

The Beacon Centre

Maths 2021-22

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. Each week students will complete a 'Skills Check' assessment which will identify gaps in essential knowledge and skills and allow the department to provide opportunities for students to address and close these gaps enabling students to make progress in the subject.

Long Term overview of the topics that each class will study during each half term.			
	Key Stage 3 (Redwoods/Aspen)	Year 10 (Bonsai)	Year 11 (Blossoms)
Autumn 1	Number and calculations Factors and multiples	Number and calculations Factors and multiples	Transformations Constructions Graphs
Autumn 2	Expressions and equations Perimeter, area and volume	Fractions, decimals and percentages 1 Expressions	Pythagoras/trigonometry Area and volume 2 Expressions/equations 2
Spring 1	Fractions, decimals and percentages Graphs	Charts and averages Equations 1	Fractions, decimals and percentages 2 Vectors Sequences
Spring 2	Charts and averages Probability	Area and volume 1 Ratio	Revision/ ASDAN Accelerated Progress/Short Course in Maths
Summer 1	Shapes and angles Transformations	Shapes and angles Probability	Revision/ ASDAN Accelerated Progress/Short Course in Maths
Summer 2	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 3 (Aspens/Blossoms)

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>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>Expressions & Equations:</p> <ul style="list-style-type: none"> Writing expressions Substitution Simplifying expressions Expanding single brackets Factorising single brackets <p>Solving linear equations (including brackets)</p> <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 (Redwoods) (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 Standard form Fractional indices <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 Using bounds 	<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 Fractions of amounts Percentages of amounts non calculator Percentages of amounts using a calculator Percentage increase/decrease Converting between FDP Compare and order FDP <p>Expressions</p> <ul style="list-style-type: none"> Writing expressions Substitution Simplifying expressions (inc expand and simplify) Expanding single brackets Factorising single brackets Expand double brackets Factorise double brackets Expand three 	<p>Charts & Averages</p> <ul style="list-style-type: none"> Mean, mode, median and range Pie charts Stem & leaf Scatter graphs Line graphs Two way tables Averages from tables Reverse averages/average problems Types of data Questionnaires Sampling Cumulative frequency Boxplots Histograms <p>Equations 1</p> <ul style="list-style-type: none"> Solve linear equations (inc decimal/fractional solutions) Form and solve linear equations Inequality signs Show inequalities on number line Solve inequalities Solve equations with unknowns on both sides Change the subject 	<p>Area & Volume 1</p> <ul style="list-style-type: none"> Area of triangles Area of parallelogram Area of trapezia Area of compound shapes Volume of prisms Surface area of cube/cuboids Problem solving Arcs and sectors Spheres, pyramids and cones <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 Maps and scale drawings Converting currency Best value Distance charts Timetables Speed, distance & time Mass, density & volume Force, pressure & area Inverse and direct proportion 	<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 Congruence Similar shapes Drawing and measuring angles Missing angle problems Angles in parallel lines Circle theorems <p>Probability</p> <ul style="list-style-type: none"> Probability scales Sums to one Probability experiments Probability from two way tables Sample space diagrams Tree diagrams (inc conditional) Venn diagrams 'And/or' rule Listing outcomes Combinations 	<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>Constructions</p> <ul style="list-style-type: none"> Triangles Nets Plans and elevations Perpendicular bisectors Angle bisectors Perpendicular ; point on line, point away from line Loci Bearings Tessellations

	<ul style="list-style-type: none"> <i>brackets</i> <i>Difference of two squares</i> 				
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Class: Year 11 (Blossoms) (<i>Higher GCSE only content</i>)					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<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>Constructions</p> <ul style="list-style-type: none"> Triangles Nets Plans and elevations Perpendicular bisectors Angle bisectors Perpendicular ; point on line, point away from line Loci Bearings Tessellations <p>Graphs</p> <ul style="list-style-type: none"> Plot and identify co-ordinates Horizontal and vertical lines Midpoints of lines Drawing straight line graphs Gradient and y – intercept Equations of lines 	<p>Pythagoras & Trigonometry</p> <ul style="list-style-type: none"> Pythagoras Theorem Problem solving with Pythagoras Trigonometry – finding missing sides 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>Area and Volume 2</p> <ul style="list-style-type: none"> Area and circumference of circles Area of sectors/ arc length Volume of cylinders Surface area of prisms Volume and surface area of spheres, cones and pyramids Converting metric units of area <i>Area of segment</i> <i>Volume of frustums</i> 	<p>Fractions, Decimals & Percentages 2</p> <ul style="list-style-type: none"> Compound interest/ depreciation Percentage change Reverse percentages Recurring decimals Calculating with fractions and powers Problem solving <p>Vectors</p> <ul style="list-style-type: none"> Vector notation Draw and label vectors Interpret vectors Add/subtract vectors Multiply vectors Calculate with vectors Problem solving <p><i>Vector proof</i></p> <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 	<p>Revision/ ASDAN Accelerating Progress/Short Course in Maths</p>	<p>Revision/ ASDAN Accelerating Progress/Short Course in Maths</p>	<p>Exams</p>

<ul style="list-style-type: none"> • Parallel lines • Quadratic graphs • Cubic graphs • Reciprocal graphs • Using graphs to find solutions • Distance-time graphs • Area under a graph • Gradient of curve 	<p>Expressions & Equations 2</p> <ul style="list-style-type: none"> • Solve equations with brackets • Solve equations with unknowns on each side • Factorise double brackets • Changing the subject • Difference of two squares • Simultaneous equations • Expand three brackets • Trial & improvement • Solving quadratics using formula • Completing the square 	<p>term is in a sequence</p> <ul style="list-style-type: none"> • Quadratic and cubic sequences • Fibonacci sequences • Iteration – locating roots 			
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