Eastlea
COMMUNITY SCHOOL

Mathematics Curriculum Key Stage 3

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 emphasize 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)

Decisions about progression are based on the security of students' understanding and their readiness to progress to the next stage of their education. Students who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content in preparation for the next stage of their education. Those who are not sufficiently fluent will be given the opportunity to consolidate their understanding, including through additional practice, before moving on. At Key Stage 3 students are taught so they:

Develop fluency

- Consolidate their numerical and mathematical capability from Key Stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots;
- Select and use appropriate calculation strategies to solve increasingly complex problems;
- Use algebra to generalise the structure of arithmetic, including formulating mathematical relationships;
- Substitute values in expressions, rearrange and simplify expressions, and solve equations;
- Move freely between different numerical, algebraic, graphical and diagrammatic representations;
- Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions;
- Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.

Reason mathematically

- Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations;
- Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically;
- Identify variables and express relations between variables algebraically and graphical;
- Make and test conjectures about patterns and relationships; look for proofs or counter-examples;
- Begin to 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 begin to express their arguments formally;

Solve problems

- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems;
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics;
- Begin to model situations mathematically and express the results using a range of formal mathematical representations;
- Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.

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

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Programmes of Study for KS3 (Foundation)

KS3	YEAR 7	YEAR 8	YEAR 9
Term	**FOUNDATION SoW**	**FOUNDATION SoW**	**FOUNDATION SoW**
Autumn 1	Unit 1 Analysing and displaying data	Unit 1 Number properties and calculations	Unit 1 Roots, powers, factors and multiples
	Unit 2 Calculating	Unit 2 Shapes and measures in 3D	Unit 2 Sequences and linear equations
Autumn 2	Unit 3 Expressions, functions and formulae	Unit 3 Statistics	Unit 3 Area and Volume of shapes
	Unit 4 Graphs	Unit 4 Expressions and equations	Unit 4 Calculations with fractions, decimals and percentages
			Unit 5 Averages from frequency tables and diagrams
Spring 1	Unit 5 Factors and multiples	Unit 5 Decimal calculations	Unit 6 Calculations with decimals and Standard form
	Unit 6 Decimals and measures	Unit 6 Angles	Unit 7 Quadratics and real-life graphs
Spring 2	Unit 7 Angles and lines	Unit 7 Number properties	Unit 8 Angles, polygons and transformations
			Unit 9 Probabilities and diagrams
Summer 1	Unit 8 Measuring and shapes	Unit 8 Sequences	Unit 10 Algebraic manipulation and simultaneous equations
	Unit 9 Fractions, decimals and percentages	Unit 9 Fractions and percentages	Unit 11 Constructions and Loci
Summer 2	Unit 10 Transformation	Unit 10 Probability	Unit 12 Probability and Cumulative frequency

Programmes of Study for KS3 (Higher)

KS3	YEAR 7	YEAR 8	YEAR 9
Term	**FOUNDATION SoW**	**FOUNDATION SoW**	**FOUNDATION SoW**
Autumn 1	Unit 1 Analysing and displaying data	Unit 1 Factors and powers	Unit 1 Powers, roots, factors and multiples
	Unit 2 Number skills	Unit 2 Working with powers	Unit 2 Linear equations and sequences
Autumn 2	Unit 3 Equations, functions and formulae	Unit 3 2D shapes and 3D solids	Unit 3 Surface area and volume of 3D shapes
	Unit 4 Fractions	Unit 4 Real-life graphs	Unit 4 Ratios and percentages
			Unit 5 Calculating statistics
Spring 1	Unit 5 Angles and shapes	Unit 5 Transformations	Unit 6 Approximations and Standard form
	Unit 6 Decimals	Unit 6 Fractions, decimals and percentages	Unit 7 Non linear graphs
Spring 2	Unit 7 Equations	Unit 7 Constructions and loci	Unit 8 Angles, polygons and transformations
			Unit 9 Probability and diagrams
Summer 1	Unit 8 Multiplicative reasoning	Unit 8 Probability	Unit 10 Algebraic fractions and simultaneous equations
	Unit 9 Perimeter, area and volume	Unit 9 Scale drawings and measurements	Unit 11 Constructions and Loci
Summer 2	Unit 10 Sequences and graphs	Unit 10 Graphs	Unit 12 Box plots and experimental probability

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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.