



King's College
The British School of Murcia

*Mathematics KS3
Curriculum Overview*

Mathematics Enhancement Programme at Key Stage 3

Curriculum Rationale

Studying Mathematics at King's College Murcia enables every student to develop their capacity to think analytically, logically, and creatively. By taking every opportunity to relate theoretical concepts to the real world, our students are provided with the opportunity to apply their learning to real-life situations and solve complex problems. By focusing on the skills required to be successful in Mathematics, we support our students to develop excellent habits for learning.

Every member of our department is committed to:

- Providing engaging, interactive and enjoyable lessons that stimulate students' curiosity, problem solving, collaboration, and creativity skills.
- Facilitating excellent progress for every student every single lesson, building a solid foundation for students to achieve the highest possible grades in KS4 and KS5
- Ensuring that lessons are accessible for all learners, regardless of their learning needs, gender, or background.

At Key Stage 3, we follow a 'Mathematics Enhancement' Curriculum. In line with the British National Curriculum, this research-drive approach has four core principles:

- 1. Whole class interactive teaching**
- 2. Mental maths skills**
- 3. Correct, precise and orderly spoken and written mathematics**
- 4. Whole class progression- through high quality teaching and learning ensuring every student makes progression from their starting point**

Assessment Model

There are both end of unit revision assessments and half termly diagnostic assessments, covering all material up to that time, developing pupils retention of cumulative knowledge through spaced learning and retrieval practice. Assessment level will track students progress towards their CAT4 predicted grades and enable us to report rates of progress to pupils and parents. Pupils will receive diagnostic feedback on each assessment enabling them to clearly see how they can improve and further their progress, making formative use of our summative assessment measures.

Year 7

In Year 7, students focus on building the mathematical skills essential for success in later years. There is a focus on worded problems and comprehension to support English language development and acquisition. Lessons are designed to provide stretch and challenge for every single student regardless of their starting point enabling every student to make progress each lesson.

Autumn	Logic - two-way tables, sets and venn diagrams
	Arithmetic- Place value, whole numbers and decimals
	Graphs - directed numbers on number line, coordinates
	Graphs - plotting polygons and conversion graphs
	Arithmetic -Addition and subtraction of decimals - money
	Angles - Basic geometry
	Arithmetic -Multiplication of decimals - whole numbers and decimals
	Number patterns and sequences - nth term formulae
	Arithmetic -Division of decimals - whole numbers and decimals
Spring	Area and Perimeter
	Arithmetic - Fractions- fundamental concepts
	Data collection and Presentation - collection organisation and display
	Arithmetic - recap of 4 rules for whole numbers and decimals
	Searching for patterns - nth term for geometric sequences
	Time, Timetables and milage charts
Summer	Arithmetic - Negative numbers - four rules
	Algebra - Linear equations
	Arithmetic - Decimals and fractions percentages conversion
	Discrete Quantitive data - organisation and analysis
	Scale drawing - Lengths and angles
	Arithmetic -Fractions four rules
	Probability of one event - including addition rule
	Volume - cubes, cuboids, triangular prisms, capacity, density

Year 8

In Year 8, students build upon many of the concepts covered in Year 7, extending their learning further to solve increasingly complex problems and apply their newly acquired skills to tackle real-world problems.

Autumn	Mathematical Diagrams
	Factors
	Pythagoras
	Rounding and Estimating
	Data Analysis
	Nets and Surface Area
	Ratio and Proportion
	Algebra: Brackets
Spring	Arithmetic: Fractions and percentages
	Probability - Two events
	Angles, Bearings and Maps
	Revision
	Formulae - Including change of subject
	Money and time
Summer	Straight line graphs
	Polygons
	Circles and cylinders
	Speed, Distance and Time
	Similarity
	Questionnaires and Analysis

Year 9

Students in Year 9 bring together all of their mathematical skills to build a solid foundation for the start of their IGCSE course in Year 10 studying a range of topics from across the curriculum. Designed to embed spaced learning and retrieval practice, with the introduction of GCSE style questions to begin the transition from KS3 to KS4. Problem solving, interactive teaching methods and developing mathematical communication skills drive students ambition and progress.

Autumn

Apply the four basic operations on negative integers
Simplify algebraic expressions
Expanding single brackets
Expanding double brackets
Multiplying out brackets in context (shape/worded problems)
Factorising expressions
Factorising quadratic expressions
Factorising quadratic expressions in context (shape and worded problems)
Substitute into and Evaluate algebraic expressions
Form algebraic formula
Four operations with fractions
Four operations with algebraic fractions
Properties of triangles and quadrilaterals
Angles around a point and on a straight line
Angles in triangles and quadrilaterals
Angles on parallel lines
Bearings
Bearings and angles around parallel lines
Investigating interior angles of polygons
Investigating exterior angles of polygons
Construct and solve algebraic equations involving angles
Identifying congruent and similar shapes, 2D
Similar shapes 2D HA: 3D
Solve linear equations
Change the subject of formulae

Spring

Finding the nth term of a linear sequence
Applying nth term
Recognising non-linear sequences
Graph and axis skills
Plotting linear sequences
Plotting graphs using $y = mx + c$
Calculating the gradient (m) of a line
Understanding the y intercept (c)
Identifying equations of lines using $y = mx + c$
Finding equations of lines from coordinates
Identifying the equations of parallel/perpendicular lines
Solving problems with straight line graphs
Solving numerical problems involving direct/inverse proportion
Representing direct/inverse proportional relationships graphically
Interpreting direct/inverse proportional relationships from real life graphs

	Interpreting real life graphs (speed, distance, time)
	Solving simple kinematic problems (speed, distance, time, acceleration) from real life graphs
	Enlargement from a centre
	Constructions
	Loci
	Inequalities
	Form and solve equations
	Solving linear simultaneous equations
	Solving simultaneous equations graphically
Summer	Probability of single events, number line
	Probability of mutually exclusive events
	Expected frequency
	Sample space diagrams
	Two-way tables
	Venn Diagrams
	Probability of combined events (AND + OR)
	Further Pythagoras problems (including 3D)
	Properties/names of 3D solids (prisms, pyramids etc.)
	Volume
	2D shapes including area of a circle
	Surface area
	Mixed volume/surface area problems
	Mean, median, mode and range
	Averages from a frequency table

How can parents support their child's learning?

- *Encourage your child to show you their Google Classroom and Google Calendar to access all of the key information, assessment dates and detailed overviews for each unit.*
- *Use the online textbooks and resources available to support your child in their learning at home (see links below).*
- *Students are expected to complete homework to a high standard.*
- *Students should continually revise the topics covered for assessments and periodically to enhance their learning.*
- *encourage students to use their post assessment feedback to work on their areas for development.*

The following online resources are useful reference points for students:

- Google Classroom
- MyiMaths: <https://www.myimaths.com/>
- Dr. Frost Mathematics: www.drfrostmaths.com
- Corbett Maths: <https://corbettmaths.com/contents/>
- Centre for Innovation in Mathematics Teaching (Year 7):
<https://www.cimt.org.uk/projects/mepres/book7/book7.htm>
- Centre for Innovation in Mathematics Teaching (Year 8):
<http://www.cimt.org.uk/projects/mepres/book8/book8.htm>