Eastlea
COMMUNITY SCHOOL

Mathematics Curriculum Key Stage 4

Vision

The Mathematics Faculty aims to build and uphold a rich, diverse and challenging curriculum that is deep and intense in subject knowledge, which not only meets the needs of the annual examinations but simultaneously is inclusive of the needs of all students. We aim to prepare students with the confidence and mathematical skills required in life and the workplace. Our syllabus is led by the national curriculum with a range of tasks that emphasise problem solving, investigations and practical activities. This encourages students to become independent learners.

Students are set from Year 7 through to Year 11 (they are placed according to prior attainment and are able to move between sets depending on their progress)

The key concepts are extended further at Key Stage 4, so students are taught so they:

Develop Fluency

- Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system to include powers, roots {and fractional indices};
- Select and use appropriate calculation strategies to solve increasingly complex problems, including exact calculations involving multiples of π {and surds}, use of standard form and application and interpretation of limits of accuracy;
- Consolidate their algebraic capability from Key Stage 3 and extend their understanding of algebraic simplification and manipulation to include quadratic expressions, {and expressions involving surds and algebraic fractions};
- Extend fluency with expressions and equations from Key Stage 3, to include quadratic equations, simultaneous equations and inequalities;
- Move freely between different numerical, algebraic, graphical and diagrammatic representations, including linear, quadratic, reciprocal, {exponential and trigonometric} functions.
- Use mathematical language and properties precisely.

Reason Mathematically

- Extend and formalise their knowledge of ratio and proportion, including trigonometric ratios, in working with measures and geometry, and in working with proportional relations algebraically and graphically;
- Extend their ability to identify variables and express relations between variables algebraically and graphically;
- Make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples; begin to use algebra to support and construct arguments {and proofs};
- Reason deductively in geometry, number and algebra, including using geometrical constructions;
- Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning;
- Explore what can and cannot be inferred in statistical and probabilistic settings, and express their arguments formally;
- Assess the validity of an argument and the accuracy of a given way of presenting information.

Solve Problems

- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts;

- Make and use connections between different parts of mathematics to solve problems;
- Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions;
- Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem;

Teaching and Learning

There are **six** key strands of Mathematics taught as part of the national curriculum, which are weighted differently depending on the tier of examination:

1. Number
    - Structure and calculation
    - Fractions, decimals and percentages
    - Measures and accuracy
2. Algebra
    - Notation, vocabulary and manipulation
    - Graphs
    - Solving equations and inequalities
    - Sequences
3. Ratio, proportion and rates of change
4. Geometry and measures
    - Properties and constructions
    - Mensuration and calculations
    - Vectors
5. Probability
6. Statistics

Extra Curricular Activities and Homework

Homework Clubs
UKMT
Enrichment Club

Programmes of Study for KS4 (Foundation)

KS4	YEAR 10	YEAR 11
Term	**GCSE (9-1) Foundation**	**GCSE (9-1) Foundation**
Autumn	Unit 1 Number 1	Unit 16 Proportionality
	Unit 2 Algebra	Unit 17 Compound Measures
	Unit 3 Number 2	Unit 18 Inequalities and Formula
	Unit 4 Statistics	Unit 19 Quadratics
	Unit 5 Angles	Unit 20 Constructions and Loci
	End of Term 1 Test	**Dec MOCK 1**
Spring	Unit 6 Algebra 2	Unit 21 Numbers 3 Unit 22 Circles Unit 23 Similarity and Congruence Unit 24 Vectors **Revision**
	Unit 7 Measure	
	Unit 8 Fractions and Percentages	
	Unit 9 Compound Measure	
	Unit 10 Averages and Range	
	End of Term 2 Test	**Mar MOCK 2**
Summer	Unit 11 Perimeter, Area and Volume	**Revision**
	Unit 12 Graphs	
	Unit 13 Transformations	
	Unit 14 Statistics and Probability	
	Unit 15 Right Angled Triangles	
	End of Year Test	**GCSE (9-1) Foundation Exam (3 Papers)**

Programmes of Study for KS4 (Higher)

KS4	YEAR 10	YEAR 11
Term	**GCSE (9-1) Higher**	**GCSE (9-1) Higher**
Autumn	Unit 1 Number 1	Unit 16 Proportionality
	Unit 2 Algebra	Unit 17 Compound Measures
	Unit 3 Number 2	Unit 18 Inequalities and Formula
	Unit 4 Statistics	Unit 19 Quadratics
	Unit 5 Angles	Unit 20 Constructions and Loci
	End of Term 1 Test	**Dec MOCK 1**
Spring	Unit 6 Algebra 2	Unit 21 Numbers 3 Unit 22 Circles Unit 23 Similarity and Congruence Unit 24 Vectors **Revision**
	Unit 7 Measure	
	Unit 8 Fractions and Percentages	
	Unit 9 Compound Measure	
	Unit 10 Averages and Range	
	End of Term 2 Test	**Mar MOCK 2**
Summer	Unit 11 Perimeter, Area and Volume	**Revision**
	Unit 12 Graphs	
	Unit 13 Transformations	
	Unit 14 Statistics and Probability	
	Unit 15 Right Angled Triangles	
	End of Year Test	**GCSE (9-1) Higher Exam (3 Papers)**

Useful Websites Exam boards

https://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

Learning Resources

https://www.mathsgenie.co.uk - A bank of exam questions by topic with worked solutions.

https://vle.mathswatch.co.uk/vle - MathsWatch is the complete online Maths platform that makes learning available to your students 24/7 with a personalised log-in.