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 10 Higher	Autumn Term 1	Unit Title: Block E 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):

Students will be able to:

- Form and solve 1 or 2 linear equations using column vector notation
- Find the surface area of a cylinder. Find the Surface Area given the area of the cross section
- Find the volume of a cone or sphere and use the volume to find the value of a radius or diameter
- Use multiple construction techniques to find the locus of points that satisfy them
- Perform and Describe one of the four transformations
- Describe a combination of transformations as a single transformation
- Construct a given bearing including scale measures. Find bearing from an accurate diagram
- Find the Area of a sector. Given the area find the angle or radius
- Find the Arc Length and Perimeter of a sector. Given the Arc Length find the angle or radius of a sector
- Find the Area of a composite shape
- Apply Pythagoras' Theorem to unfamiliar situations. E.g. Trapeziums
- Find the Perimeter of composite shapes including sectors
- Find angles using right angles trigonometry
- Derive, recall and apply exact trigonometric values to right angles triangles(Non Calc)
- Explain from given features why triangles are congruent e.g SAS/SSS/ASA/RHS

Essential Skills (what must students be able to demonstrate): How to

- Solve linear equations using vectors
- Find the Surface area of a cylinder
- Find the volume of a cone/sphere
- use a compass accurately to find regions
- apply transformations to a given shape
- describe transformations between 2 shapes
- Find the area of a sector using proportion
- Find the arc length of a sector using proportion
- Apply Pythagoras' Theorem
- Use standard shapes to find the perimeter of composite shapes
- Use Trigonometry to find unknown sides and angles in right angled triangles
- Explain the reasons why 2 shapes are congruent

Terminology:

Key Words: Congruent, Transformation, Sector, Arc Length, Construct, Loci, Solve, Vector, Radius, Diameter

Lessons:

- Vector Arithmetic
- Surface Area of a Cylinder
- Volume of a cone/Sphere
- Constructions and Loci
- Single Transformations Exam Questions
- Combination of Transformations
- Bearings
- Area of a sector
- Arc Length and Perimeter of a sector
- Area of composite shapes including sectors
- Pythagoras' Theorem
- Perimeter of composite shapes including sectors
- Trigonometry
- Exact Trig Values
- Congruent Triangles

Careers Links:	**Enrichment:**	**MYPB:** Resilience, Self-Motivation, Communication, Motivation

Mathematics: Medium Term Overview

Year 10 Higher	Autumn Term 2	Unit Title: Block E Probability and Data/Ratio and Proportion	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):	Essential Skills (what must students be able to demonstrate): How to	Lessons:
Students will be able to: • Complete a scatter graph and identify the percentage of entries that satisfy a given condition • Find the modal class/median class and estimate of the mean from a grouped frequency table • Use the formula for Compound Interest to find future and historic values. • Solve problems involving Density	• Plot a scatter graph and explain types of correlation • Find a percentage based on a condition set • Find an estimate of the mean from grouped data • Find averages and the range from grouped data • Use repeated percentage change • Use the connection between density/mass and volume **Terminology:** Key Words: Plot, Correlation, Line of best fit, median, mode, modal class, mean, range, compound interest, depreciation, density	• Scatter Graphs • Grouped Frequency table • Compound Interest and Depreciation • Density/mass/volume
Careers Links:	**Enrichment:**	**MYPB:** Resilience, Self-Motivation, Communication, Motivation

Mathematics: Medium Term Overview

Year 10 Higher	Autumn Term 2	Unit Title: Block F - Number	No of Lessons: 12
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:
Students will be able to: • Find the Percentage change between 2 numbers using Calculator and Non Calculator methods • Find an original value using reverse percentages • Identify the upper and lower bounds to perform calculations • Add and Subtract surds using methods of simplifications • Multiply and Divide Surds of the form k root p • Expand Single Brackets involving Surds including simplification • Evaluate integers and fractions raised to a fractional power including negatives. • Convert a recurring decimal to a fraction using algebraic methods	• Find a percentage change between 2 numbers • Use percentage multipliers to find original amounts • Find Upper and Lower bounds of 2 rounded values to perform a calculation • Simplify surds and add or subtract • Multiply and Divide surds • Evaluate values raised to a fractional power • Convert a recurring decimal to a fraction **Terminology:** Key Words: Multiplier, Bound, Surd, Integer, Fractional Power, Evaluate, Recurring	• Find a Percentage change • Reverse Percentages • Upper and Lower Bound Calculations • Add and Subtract Surds • Multiply and Divide Surds • Expand Brackets involving surds • Fractional Powers • Convert a recurring decimal to a fraction
Careers Links:	**Enrichment:**	**MYPB:** Resilience, Self-Motivation, Communication, Motivation

Mathematics: Medium Term Overview

Year 10 Higher	Spring Term 1+2	Unit Title: Block F - Algebra	No of Lessons: 38
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:
Students will be able to: • Solve equations involving fractions e.g.$(3x + 2)/5 = (2x +3)/7$ • Expand 3 binomials. Find values of a and b given the coefficient of x^3 and constants • Factorise quadratics of the form $ax^2 + bx + c$ • Factorise expressions using difference of 2 squares involving fractional components • Solve quadratic equations of the form $ax^2 + bx + c = 0$ • Sketch quadratics including roots and y - intercept. Find the equations of quadratics given x and y intercept • make x the subject e.g $3x + d = cx + 5$ • Find an inverse function using a function machine algebraically. • Identify the shape of a reciprocal graph of the form $y = 1/x$. Sketch graphs of the form $1/(x+a)$ • Find the equation of a perpendicular line. Understand that the product of 2 perpendicular gradients is -1 • Sketch Speed Time graphs. Find the distance using the graph • Use understanding of Velocity/Time graphs to find acceleration using a tangent • Solve Linear simultaneous equations by elimination involving negative and decimal solutions • Solve Linear Simultaneous equations by substitution. • Find the nth term of a quadratic sequence • Represent linear inequalities graphically and define a region which satisfies multiple(2 or 3) inequalities	• Solve equations involving fractions • Expand 3 binomials where a,b,c,d are integers • Factorise a quadratic where a>1 • Factorise expressions involving difference of 2 squares • Factorise a cubic of the form $ax(bx +c)(bx – c)$ • Sketch quadratics stating all intercepts and roots • Change the subject involving factorising • Find an inverse using a function machine • Identify a reciprocal graph and its features • Sketch a speed time graph • Solve Simultaneous Equations using elimination • Solve simultaneous equations using substitution • Find the nth term of a quadratic sequence • Represent linear inequalities graphically • Use iteration techniques to find future or previous terms using a calculator.	• Solving equations involving fractions • Expand 3 binomials • Factorise 2 binomials • Difference of 2 squares • Solve Quadratic Equations • Sketch Quadratics • Change the subject that involves factorising • Inverse Functions using Function Machine • Exponential Graphs • Find the equation of a perpendicular line • Speed-Time graph --> Area under graph is the distance • Speed/velocity Time graph - change in speed/velocity = acceleration • Simultaneous Equations • Simultaneous Equations • Quadratic Nth Term • Plot a linear inequality and shade the correct region • Iteration

• Use iteration techniques to find the next term including working backwards. Calculator methods only	• Find the equation of a perpendicular line **Terminology:** Key Words: Solve, Equation, Binomial, Coefficient, Quadratic, intercept, roots, inverse, subject, reciprocal, perpendicular, Simultaneous equation, nth term, linear, Inequality, Equality, Iteration, Region	
Careers Links:	**Enrichment:**	**MYPB:** Resilience, Self-Motivation, Communication, Motivation

Mathematics: Medium Term Overview

Year 10 Higher	Summer Term 1+ 2	Unit Title: Block F – Geometry		No of Lessons: 38
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:
Students will be able to: • Conversion between measurements of area and volume e.g cm^2 to mm^2 • Find sides and angles in right angled triangles • Derive, recall and apply exact Trig values. • Apply exact Trig values to problems in context including sectors • Use Pythagoras' Theorem in 3D • 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 • Prove shapes are congruent using RHS, SSS, ASA and SAS notation • Enlarge shapes using fractional scale factors • To be able to perform multiple Transformations and describe as a single transformation • Find the Surface Area of a Cone/Sphere including find the radius given the surface Area • Find the Surface Area and Volume of a pyramid. Including reverse calculations • Find the Surface Area and Volume of a Frustum. • Solve problems using vector geometry e.g find AB using a and b notation. Solve column vector problems • Define features of a circle including sectors • Explain features of a cyclic quadrilateral and solve problems numerically and algebraically • Explain features of angles subtended at the centre and circumference and solve problems numerically and algebraically	• Convert between cm^2 and mm^2 • Use Trigonometry to find sides and angles in right angled triangles. • Recall Exact Trig values • Apply exact trig values to problems • Use Pythagoras' Theorem in 3D • Use the Sine rule to find sides and angles • Use the cosine rule to find sides and angles • Prove shapes are congruent using proofs • Enlarge a shapes using fractional factors • Perform a combination of transformations • Describe a combination of transformations • Find the surface area of a cone/sphere • Find the Surface area of a pyramid • Find the volume of a pyramid • Find the SA and Volume of a Frustum • Use Vector Geometry to find missing vectors • Use circle theorems to find missing angles • Explain features of circle theorems and apply algebraically	• Conversion between compound measures e.g cm^3 and mm^3 • Trigonometry • Exact Trig Values • Trigonometry using Exact Trig Values • 3D Pythagoras' Theorem • Sine Rule • Cosine Rule • Prove shapes are congruent • Enlargement - Fractional scale factors • Combination of Transformations • Surface Area of a Cone/Sphere • SA and Volume of a Pyramid • Frustums (Surface Area and Volume • Simple Vector Geometry - Midpoints only • Review of parts of a circle • Circle Theorems - Cyclic Quadrilateral • Circle Theorems - Angles subtended at the centre and circumference • Circle Theorems - Angles in the same segment • Circle Theorems - Angles in a semi circle

• Explain the properties of angles in the same segment solving problems numerically and algebraically • Explain the properties of angles in a semi circle solving problems numerically and algebraically	**Terminology:** Key Words: Derive, Sine, Cosine, Congruent, Fractional Scale Factor, Transformation, Surface Area, Frustum, Vector, Column Vector, Subtended, Segment,	
Careers Links:	**Enrichment:**	**MYPB:** Resilience, Self-Motivation, Communication, Motivation