parallelograms • Volume by counting cubes • Volume of cubes and cuboids • Surface area of cubes and cuboids 	<p>Fractions, Decimals & Percentages</p> <ul style="list-style-type: none"> • What is a fraction? • Shading fractions • Simplifying and finding equivalent fractions • Comparing and ordering fractions • Mixed numbers and improper fractions • Add/subtract fractions • Multiply/divide fractions • Fractions of amounts • Find 50/25/10/5/1% of amounts • Percentages of amounts using a calculator • Converting between FDP <p>Graphs</p> <ul style="list-style-type: none"> • Plot and identify co-ordinates • Horizontal and vertical lines • Drawing straight line graphs • Distance-time graphs 	<p>Charts & Averages</p> <ul style="list-style-type: none"> • Tally charts/frequency tables • Two way tables • Questionnaires • Pictograms • Bar charts • Pie charts • Scatter graphs • Mean, mode, median and range <p>Probability</p> <ul style="list-style-type: none"> • What is probability? • Probability in words • Probability scales • Sums to one • Probability experiments • Sample space diagrams • 'And/or' rule • Listing outcomes 	<p>Shapes & Angles</p> <ul style="list-style-type: none"> • Polygons • Properties of triangles • Properties of quadrilaterals • Types of angles • Drawing and measuring angles • Angles on straight lines • Angles around a point • Angles in triangles • Angles in quadrilaterals • Properties of 3D shapes • Nets • Plans and elevations <p>Transformations</p> <ul style="list-style-type: none"> • Line symmetry • Rotational symmetry • Reflection • Rotation • Translation • Enlargement 	<p>Ratio</p> <ul style="list-style-type: none"> • What is ratio? • Writing ratios • Simplifying ratios • Writing ratios as fractions • Dividing into ratios • Scaling recipes • Maps and scale drawings • Converting currency • Best value <p>Sequences</p> <ul style="list-style-type: none"> • Continue sequences and finding missing terms • Draw next pattern in sequence • Find term to term rule • Writing sequences • Find nth term • Decide if a term is in a sequence

Class: Key Stage 3a+9-+

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Number & Calculations:</p> <ul style="list-style-type: none"> Types of number Written calculations – including decimals (+ - x ÷) Multiply and divide by 10, 100, 1000 Indices and roots Negative numbers Order of operations - BIDMAS Money calculations Time calculations <p>Expressions & Equations:</p> <ul style="list-style-type: none"> Writing expressions Substitution Simplifying expressions Expanding single brackets Factorising single brackets Solving linear equations (including brackets) 	<p>Factors & Multiples:</p> <ul style="list-style-type: none"> Prime numbers Listing factors and multiples HCF & LCM (including problem solving) Prime factorisation Rounding (including significant figures) Estimation Using a scientific calculator <p>Perimeter, Area & Volume</p> <ul style="list-style-type: none"> Perimeter (including regular polygons) Area of rectangles Area of triangles Area of parallelograms Area of trapezia Area and circumference of circles Area of compound shapes Volume of prisms Surface area of prisms 	<p>Fractions, Decimals & Percentages</p> <ul style="list-style-type: none"> Shading fractions Simplifying and finding equivalent fractions Comparing and ordering fractions Mixed numbers and improper fractions Add/subtract fractions Multiply/divide fractions Fractions of amounts Percentages of amounts non calculator Percentages of amounts using a calculator Percentage increase/decrease Converting between FDP <p>Graphs</p> <ul style="list-style-type: none"> Plot and identify co-ordinates Horizontal and vertical lines Drawing straight line graphs Distance-time graphs 	<p>Charts & Averages</p> <ul style="list-style-type: none"> Tally charts/frequency tables (including grouped frequency tables) Two way tables Questionnaires Pictograms Bar charts Pie charts Scatter graphs Mean, mode, median and range <p>Probability</p> <ul style="list-style-type: none"> Probability in words Probability scales Sums to one Probability experiments Sample space diagrams 'And/or' rule Probability from two way tables Listing outcomes 	<p>Shapes & Angles</p> <ul style="list-style-type: none"> Polygons Properties of triangles Properties of quadrilaterals Types of angles Drawing and measuring angles Angles on straight lines Angles around a point Angles in triangles Angles in quadrilaterals Properties of 3D shapes Nets Plans and elevations <p>Transformations</p> <ul style="list-style-type: none"> Line symmetry Rotational symmetry Reflection Rotation Translation Enlargement 	<p>Ratio</p> <ul style="list-style-type: none"> Writing ratios Simplifying ratios Writing ratios as fractions Dividing into ratios Problem solving with ratio (given one share/difference between shares) Scaling and problem solving with recipes Maps and scale drawings Converting currency Best value <p>Sequences</p> <ul style="list-style-type: none"> Continue sequences and finding missing terms Draw next pattern in sequence Find term to term rule Writing sequences Find nth term Decide if a term is in a sequence Fibonacci sequences

Class: Year 10 (*Higher GCSE only content*)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Number & Calculations:</p> <ul style="list-style-type: none"> Types of number Written calculations Indices and roots Negative numbers Order of operations – BIDMAS Given that calculations Standard form <p>ASDAN 3A5</p> <ul style="list-style-type: none"> <i>Fractional indices</i> <p>Factors & Multiples:</p> <ul style="list-style-type: none"> Prime numbers Listing factors and multiples Prime factorisation HCF & LCM (including using Venn) Rounding (including significant figures) Estimation Error intervals Using a scientific calculator <ul style="list-style-type: none"> <i>Using bounds</i> 	<p>Fractions, Decimals & Percentages</p> <ul style="list-style-type: none"> Simplifying and finding equivalent fractions Comparing and ordering fractions Mixed numbers and improper fractions Add/subtract fractions Multiply/divide fractions <p>ASDAN 3A2</p> <ul style="list-style-type: none"> Fractions of amounts <p>ASDAN 2A5</p> <ul style="list-style-type: none"> Percentages of amounts non calculator Percentages of amounts using a calculator Percentage increase/decrease <p>ASDAN 2A1</p> <ul style="list-style-type: none"> Converting between FDP Compare and order FDP <p>Expressions</p> <ul style="list-style-type: none"> Writing expressions Substitution <p>ASDAN 5A5</p> <ul style="list-style-type: none"> Simplifying expressions (inc expand and simplify) Expanding 	<p>Charts & Averages</p> <ul style="list-style-type: none"> Mean, mode, median and range Pie charts <p>ASDAN 1A1</p> <ul style="list-style-type: none"> Stem & leaf Scatter graphs Line graphs <p>ASDAN 1A2</p> <ul style="list-style-type: none"> Two way tables Averages from tables Reverse averages/average problems Types of data Questionnaires Sampling <p>ASDAN 1A4</p> <ul style="list-style-type: none"> <i>Cumulative frequency</i> <i>Boxplots</i> <i>Histograms</i> <p>Equations 1</p> <ul style="list-style-type: none"> Solve linear equations (inc decimal/fractional solutions) <p>ASDAN 5A2</p> <ul style="list-style-type: none"> Form and solve linear equations Inequality signs Show inequalities on number line Solve inequalities 	<p>Area & Volume 1</p> <ul style="list-style-type: none"> Area of triangles Area of parallelograms Area of trapezia <p>ASDAN 4A1</p> <ul style="list-style-type: none"> Volume of prisms Surface area of cube/cuboids Problem solving <ul style="list-style-type: none"> <i>Arcs and sectors</i> <i>Spheres, pyramids and cones</i> <p>Ratio</p> <ul style="list-style-type: none"> Dividing into ratios Problem solving with ratio (given one share/difference between shares) Scaling and problem solving with recipes <p>ASDAN 3A1</p> <ul style="list-style-type: none"> Maps and scale drawings Converting currency <p>ASDAN 3A3</p> <ul style="list-style-type: none"> Best value <p>ASDAN 2A3</p> <ul style="list-style-type: none"> Timetables Speed, distance & time 	<p>Shapes & Angles</p> <ul style="list-style-type: none"> Name and describe polygons up to 12 sides Interior angles, sum, exterior angles of polygons <p>ASDAN 4A5</p> <ul style="list-style-type: none"> Congruence Similar shapes Drawing and measuring angles Missing angle problems Angles in parallel lines <ul style="list-style-type: none"> <i>Circle theorems</i> <p>Probability</p> <ul style="list-style-type: none"> Probability scales Sums to one Probability experiments <p>ASDAN 1A3</p> <ul style="list-style-type: none"> Sample space diagrams Tree diagrams (inc conditional) Venn diagrams 'And/or' rule Listing outcomes <ul style="list-style-type: none"> <i>Combinations</i> 	<p>Constructions</p> <ul style="list-style-type: none"> Triangles Nets <p>ASDAN 4A2</p> <ul style="list-style-type: none"> Plans and elevations <p>ASDAN 4A4</p> <ul style="list-style-type: none"> Perpendicular bisectors Angle bisectors Perpendicular; point on line, point away from line Loci Bearings Tessellations <p>Transformations</p> <ul style="list-style-type: none"> Line symmetry Rotational symmetry Reflection Rotation Enlargement (inc neg/fractional scale factor) Translation Combining transformations <p>Vectors</p> <ul style="list-style-type: none"> Vector notation Draw and label vectors Interpret vectors Add/subtract vectors Multiply vectors Calculate

	<p>single brackets</p> <ul style="list-style-type: none"> • Factorising single brackets • Expand double brackets • <i>Factorise double brackets</i> • <i>Expand three brackets</i> • <i>Difference of two squares</i> 	<ul style="list-style-type: none"> • <i>Solve equations with unknowns on both sides</i> • <i>Change the subject</i> 	<ul style="list-style-type: none"> • Mass, density & volume • Force, pressure & area • <i>Inverse and direct proportion</i> 		<p>with vectors</p> <ul style="list-style-type: none"> • Problem solving • <i>Vector proof</i>
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Class: Year 11 (*Higher GCSE only content*)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Graphs</p> <ul style="list-style-type: none"> Plot and identify co-ordinates Horizontal and vertical lines Midpoints of lines <p>ASDAN 5A4</p> <ul style="list-style-type: none"> Drawing straight line graphs <p>ASDAN 2A4 ASDAN 5A3</p> <ul style="list-style-type: none"> Gradient and y – intercept Equations of lines Parallel lines Quadratic graphs Cubic graphs Reciprocal graphs Using graphs to find solutions Distance-time graphs <ul style="list-style-type: none"> <i>Area under a graph</i> <i>Gradient of curve</i> <p>Pythagoras & Trigonometry</p> <ul style="list-style-type: none"> Pythagoras Theorem Problem solving with Pythagoras Trigonometry – finding missing sides 	<p>Area and Volume 2</p> <ul style="list-style-type: none"> Area and circumference of circles Area of compound shapes Area of sectors/ arc length Volume of cylinders Surface area of prisms <p>ASDAN 4A3</p> <ul style="list-style-type: none"> Volume and surface area of spheres, cones and pyramids Converting metric units of area <ul style="list-style-type: none"> <i>Area of segment</i> <i>Volume of frustums</i> <p>Expressions & Equations 2</p> <ul style="list-style-type: none"> Solve equations with unknowns on each side Factorise double brackets Changing the subject Difference of two squares Simultaneous equations <ul style="list-style-type: none"> <i>Expand</i> 	<p>Fractions, Decimals & Percentages 2</p> <ul style="list-style-type: none"> Compound interest/ depreciation <p>ASDAN 2A2 ASDAN 3A4</p> <ul style="list-style-type: none"> Percentage change Reverse percentages Recurring decimals Calculating with fractions and powers Problem solving <p>Sequences</p> <ul style="list-style-type: none"> Continue sequences and finding missing terms Draw next pattern in sequence Find term to term rule Writing sequences Find nth term <p>ASDAN 5A1</p> <ul style="list-style-type: none"> Decide if a term is in a sequence Quadratic and cubic sequences Fibonacci sequences <ul style="list-style-type: none"> <i>Iteration – locating roots</i> 	Revision	Revision	Exams

<ul style="list-style-type: none">• Trigonometry – finding missing angles• Problem solving with Trigonometry• <i>Sine & cosine rule</i>• <i>Area of triangle using sine</i>• <i>Trigonometric graphs</i>	<p><i>three brackets</i></p> <ul style="list-style-type: none">• <i>Trial & improvement</i>• <i>Solving quadratics using formula</i>• <i>Completing the square</i>				
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