Ercall Wood Academy
Empower | Respect | Aspire

Curriculum Mapping Document
Mathematics and Further Mathematics

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Our curriculum explores and clarifies student beliefs and values and empowers them to learn to think and speak for themselves by developing critical and evaluative skills which enables them to be more socially mobile.

- Our curriculum develops skills for learning, life and work by making learning relevant and engaging, thereby helping students to apply lessons to their life beyond the classroom.

Year 8 Curriculum Implementation

Students will develop skills learnt in year 7 and extend their knowledge to more abstract concepts.

Number, Algebra and Sequences		Area, Perimeter and Probability		Probability, Inequalities and Data	
1	2	3	4	5	6
Number and Ratio (Autumn A) Students will discover prime numbers and their real life uses before an introduction to indices. Students then learn how to write a regular number in standard form and vice versa before applying their new knowledge to calculating with standard form. Students will gain a deep understanding of ratio by being able to simplify, share into, and calculate or problem solve with ratio. This is then extended into best buys and compound measures **Algebra and Sequences (Autumn B):** Previous year 7 knowledge of algebra is then extended to solving equations with unknowns on both sides, or with fractions. Students will be able to solve equations with indices or roots. Being able to continue or find missing terms of a sequence leads to being able to calculate an nth term or generate a sequence. Students will use these new skills to apply to sequences with shapes.		**Area, Perimeter and Circles (Spring A)** Students will extend on their knowledge of 2D shape to be able to calculate the area or perimeter. Students will apply this knowledge with their algebra skills to calculate area or perimeter algebraically. Students will then apply these skills to compound shapes. Students will build on the previous unit to circles to be able to calculate the area or circumference. Students will need to recognise and describe parts of the circle. **Probability (Spring B):** Students will need to understand and learn the language of probability, and use these terms confidently. We extend this knowledge to calculating simple probabilities to more complex theoretical probabilities and expectations. Further developing these skills, students will be introduced to sample space diagrams, two-way tables and Venn diagrams		**Shape and Constructions (Summer A)** Students will use their KS2 knowledge of co-ordinates to problem solving before being introduced to bearings and their real life uses. Continuing with the real life theme, students learn to calculate with scale diagrams and map scales. Students will then improve their use of mathematical equipment to accurately construct triangles, bisectors and loci **Inequalities and Data (Summer B):** This Inequalities unit build on previous algebraic skills such as solving equations, but to include drawing and recognising inequalities on a number line. Students gain an understanding of types of data and the uses of sampling and questionnaires. Students will be introduced to dual or composite bar charts and stem and leaf diagrams.	
Summative Assessments: **Autumn A – Number** **Ratio**		**Summative Assessments:** **Spring A – Area and Perimeter** **Circles** **Spring B – Probability 1**		**Summative Assessment:** **Summer A : Shape** **Construction** **Summer B: Inequalities**	

Year 9 Curriculum Implementation

Students will embed the Mathematics skills introduced in Years 7 and 8 through the study of more challenging problems and concepts.

Number, Algebra and Graphs		3D Shapes, Transformations and Proportion		Probability, Simultaneous Equations and Right angled triangles	
1	2	3	4	5	6
Number and Percentages (Autumn A): Students begin the year with by building on their previous knowledge of rounding to an introduction to truncation, error intervals and bounds. Students then gain complete a unit on percentages, including simple and compound interest, and reverse percentages. **Expanding, Factorising and Graphs (Autumn B):** Students extend their knowledge of algebra by expanding double brackets and factorising quadratics, before rearranging formulae.		**Area, volume and transformations (Spring A):** Students apply their previous understanding of area to calculate surface area and volume of 3D shapes such as prisms and cylinders. Students then complete a unit on transformations, including recognising and describing transformations **Real life graphs and proportion (Spring B):** Students are now introduced to real life graphs such as distance-time graphs, depth-time graphs and the practical uses of conversion graphs. Students are then apply their knowledge of best buys to a unit covering proportion, similarity and congruent shapes.		**Probability, Statistics and Simultaneous Equations (Summer A):** In this half term, students are introduced to tree diagrams, pie charts, frequency polygons. Students then apply all previous teachings of algebra to simultaneous equations, including creating and solving simultaneous equations. **Pythagoras and Trigonometry (Summer B):** In the final half term of the year, students calculate with right angled triangles using Pythagoras and/or trigonometry. Students also gain an understanding of exact trigonometric values.	
Summative Assessments: **Autumn A – Number 3** **Percentages** **Autumn B – Algebra 4** **Graphs**		**Summative Assessment:** **Spring A – Surface area and volume** **Transformations** **Spring B – Real life graphs** **Proportion**		**Summative Assessment:** **Summer A: Probability and statistics** **Simultaneous Equations**. **Summer B**:**Pythagoras**. **Trigonometry**	

Year 10 Curriculum Implementation –

Our key stage 4 pupils build on their previous knowledge to further develop their fluency, mathematical reasoning and competence in solving increasingly difficult problems. We aim to deliver engaging, yet challenging lessons, that with the correct amount of support, will allow pupils to achieve success every lesson

1	2	3	4	5	6

Foundation

Number and algebra (Autumn A)

Students begin the year by completing a comprehensive unit on calculating with fractions and mixed numbers, including fractions of amounts and writing one quantity as a fraction of another.

The algebra 1 unit covers solving linear equations, substitution, factorising and solving quadratics.

Sequences and probability (Autumn B)

In the second half term, students complete a unit on sequences, including sequences of shapes and nth term.

The probability unit builds on previous knowledge of tree diagrams to include Venn diagrams, notation, relative frequency and expectations.

Higher

Number and algebra (Autumn A)

Students start the year by being introduced to surds, indices, bounds and being able to convert a recurring decimal to a fraction.

Students then extend their knowledge of algebra to include factorising quadratics where a> 1, completing the square, difference of two squares and plotting and solving quadratics.

Graphs and Probability

Students are introduced to histograms for the first time as well as covering cumulative frequency graphs and box plots.

Students then extend their previous probability knowledge by completing a unit on conditional probability, Venn diagrams and notation and the product rule.

Foundation

Shape, Surface area and volume (Spring A)

Students learn how to classify shapes and calculate the perimeter and area of 2D shapes, before an in depth unit on parts of a circle and area and circumference. We then extend this knowledge into and calculating the surface area and volume of prisms and cylinders.

Vectors and Transformations (Spring A)

Students are introduced to vector notation for the first time and can use this knowledge to draw or calculate with vectors. We then start working on transformations including being able to recognise and describe a transformation.

Higher

Shape and graphs (Spring A)

Students apply their knowledge of Pythagoras and trigonometry to the sine and cosine rules and 3D Pythagoras and trigonometry, and the area of non-right angled triangles.

We complete a unit on equations of linear, parallel and perpendicular lines.

Shape and proportion (Spring B)

The new year starts with calculating the volume and surface area of prisms, compound shapes, cones, spheres and frustums. We then calculate with area and volume scale factors, congruence and similarity.

The final unit of the term comprises of calculating with direct and indirect proportion, and proportion graphs.

Foundation

Angles, Index laws and standard form (Summer A)

Students build on their knowledge of simple angle facts to be able to calculate angle sin polygons and angles on parallel lines.

The second unit this half term is complied of learning and calculating with the index laws before recognising and calculating with standard form.

Percentages and statistics (Summer B)

Students build upon previous knowledge of percentages to be able to calculate percentage change, simple and compound interest and reverse percentages.

We finish off the year with a unit on statistics to include calculating averages from a table or a statistical diagram, and justify their choice of average.

Higher

Algebra and Vectors (Summer A)

Student begin the term with calculating with algebraic fractions, expanding triple brackets and rearranging formula with factorising.

Students are then introduced to algebraic vectors, including arithmetic and vector proof.

Growth and Decay, and Circles (Summer B)

Recognising and sketching graphs leads into real life graphs and an introduction into iteration.

Finally students are introduced to circle theorems where they'll need to recognise and calculate angles using their new knowledge. We extend this to graphs of circles.

Summative Assessment:	Summative Assessment:	Summative Assessment:
Foundation:	**Foundation**:	**Foundation**:
Number 1	Shape 1	Angles
Algebra 1	Surface area and volume	Index laws and Standard form
Sequences	Vectors	Percentages
Probability	Transformations	Statistics
Higher:	**Higher**:	**Higher**:
Number 1	Number 1	Algebra 2
Algebra 1	Algebra 1	Vectors
Graphs	Graphs	Growth and decay
Probability	Probability	Circles
	.	

Year 11 Curriculum Implementation

In Year 11, students will complete their study of the final GCSE Mathematics by the end of the Autumn term. From January, students will work on their weaknesses from the Autumn mock, before starting a program of revision.

1	2	3	4	5	6
Foundation **Pythagoras, Trigonometry and Graphs (Autumn A)** Students build on previous knowledge of Pythagoras and trigonometry and apply their skills to be able to problem solve. We then combine all knowledge of graphs to be able to problem solve with an emphasis on exam-style questions. **Simultaneous equations (Autumn B)** Students combine their algebra skills to be able to create and solve simultaneous equations. We then extend this to solving graphically. **Higher** **Quadratics and graphs (Autumn A)**		**Higher and foundation - Targeted revision (Spring)**		**Higher and foundation – Revision and exams (Summer)**	

Students build on previous knowledge to solving quadratic simultaneous equations before being introduced to quadratic sequences and solving quadratic inequalities. Our graphs unit will see students draw, solve and recognise trigonometric graphs. Students will also be able to calculate graph transformations, the tangent to a graphs and the area under a graph. **Algebra (Autumn B)** Students finish the term by exploring functions, which includes composite, inverse and solving functions before b=being introduced to algebraic proof..		
Foundation: Pythagoras and Trigonometry Graphs Simultaneous equations **Higher**: Quadratics Graphs Algebra 3	**Foundation and Higher** Assessments based on individual class weaknesses highlighted from each mock series	