# Y7 KLAB Curriculum

KING'S LEADERSHIP
ACADEMY BOLTON

## Y7 Maths Curriculum

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## 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 7 | | LEARNING CYCLE | LC1 |
|---|---|---|---|---|---|
| **Module(s)** | Number 1 - Non-calculator | | | | |
| **Outline and Rationale** | LC1 begins with a fortnight which provides an overview of numerical skills, arithmetic techniques, and negative numbers. The rationale for this is to establish key numeracy skills whilst reviewing learning from KS2. It is necessary that these skills are embedded for all students to ensure that they can access KS3 content. The module then continues with factors, multiple and primes, the order of operations and an introduction to fractions. A deep understanding of these ensures students can succeed not only with number topics but also make sure they have the necessary foundations for Algebra 1 in LC2 and beyond. | | | | |

| **Learning Cycle Overview** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** |
|---|---|---|---|---|---|---|---|
| | Roman numerals<br><br>And negative numbers | Arithmetic techniques including decimals and large numbers | Factors, multiples & primes | Indices & roots<br><br>Order of operations<br><br>Rounding and estimates | Mixed numbers and fractions of amounts | Revision<br><br>Assessment | Gap week (review of topics week 1-5) |

# MATHS – LC2

| SUBJECT | Mathematics | YEAR 7 | | LEARNING CYCLE | LC2 |
|---|---|---|---|---|---|
| **Module(s)** | Algebra 1/ Geometry 1 | | | | |
| **Outline and Rationale** | After doing mostly number during LC1, in this learning cycle students will be introduced to algebra and geometry. For algebra, students will learn about algebraic expressions, how to simplify, expand and substitute into them. These skills are key, not only in building towards the GCSE but in its real-life applications. It is important students see the processes involved in algebra and how to apply them. These algebra skills will be recapped and expanded later in the year and throughout every year.<br><br>It will also be the students' first look at geometry, mainly focussing on angle properties. It will begin with the basics of angles, which pupils will have seen to some extent at primary school, it will then move onto angles in polygons which will build upon basic angle facts to stretch pupils.<br><br>This is being taught now as after studying some topics from number in learning cycle 1 it is important students encounter some of the other major strands of maths early on. Both topics build on LC1, using different operations and estimation in Geometry in particular but giving them a real-life focus. Algebra also links into certain aspects of this as well as the history of Maths elements from LC1, discussing how algebra came from the middle east etc. There is also opportunity to link the two topics, using algebra when looking at angles, substituting and simplifying being two examples. | | | | |

| Learning Cycle Overview | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 |
|---|---|---|---|---|---|---|---|
| | Intro to algebra and simplifying expressions | Substitution and expanding brackets | Solving equations | Angle properties and notation | Angles in triangles and quadrilaterals and polygons | Revision<br><br>Assessment | Gap week (review of topics Week 1-5) |

# MATHS LC3

| SUBJECT | Mathematics | YEAR 7 | | LEARNING CYCLE | LC3 |
|---|---|---|---|---|---|
| **Module(s)** | Number 2 and Proportion 1 | | | | |
| **Outline and Rationale** | In LC1 students recapped their knowledge of number from primary school and built on key knowledge around factors, multiples and the four operations including decimals and fractions. This number module builds on these skills introducing the concepts of percentages and ratio whilst ensuring plenty of opportunity to check for knowledge retention and interleave past topics.<br>This topic is being taught in order to develop key numerical and proportional 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 by solving best buy problems, converting currencies and adjusting recipes. This topic is being taught now as it allows a recap of knowledge taught in L1 whilst introducing ratio and percentage increases and decreases. Up until now the Mathematics that has been taught (number 1 and algebra 1) has been highly procedural, this module enables students to see how Mathematics links to their everyday lives and how important number is in everything we do. | | | | |

| **Learning Cycle Overview** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** |
|---|---|---|---|---|---|---|---|
| | Fractions :<br>Equivalent review &<br>4 operations | FDP | Percentages of amounts<br>Multipliers<br>Increase & Decrease | Ratio:<br>Simplifyi<br>ng<br>Sharing | Proportion:<br>Recipes<br>Best Buys<br>Currency | Revision<br>Assessment | Gap week<br>(review of topics Week 1-5) |

# MATHS LC4

| SUBJECT | Mathematics | YEAR 7 | | LEARNING CYCLE | LC4 |
|---|---|---|---|---|---|
| **Module(s) Geometry 2** | Covering: Metric and imperial units, unit conversions, perimeter, area, plans and elevations, volume, pi and circle formulae | | | | |
| **Outline and Rationale** | In LC2 students encountered geometry for the first time at secondary school, recapping work from KS2 on identification of polygons and their properties. LC4 will build on this, starting by identification of metric units of measurement that students will have encountered but not necessarily have put into context before. Students will develop fluency with metric units through conversion between measurements of length, mass, capacity and volume.<br><br>This links into the work that will follow in weeks 2 – 5 of this learning cycle where students will investigate perimeter, area and volume in a variety of contexts. In doing so, students will also recap number work including use of operations and dealing with fractions and decimals. Students will also recap work in algebra involving substituting into formulae.<br><br>This is being taught now to develop spatial awareness in students and to deepen their experience of application of maths and problem solving. | | | | |

| **Learning Cycle Overview** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** |
|---|---|---|---|---|---|---|---|
| | Use of and conversion between metric units | Area and perimeter of shapes | Volume of regular prisms<br><br>Plans and elevations of shapes | Origins of pi and linked formulae for circumference and circle area | Semi circles and sectors<br><br>Volume of cylinders | Revision<br><br>Assessment | Gap week (review of topics Week 1-5) |

# MATHS LC5

| SUBJECT | Mathematics | YEAR 7 | LEARNING CYCLE | LC5 |
|---|---|---|---|---|
| **Module(s)** | Probability and statistics 1 | | | |
| **Outline and Rationale** | In primary school pupils should have been taught how to interpret simple pictograms, tables and tally charts and be able to ask and answer questions about totalling and comparing data. In LC3 students recapped and extended on operations with fractions which will be useful for teaching probability. In LC2 pupils revisited angles which will support the construction of pie charts. This module will build on pupil's interpretation skills, introduce pie charts, present averages, and explore probability further whilst ensuring plenty of opportunity to check for knowledge retention and interleave past topics.<br><br>This topic is being taught to develop key statistical knowledge and strengthen ability to compare various types of data that are required not only at KS4 but also in real life. This module gives students the opportunity to apply mathematical skills by statistically analysing data, considering the probability of everyday events and considering averages in a real-life context. This topic is being taught now as it allows a recap of knowledge taught in primary whilst introducing new forms of data and looking at probability in greater depth. Up until now pupils will have only prior knowledge from primary around probability and statistics. This will enable students to develop their understanding of data and probability in relation to every day uses of statistics. | | | |

| **Learning Cycle Overview** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** |
|---|---|---|---|---|---|---|---|
| | Probability | Data: types, cycle, collecting | Averages | Displaying data: pictograms and bar charts | Displaying data: Pie charts | Revision<br><br>Assessment | Gap week (review of topics Week 1-5) |