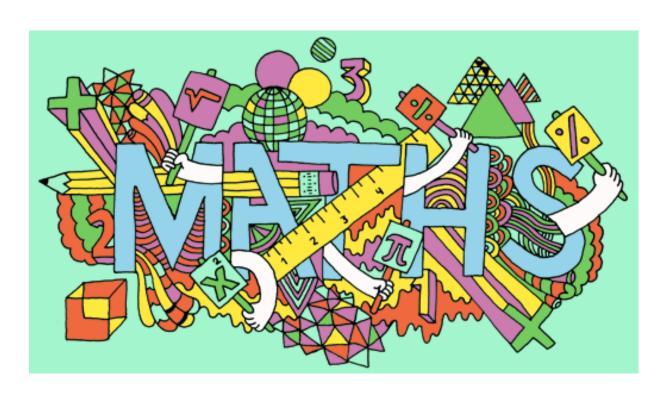# MATHEMATICS

Team Leader (Mathematics and Computing): Mrs C Lovell

Mathematics is a Core Subject so it is studied by every student in the Academy. Mathematics is such an important part of modern life that no student can really function in the world without at least a basic grasp of numeracy.

Accommodation

The mathematics area in C-block consists of 6 specialist teaching rooms in which the majority of students will be taught their mathematics lessons. We also have a computer suite dedicated to the learning of Mathematics and computing.

Resources

The Faculty is well resourced with books, equipment and stand-alone activities. Each of the classrooms has an interactive whiteboard and software to enhance the learning of our students.

Students need to bring the following to every Mathematics and Statistics lesson:
- Black/Blue Pen (including a spare)
- Green Pen
- Pencil and sharpener or mechanical pencil
- Rubber
- Ruler
- Protractor
- Compass
- Scientific Calculator with Natural Display (eg Casio Fx-83GT

Calculators, revision guides and workbooks can be purchased from the school, please contact your child's teacher.

Key Stage 3: Years 7 and 8

We follow a curriculum which has been written in conjunction with the Cabot Learning Federation and covers all the aspects of the National Curriculum. We are using ideas from Chinese teaching which is seeking to ensure that students thoroughly learn maths from the very basics as well as providing opportunities to extend those who understand by offering a deeper understanding of maths.

During Key Stage 3 students will study:
- Number
- Algebra
- Geometry and Measures
- Handling Data and Probability
- Using and Applying Mathematics
- Applying Mathematics to Real-Life Situations

Students will sit internal exams four times a year. These are in the form of written assessments and online multiple choice questions.

Students will be set homework every week. Homework may be via Mathswatch which will instantly mark their answers so they can immediately check their own understanding. Homework may also be set on paper. These are then either marked in class or by the teacher.

Key Stage 4: Years 9, 10 and 11.

Students follow the AQA GCSE scheme of work

Students will study:
- Number
- Algebra
- Geometry and Measures
- Statistics
- Using and Applying Mathematics
- Applying Mathematics to Real-Life Situations

Students will sit full mock exams twice a year. They will be provided with a breakdown of their marks which highlights areas they performed well in and those which they need to revise using Mathswatchvle.com.

There are three exam papers as outlined below, each are 90 minutes long and have a total of 80 marks available. They have a mixture of question styles from short single-mark questions to multi-step problems. The mathematical demand increases as the students progresses through the paper.

Paper 1   Non-Calculator   Date
Paper 2   Calculator   Date
Paper 3   Calculator   Date

Students will also sit end of topic tests and be given the opportunity to engage with the exam board's mark schemes for these.

Students will be set homework every week. Homework may be via Mathswatch which will instantly mark their answers so they can immediately check their own understanding. Homework may also be set on paper.

Programmes of Study

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	**Probability:** Analyse the of outcomes of probability experiments including using tables, grids and Venn diagrams and sample spaces **Number:** Use the concepts of prime numbers, factors, and multiples. Use the four operations, including formal written methods	**Number:** Addition and subtraction of fractions. Multiplication and division with fractions. Understand the order of operation. **Algebra:** Use and interpret algebraic notation then collecting like terms and expanding bracket Understand the concepts of expressions, equations inequalities, terms and factors Substitute numerical values into formulae and expressions, including scientific formulae	**Algebra:** Generate sequences from term to term, position to term. Recognise geometric and other sequences. Plotting co-ordinates in all four quadrants Plotting straight line graphs and applied problems using y = mx and y = x + c **Ratio and Proportion:** Simplifying fractions, fractions of amounts and fractional change.	**Ratio and Proportion:** Simplifying ratios Simplifying ratios into the form of 1:n and n:1. Dividing an amount by a given ratio. Expressing ratios as a fraction and vice versa. **Number:** Calculating using time	**Geometry and measures:** Calculating the area and perimeters of rectangles, triangles and compound shapes. Know the parts of the circle and calculating its area and circumference. Apply the properties of angles at a point, angles on a straight line and angles in a triangle. Deduce the angle sum in any polygon and derive properties of regular polygons	**Geometry and measures:** Constructing congruent triangles; SAS, ASAM SSS. **Revision and consolidation**
	Assessment at the end of term		Assessment at the start of term	Assessment at the end of term		Assessment at the start of term

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 8	**Statistics:** Constructing tables, charts and graphs. Including; frequency tables, bar charts, line graphs, pie charts, scatter graphs. Calculate the mode, median, mean and range from data sets and frequency tables. **Number:** Order positive and negative numbers as well as using inequalities. Converting mixed numbers to improper fractions. Rounding to decimal places and significant figures.	**Number:** Calculating fractions and percentages of amounts with and without a calculator. Fraction, Decimal, Percentage relationships. Percentage multiplier. **Algebra:** Solving linear equations from one-step equations up to variables on both sides including brackets. Plotting linear lines in the form of y=mx+c Plotting quadratic functions.	**Algebra:** Identify the gradient and intercept of straight line graphs **Number:** Multiply and divide by powers of 10. Convert numbers into standard form. **Ratio and Proportion:** Enlarge shapes using scale factor Substituting into formulae Rearrange formulae	**Ratio and Proportion:** Revision of percentage of amounts. Percentage change Simple interest Reverse percentages Conversion between standard units of mass, length and volume. Solve problems using direct and inverse proportion	**Algebra:** Rearranging formulae to change the subject. Derive formula and calculate areas of triangles parallelograms and trapeziums. Derive formula and calculate volume of cuboids and prisms. **Geometry and Measures:** Angle sums for polygons. Interior and exterior angles Parallel angles Pythagoras Theorem	**Geometry and Measures:** Transformations including; Reflection and rotation. Translations using words and vectors. Enlargement by a scale factor from a point. **Revision and consolidation.**
	Assessment at the end of term		Assessment at the start of term	Assessment at the end of term		Assessment at the start of term

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 9	1st Year of AQA 3yr GCSE Course					
	Higher: Basic Number Factors and Multiples Angles Scale Diagrams and bearing Basic Algebra Basic Fractions	Higher: Coordinates and linear graphs Basic decimals Rounding Collecting and representing data Sequences	Higher: Percentages Perimeter and Area Real Life graphs	Higher: Circumference and area Equations Ratio and Proportion	Higher: Basic probability Scatter graphs Standard form	Higher: Transformations Constructions 2D representations of 3D shapes Revision for End of year assessment
	Foundation: Basic Number Factors and Multiples Angles Scale Diagrams and bearing Basic Algebra	Foundation: Basic fractions Coordinates and linear graphs Basic decimals Rounding Collecting and representing data	Foundation: Sequences Percentages Perimeter and Area	Foundation: Circumference and area Ratio and Proportion Basic Probability	Foundation: Equations Scatter graphs Perimeter and area	Foundation: Transformations Pythagoras' Theorem 2D representations of 3D shapes Revision for End of Year assessment
						CLF Mock Assessments 2 papers (June/July)

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	2nd Year of AQA 3yr GCSE Course					
Year 10	Higher: Calculating with percentages Measures Surds	Higher: Statistical measures Indices Properties of polygons	Higher: Number recap Congruency and similarity Pythagoras Basic Trigonometry	Higher: Simultaneous Equations Probability Statistics recap	Higher: Algebra – Quadratics Rearranging formulae Volume of shapes	Higher: Algebra recap Sketching graphs Linear and quadratic equations and their graphs Geometry and measures recap
	Foundation: Standard Form Calculating with percentage Measures	Foundation: Statistical measures Indices Construction and Loci	Foundation: Algebra recap Congruence and similarity Intro to trigonometry	Foundation: Further perimeter and area Graphs recap Circumference and area of circles	Foundation: Simultaneous Equations Properties of polygons	Foundation: Real Life Graphs Basic Probability
					CLF Mock Assessments 2 Papers (April)	

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	3rd Year of AQA 3yr GCSE Course					
Year 11	Higher: Quadratics Rearranging formulae and identities Trigonometry recap Growth and Decay	Higher: Equation of a circle Further equations and graphs Direct and inverse proportion	Higher: Inequalities Vectors Sketching graphs (Subject to change based on Mock analysis)	Higher: Sine and cosine rule Transforming functions Numerical methods Circle theorems (Subject to change based on Mock analysis)	Higher: Gradients and rate of change Area under a curve Algebraic fractions (Subject to change based on Mock analysis)	Higher: GCSE Exams
	Foundation: Volume Quadratics Rearranging formulae and identities	Foundation: Inequalities Algebra and graphs Sketching graphs	Foundation: Direct and inverse proportion Trigonometry (Subject to change based on Mock analysis)	Foundation: Solving quadratic equations Quadratic graphs Growth and decay (Subject to change based on Mock analysis)	Foundation: Vectors (Subject to change based on Mock analysis)	Foundation: GCSE Exams
		CLF Mock Assessments 3 papers (November)		CLF Mock Assessments 3 papers (Feb/March)	GCSE Exams (May-June) 3 papers 90mins each	