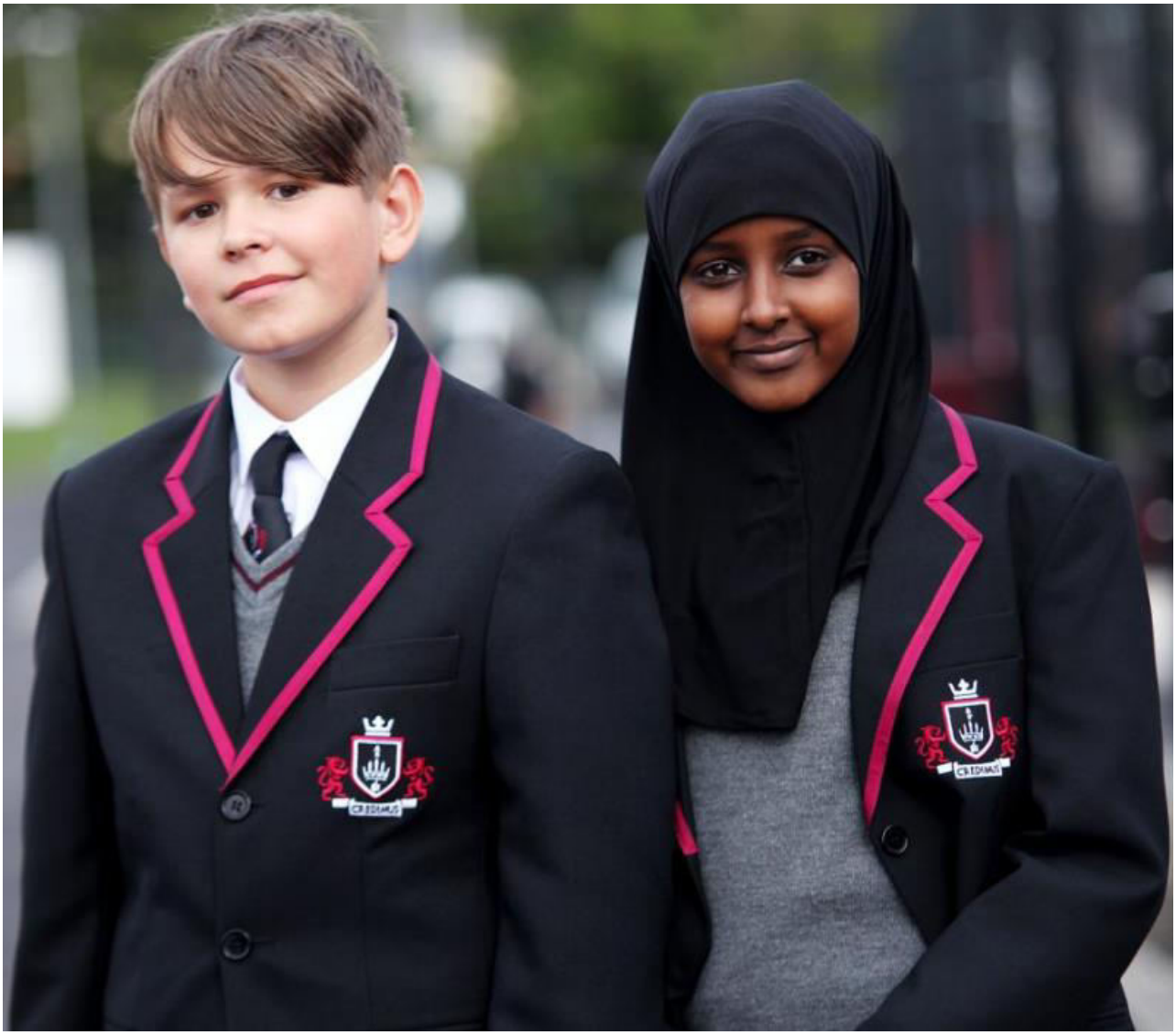
Y8 KLAB Curriculum

KING'S LEADERSHIP
ACADEMY BOLTON



Y8 Maths Curriculum

Contents

Intent, Implementation and Impact

In Mathematics students study topics within the following areas: Number, Algebra, Geometry, Statistics and Ratio and Proportion. Throughout each year at King's Leadership Academy Bolton students will deepen their knowledge and fluency within these areas, with a high focus on developing numerical fluency and problem solving skills.

Assessment of applying mathematics and using mathematics to solve problems will also be set in contexts that pupils should be expected to deal with in the real world. Pupils might be asked to answer questions on, for instance, decorating a room or designing a garden; or paying bills or sorting out rotas for shop staff. Finance and real life applications for maths have also become a large focus in the new curriculum.

One weekly maths enrichment club after school is an opportunity for pupils to seek further support. Home Learning is set every week on Hegarty Maths. Students should watch the video to see examples and methods of how to tackle the topic. Students are expected to copy the key examples into their books and use them to tackle the quiz. All working out should be shown, just like a Maths lesson, in their Hegarty Maths exercise books.

Revision materials will be provided by the school in the form of practice papers, videos, worksheets, topic booklets, detailed PowerPoints with questions, and after school provision.

Students are now expected to communicate their mathematics much more clearly through their working out. This means that they need to set work out in logical steps that demonstrate to the reader/marker what they are doing and what their thought processes entail. Students are also required to remember key formulae and apply that in their answers without the support of a formulae sheet being provided in the exam as in previous years.

Mathematics is an essential qualification if you are planning to go onto study the subject further at A level and at degree level, but the subject is also an essential qualification for life. Number skills are required in almost all everyday situations, such as working out bills, calculating your salary, shopping, dealing with mortgages and investments. Thinking like a mathematician will help to improve your problem-solving and decision-making skills.

MATHS LC1

SUBJECT	MATHEMATICS	YEAR 8		LEARNING CYCLE	LC1
Module(s)	Number 3 and Algebra 2				
Outline and Rationale	This learning cycle recaps key knowledge learnt in modules Number 1, Number 2 and Algebra 1 from year 7 to ensure a good understanding of the content is there. Modules Number 3 and Algebra 2 build on these and further develop the student's skills by introducing index laws, finding percentage change and working with quadratic equations. This topic is being taught now as it recaps a lot of content from year 7 whilst still providing an opportunity for stretch. This topic is being taught in order to develop key numerical and algebraic skills that are required not only at KS4 but also in real life. This module gives students the opportunity to apply mathematical skill to everyday mathematical problems involving tax, interest rates and finding unknowns. The algebraic content will be revisited and built on in year 9 to provide a deeper understanding of Algebra. This learning cycle ensures students have a secure understanding of basic number and algebra content before it is combined with other topics in AO3 questions.				

Learning Cycle Overview	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	BIDMAS powers & roots	Multiplies increase & decrease percentage change	repeated percentage change FDP: ordering and calculations	Expanding and factorising single brackets Expanding double brackets	Expressions Substitution Solving equations	Revision Assessment	Gap week (review of topics Week 1-5)

MATHS LC2

SUBJECT	Mathematics	YEAR 8		LEARNING CYCLE	LC2
Module(s)	**Geometry 3**				
Outline and Rationale	This topic is being taught to ensure pupils have solid geometrical knowledge and skills which will be built on throughout KS3 and KS4 but are also important for real life applications. In year 7, pupils will have covered a wide range of topics and will be comfortable with basic number, algebra and geometry. They will have also covered number and algebra again in LC1 of Year 8. This module will continue to build on basic geometry skills such as area, perimeter and circle measure, pupils will also build on these skills by exploring new topics such as surface area, pythagoras and constructions. Within geometry topics, there is opportunity to practice algebraic skills such as forming and solving equations which the pupils will have looked at in year 7, this will also be revisited and built on later on in year 8.				

Learning Cycle Overview	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	Area and Perimeter	Surface area and circle measure	Volume	Pythagoras' Theorem	Constructions	Revision Assessment	Gap week (review of topics Week 1-5)

MATHS LC3

SUBJECT	Mathematics	YEAR 8		LEARNING CYCLE	LC3
Module(s)	Ratio & Proportion 2 Statistics 2				
Outline and Rationale	Much work in maths and science concerns the relationship between variables and rates, which are an application of direct proportion. Proportion is a common theme in other areas of life e.g. body proportions (Leonardo Da Vinci's Vetruvian man). Proportions, and the relationships between certain lengths, are also important in architecture and in art. The learning over week 1 and 2 will recap skills from Year 7 LC3 and extend them to ensure students can solve a variety of ratio and proportion problems fluently by considering which method is most appropriate. Students will explore the relationship between ratios and fractions to deepen their understanding of multiplicative relationships. Statistics generally developed due to the need for states to monitor socio-economic data. The Bible contains at least two accounts of censuses – the earliest in Genesis when Moses was instructed to take a census of the people. However, most statistical developments have been a comparatively recent (in the last 500 years) advancement within mathematics. The Learning Cycle builds on from Y7 LC5 to ensure students can draw and interpret appropriate tables, charts and diagrams. This will be developed further in Y9 where students will use frequency tables to construct and interpret histograms.				

Learning Cycle Overview	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Ratio: Converting FDP Simplifying ratios Writing ratios as fractions Sharing into a ratio	Proportion: Direct proportion Recipes Conversion rates Conversion graphs	Data: Types of data How to collect data Finding averages	Displaying Data: Bar charts Pie charts Quartiles	Displaying Data: Box plots Cumulative frequency diagram	Revision Assessment	Gap week (review of topics Week 1-5)

MATHS LC4

SUBJECT	Mathematics	YEAR 8		LEARNING CYCLE	LC4
Module(s)	Algebra 3				
Outline and Rationale	In primary school pupil will have had limited experience of algebra, although solving basic equations is a small part of the primary curriculum. In year 7 LC2 and year 8 LC1 pupils will study algebra notation, forming and simplifying expressions. In LC1 year 8 students recapped on algebra including linear equations. Number operations which have been taught in LC1 year 7 will be useful in solving equations, manipulating expressions and expanding expressions. The statistics module taught in the previous learning cycle will support the plotting of graphs. This module will build on algebra skills by introducing solving equations graphically, nth term, and inequalities. This topic is being taught in order to develop key algebraic knowledge and strengthen the ability to compare different ways of solving and representing equations. These are not only required at KS4 but also in real life. This module gives students the opportunity to apply mathematical skills by manipulating expressions, recognising sequences and patterns, analysing graphs, and considering algebra in a real-life context. This topic is being taught now as it allows a recap of knowledge taught in year 7 LC2 and Year 8 LC1 whilst introducing new concepts in algebra and exploring previous topics in greater depth. Up until now pupils will have some prior knowledge from year 7 and 8 so this module should allow them to deepen their knowledge as well as recall previous skills they have acquired. In addition to this pupils will be introduced to some new topics; nth term, inequalities and linear graphs.				

Learning Cycle Overview	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	Linear equations	Sequences and nth term	Linear graphs	Linear graphs; gradient and intercepts	Inequalities: number line, solve, plotting	Revision Assessment	Gap week (review of topics Week 1-5)

MATHS LC5

SUBJECT	Mathematics	YEAR 8		LEARNING CYCLE	LC5
Module(s)	Geometry 4 and Probability 3				
Outline and Rationale	Geometry is a tangible topic with many real world applications including uses in the design of buildings and machines like cars and planes. The learning in week 1, 2 and 3 will build on knowledge introduced in year 7 LC1 and LC4 and year 8 LC2. Students will use prior knowledge about shape and proportion during this topic. This is an important topic to illustrate links between concrete ideas and abstract understanding. The probability content builds on knowledge learnt in year 7 LC5 and developed previously in Number LC's where students are working with fractions and decimals. Improving learners understanding of probability is an important life skill and will be used in contexts like understanding weather forecasts and weighing up the risks of decisions.				

Learning Cycle Overview	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	Congruence, tessellation and symmetry	Transformations Rotations and Translation	Transformation Reflections and enlargements and mixed transformations	Simple and Single event probability	Multiple event probability	Revision Assessment	Gap week (review of topics Week 1-5)