

Biddulph High School Curriculum Intent

To deliver a broad and enriching curriculum through engaging and challenging lessons that provide a wide range of opportunities for all students to achieve their potential.

Students will all be prepared to take their next steps in a diverse and ever changing future ready to make a positive contribution to society. Through a broad programme of extracurricular activities students will have the opportunities to showcase their talents and experience new challenges.

We value individuals and all that they can offer as well as supporting each other with kindness and empathy.

Curriculum Intent for Mathematics:

Mathematics is an integral facet of everyday life. We want our learners to be curious, confident and competent in Mathematics. Our aim is to ensure that all students are numerate and are secure in its applications so they are prepared for everyday life and future employment.

All teachers will follow the schemes of work provided by the department. This will ensure that all students receive the same high-quality provision. All units of work will provide a clear outline of the knowledge and skills required and assessments will ensure that this knowledge has been retained and that skills can be evidenced.

Teachers will ensure that gaps are closed through regular monitoring within the classroom. DINT activities will allow for interleaving and recap of previous learning. Misconceptions will be identified through effective questioning and the regular inspection of student work.

Mathematics Long Term Overview						
Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
9	High Frequency Exam Crossover Topics	Block D Number	Block D Ratio Block D Algebra	Block D Geometry	Block D Probability and Data Block E Number	Block E Algebra
10	Block E Geometry	Block E Probability and Data Block E Ratio and Proportion Block F Number	Block F Algebra	Block F Algebra	Block F Geometry	Block F Geometry
11	Block F Ratio and Proportion Block F Probability and Data Block G Number	Block G Algebra	Block G Algebra Block G Geometry	Block G Probability and Data		
12						
13						

Mathematics: Medium Term Overview			
Year 11 Higher	Autumn Term 1	Unit Title: Block F – Ratio and Proportion/Probability and Data	No of Lessons: 12
Overview/Intent Assessment	This unit expands upon Mathematical content from previous blocks and pushes students to explore new concepts. Students will complete an assessed piece of work during lesson time which will be marked in line with STAR.		
Essential Knowledge (what must students know): Students will be able to: <ul style="list-style-type: none"> • Use compound Interest and exponential growth to find historic and future values • Construct probability tree diagrams for dependent events. • Find the modal class/median class and estimate of the mean from a grouped frequency table • Construct a cumulative frequency graph and find the median and quartiles. • Find the Interquartile range from a Cumulative Frequency graph and a list • Read and Construct a box plot. To be able to make inferences from the data available. • Construct a grouped frequency table from a cumulative frequency graph and estimate the mean. • Form an equation involving direct proportion. 		Essential Skills (what must students be able to demonstrate): How to <ul style="list-style-type: none"> • Apply compound interest • Construct a tree diagram to find probability of a number of dependent events • Find the modal class and median class from grouped data • Construct a cumulative frequency graph • Find the median and quartiles from a cumulative frequency graph • Find the interquartile range from a cumulative frequency graph • Find the interquartile range from a list of values • Read and construct a box plot • Construct a grouped frequency table from a cumulative frequency graph • Form an equation using direct proportion Terminology: Key Words: Compound interest, Tree diagram, modal, median, Cumulative Frequency, Quartiles, Box Plot, Interquartile Range(IQR), Direct Proportion	Lessons: <ul style="list-style-type: none"> • Compound Interest and Depreciation • Tree Diagram - Dependent events • Grouped Frequency table • Cumulative Frequency graphs • Interquartile range • Box Plots • Estimate the mean from cumulative frequency • Direct Proportion - Algebraic
Careers Links:	Enrichment:		MYPB: Resilience, Self-Motivation, Communication, Motivation
Mathematics: Medium Term Overview			

Year 11 Higher	Autumn Term 1	Unit Title: Block G - Number	No of Lessons: 14
Overview/Intent Assessment	This unit expands upon Mathematical content from previous blocks and pushes students to explore new concepts. Students will complete an assessed piece of work during lesson time which will be marked in line with STAR.		
<p>Essential Knowledge (what must students know):</p> <p>Students will be able to:</p> <ul style="list-style-type: none"> • Convert a recurring decimal to a fraction using algebraic methods • Expand 2 binomials involving surds • Rationalise the denominator of the form $\frac{7}{\sqrt{2}}$ • Apply laws of indices to combine a calculations to a given base value. • e.g $2^x = 18$, link to interval bisection • Problem solving e.g Pythag/Trig/Area of a circle • e.g linked to Pythagoras'/Trig/Volume • Show that questions • Surds – Rationalising the denominator prepping for A level (Expressions on Numerator and Denominator) 	<p>Essential Skills (what must students be able to demonstrate): How to</p> <ul style="list-style-type: none"> • Convert a recurring decimal to a fraction • Expand 2 binomials involving surds • Rationalise the denominator with a single term denominator • Simplify expressions by converting values to the same base. E.g $9^3 \times 27^4$ • Solve equations using interval bisection • Solve equations using Trial and Improvement • Solve problems involving Pythagoras/Trigonometry that include Area or Circumference of a circle • Rationalise the denominator where the denominator involves 2 terms where at least one is a surd. <p>Terminology: Key Words: Binomial, Expand, Recurring Decimal, Denominator, Term, Trial and Improvement, Base, Rationalise the denominator</p>	<p>Lessons:</p> <ul style="list-style-type: none"> • Convert a recurring decimal to a fraction • Surds • Rationalise the denominator • Laws of Indices • Trial and Improvement • Surds • Bounds Calculations • Laws of Indices • Rationalise the denominator 	
<p>Careers Links:</p>	<p>Enrichment:</p>	<p>MYPB: Resilience, Self-Motivation, Communication, Motivation</p>	

Mathematics: Medium Term Overview

Year 11 Higher	Autumn Term 2 + Spring Term 1	Unit Title: Block G - Algebra	No of Lessons: 36
Overview/Intent Assessment	This unit expands upon Mathematical content from previous blocks and pushes students to explore new concepts. Students will complete an assessed piece of work during lesson time which will be marked in line with STAR.		
<p>Essential Knowledge (what must students know): Students will be able to:</p> <ul style="list-style-type: none"> • Expand 3 binomials. Find values of a and b given the coefficient of x^3 and constants • Factorise a quadratic equation where the coefficient of x^2 is greater than 1 • Sketch Linear graphs to find solutions to simultaneous equations • Solve quadratics of the form $ax^2 + bx + c = 0$ including difference of 2 squares by factorisation • Simplifying a single algebraic fraction through factorisation • Simplify at least 2 algebraic fractions that involve multiplication and division • Complete the square. Identify turning points and y-intercept • Use the Quadratic Formula to solve quadratic equations. Form quadratic equations and solve • Use iteration techniques using non calculator methods • Use Numerical Methods to find approximate solutions. E.g Interval Bisection/Trial and Improvement • Simplifying algebraic fractions including addition and subtraction involving an integer. • Use the Turning point to form a quadratic equation. Generate alternative solutions. • Sketch a quadratic graph labelling roots, y - intercept and Turning points • Find the equation of a circle given a radius. Find the equation of a circle by finding the radius • Find the equation of a tangent to a circle and identify the x and y intercept 	<p>Essential Skills (what must students be able to demonstrate): How to</p> <ul style="list-style-type: none"> • Expand 3 binomials • Factorise a quadratic equation with $a > 1$ involving algebraic fractions • Sketch 2 Linear graphs to solve simultaneous equations • Solve quadratics where $a > 1$ • Solve quadratic equations using the difference of 2 squares • Simplify algebraic fractions • Complete the square to find a turning points • Sketch a quadratic stating the turning point and intercepts • Solve quadratic equations using the quadratic formula • Use iteration to solve equations • Simplify algebraic fractions involving addition and subtraction • Simplify algebraic fractions that have a constant e.g $2 + 5/(x-3)$ • Use the turning point of a quadratic to form a quadratic equation • Find the equation of a circle • Find the equation of a tangent to a circle • Find the intercepts of a tangent to a given circle. • Use function machines to solve a composite function 	<p>Lessons:</p> <ul style="list-style-type: none"> • Expand 3 binomials • Factorise 2 binomials • Straight Line Graphs - Sim Equations • Solve Quadratic Equations • Simplifying algebraic fractions • Simplifying algebraic fractions • Completing the Square • Quadratic Formula • Iteration • Interval Bisection • Simplifying algebraic fractions • Reverse complete the square • Sketch Quadratics • Equation of a circle • Find the equation of a tangent • Composite Functions using Function machine • Regions • Quadratic Inequalities • Trig Graphs • Solve by Completing the square • Form algebraic expressions and solve • Quadratic Simultaneous Equations • Transforming Graphs - Trigonometric • Transforming Graphs - Reciprocal • Transforming graphs - Quadratics • Completing the square • Generate the quadratic formula by completing the square(proof) • Transforming Graphs - General 	

<ul style="list-style-type: none"> • Use function machines to form composite functions • Plot multiple linear inequalities to identify a region. • Solve quadratic inequalities. Generate a quadratic inequality from a graphical representation • Sketch Trigonometric graphs detailing all key features. Include graphs of $y = -\sin x$ and $y = -3\sin x$ • Solve equations by completing the square • Form and solve linear and quadratic equations involving Pythagoras' Theorem/Trapezia... • Substitution • Sketch Trigonometric graphs involving transformations • Sketch Reciprocal graphs involving transformations • Sketch Quadratic graphs involving transformations. Recognise the links to completing the square • Complete the square of the form $ax^2 + bx + c$ and solve equations • Generate the quadratic formula by completing the square 	<ul style="list-style-type: none"> • Plot multiple linear inequalities to identify a region • Sketch a quadratic inequality to find a region • Solve quadratic inequalities • Sketch Trigonometric graphs • Solve quadratic equations by completing the square • Solve quadratic simultaneous equations • Sketch Trigonometric graphs involving transformations • Sketch Reciprocal graphs involving transformations • Sketch Quadratic graphs involving transformations. • Complete the square of the form $ax^2 + bx + c$ and solve equations • <p>Terminology: Key Words: Algebraic fraction, Complete the square, Turning point, Intercept, Quadratic, Iteration, Interval bisection, Trial and Improvement, Integer, Tangent, Quadratic Simultaneous Equation, Trigonometric, Transformation, Composite function</p>	
<p><u>Careers Links:</u></p>	<p><u>Enrichment:</u></p>	<p><u>MYPB:</u> Resilience, Self-Motivation, Communication, Motivation</p>

Mathematics: Medium Term Overview			
Year 11 Higher	Spring Term 1	Unit Title: Block G - Geometry	No of Lessons: 20
Overview/Intent	This unit expands upon Mathematical content from previous blocks and pushes students to explore new concepts.		
Assessment	Students will complete an assessed piece of work during lesson time which will be marked in line with STAR.		
Essential Knowledge (what must students know):		Essential Skills (what must students be able to demonstrate): How to	Lessons:
<p>Students will be able to:</p> <ul style="list-style-type: none"> • Perform calculations involving vectors e.g $\frac{2}{3}$ of $2a - 3b$ • Use the Sine rule to find angles and sides including Exact Trig values • Use the Cosine rule to find angles and sides including exact Trig values • Find the Area of a Triangle using $0.5ab\sin C$. Include link to the sine and cosine rule • Find the surface area of composite solids • Find the Volume of composite solids • Perform and describe an enlargement involving negative scale factors • Prove shapes are congruent using RHS, SSS, ASA and SAS notation • Use properties of a radius and tangent to derive missing angles • Use properties of the two tangent theorem to derive answers numerically and algebraically • Use properties of the alternate segment theorem to derive angles numerically and algebraically • • Understand the connection between SF/AF/VF involving similar shapes including using ratio • SF/AF/VF written in ratio form • • Identify scalar value for parallel lines 		<ul style="list-style-type: none"> • Find fractions of a vector • Find the vector OP where P is the point on a line such as AB • Use the cosine rule to find angles and sides • Use the cosine rule with exact trig values • Find the area of a non right angled triangle • Find the surface area of a composite solid • Find the volume of a composite solid • Perform an enlargement with a negative scale factor • Describe an enlargement with a negative scale factor • Prove shapes are congruent using the correct notation • Use radius and tangent features to find missing angles • Use the two tangent theorem to find missing angles • Use the alternate segment theorem to find missing angle • Use the connection between SF/AF/VF to find missing lengths, areas and volumes 	<ul style="list-style-type: none"> • Vector Calculations involving fractions • Sine Rule • Cosine Rule • Area of a triangle $0.5ab\sin C$ • Composite Surface Areas • Composite Volumes • Enlargement - Negative Scale Factors • Prove shapes are congruent • Circle Theorems - Radius and Tangent • Circle Theorems - Two tangent theorem • Circle Theorems - Alternate Segment Theorem • 3D Trigonometry • Similar Areas and Volumes • Similar Areas and Volumes • Vector Geometry including ratios and other shapes e.g Hexagon/Parallelogram • Vector Geometry - proving vectors are parallel/in straight line

	<ul style="list-style-type: none"> • Prove 2 vectors are parallel and also in a straight line. <p>Terminology: Key Words: Cosine rule, Vector, Composite solid, Congruent, Radius, Tangent, Alternate Segment Theorem, Scale factor, area factor, volume factor, Parallel, Vector, Scalar</p>	
<p><u>Careers Links:</u></p>	<p><u>Enrichment:</u></p>	<p><u>MYPB:</u> Resilience, Self-Motivation, Communication, Motivation</p>

Mathematics: Medium Term Overview			
Year 11 Higher	Spring Term 2	Unit Title: Block G – Probability and Data	No of Lessons: 8
Overview/Intent	This unit expands upon Mathematical content from previous blocks and pushes students to explore new concepts.		
Assessment	Students will complete an assessed piece of work during lesson time which will be marked in line with STAR.		
Essential Knowledge (what must students know): Students will be able to: <ul style="list-style-type: none"> • Draw and interpret Histograms. Understand the connection between Frequency and Frequency Density • Construct a grouped frequency table from a cumulative frequency graph and estimate the mean. • Construct tree diagrams involving dependent events • Construct a Venn diagram to find probabilities of events such as Art given Biology • Algebraic • E.g $A \cup B$ $A \cap B$ A' A/B' 		Essential Skills (what must students be able to demonstrate): How to <ul style="list-style-type: none"> • Draw a Histogram • Read information from a histogram • Estimate the proportion represented between 2 values on a histogram • Estimate the mean from a cumulative frequency graph • Construct a tree diagram for dependent events • Find a probability for dependent events without a tree diagram • Find probabilities from a Venn diagram • Complete a Venn diagram • Complete a tree diagram for independent events • What the notation mean on a Venn diagram e.g $P(A \cap B)$ Terminology: Key Words: Histogram, Frequency density, Mean, Estimate of the mean, Cumulative Frequency, Tree Diagram, Dependent event, Venn Diagram, Independent event,	Lessons: <ul style="list-style-type: none"> • Histograms • Estimate the mean from cumulative frequency • Tree Diagram - Dependent events • Venn Diagram - Probabilities • Tree Diagram - independent events • Venn Diagram notation
Careers Links:		Enrichment:	MYPB: Resilience, Self-Motivation, Communication, Motivation