

## Subject Curriculum Map

**Intent** – the mathematics curriculum at The Hurlingham Academy aims to equip all pupils with the numeracy, literacy, and problem-solving skills that they will need to apply mathematics in a real-world context. We aim to foster success, curiosity, and enjoyment in our subject, and to inspire students to study mathematics in their Further Education and work in STEM careers. Our curriculum emphasises teaching mathematics from first principles. The modules are sequenced so that all students are secure in their foundational knowledge before starting the Key Stage 4 syllabus. Our high expectations mean that all students develop skills in reasoning and problem-solving throughout the curriculum. To make certain that no child is left behind in their mathematics education, we ensure that the breadth of the curriculum is accessed by every student, and that the level of challenge is adjusted for each class. We have a fundamental belief that all pupils can succeed in mathematics, something we achieve through supportive teaching, intelligent practice, and effective curriculum sequencing.

Implementation						
Term	1	2	3	4	5	6
<b>Year 7</b>	<p><b>1. Basic Numeracy and Algebra</b></p> <p>As the curriculum is sequential, it is vital that mathematical fluency is addressed right at the start of the 5 year journey. The majority of year 7 is used to readdress the fundamentals of mathematics to ensure that future learning is not restricted by prior learning. The following KPI's will be studied in term 1:</p> <ul style="list-style-type: none"> <li>• 7.01- Numerical Skills</li> <li>• 7.02- Order of operations</li> <li>• 7.03- Basic Rules of Algebra</li> <li>• 7.04- Factors and Multiples</li> <li>• 7.05- Expand and Factorise</li> </ul>	<p><b>2. Number Sense</b></p> <p>The underlying theme for term 2 is multiplication. Pupils begin to investigate the links between operations in maths and how and when these can be applied. The following KPI's will be studied in term 2:</p> <ul style="list-style-type: none"> <li>• 7.06- Addition and Subtraction</li> <li>• 7.07 - Perimeter</li> <li>• 7.08- Multiplication and Division</li> <li>• 7.09- Area of Rectangles, Triangles and Parallelograms</li> </ul>	<p><b>3. Fractions</b></p> <p>In term 3 pupils study the conceptual understanding of fractions. Fractions underpin many complex mathematical topics, including ratios, rates, proportions, proportionality, linearity, and slope, their importance is not limited to mathematical study. Fluency with fractions is also required for many activities of daily life: following recipes, calculating discounts, comparing rates, converting measuring units, reading maps, investing money, and more. The following KPI's will be studied in term 3:</p> <ul style="list-style-type: none"> <li>• 7.10- Fraction Manipulation</li> <li>• 7.11- Adding and subtracting fractions</li> <li>• 7.12- Comparing and ordering fractions</li> <li>• 7.13- Fractions of amounts</li> </ul>	<p><b>4. Algebra and Geometry</b></p> <p>In term 4 pupils are given the opportunity to apply their fluency in algebraic form. For some pupils this will be the first time they have been exposed to algebra. Algebraic fluency underpins a lot of the curriculum in years 9, 10 and 11 so we believe it is vital that pupils become comfortable working in this format as early as possible. The following KPI's will be studied in term 4:</p> <ul style="list-style-type: none"> <li>• 7.14- Substitution</li> <li>• 7.15 – Angles</li> <li>• 7.16 - Polygons</li> </ul>	<p><b>5. Geometry</b></p> <p>Term 5 centres around geometric reasoning. Pupils apply the number and algebraic fluency they have studied earlier in geometric form. Pupil will focus on learning the relationships of shapes and solids. They will begin to use problem-solving skills, deductive reasoning, understand symmetry, and spatial reasoning. The following KPI's will be studied in term 5:</p> <ul style="list-style-type: none"> <li>• 7.17- Symmetry and reflection</li> <li>• 7.18- Co-ordinates</li> </ul>	<p><b>6. Statistics</b></p> <p>In term 6 pupils are introduced to the concept of data collection and analysis in order to develop pupils evidence based reasoning skills. The following KPI's will be studied in term 6:</p> <ul style="list-style-type: none"> <li>• 7.19- Mean</li> <li>• 7.20- Two way tables &amp; Venn Diagrams</li> </ul> <p style="text-align: center;"><b>Revision of all topics in preparation for the assessment</b></p> <p style="text-align: center;"><b>END OF YEAR ASSESSMENT</b></p>
<b>Year 8</b>	<p><b>7. Number sense 2</b></p> <p>In the first term of year 8 pupils build on the fluency studied in year 7. They revisit the concepts of fractions and rounding developing these further. They also begin to link fractions and percentages, multiplication and prime factorisation. The following KPI's will be studied in term 1:</p> <ul style="list-style-type: none"> <li>• 8.01- Powers and Roots</li> <li>• 8.02- Prime factorisation</li> <li>• 8.03- Rounding</li> <li>• 8.04- Fractions</li> <li>• 8.05- Negative number review</li> </ul>	<p><b>8. Linear equations</b></p> <p>In this module pupils develop their understanding of algebraic manipulation and start to apply knowledge to solve equations. We aim to develop pupils ability to begin to model situations mathematically and express the results using a range of formal mathematical representations. They will also develop their understanding of coordinates to start to investigate the algebraic relationships between coordinates. The following KPI's will be studied in term 2:</p> <ul style="list-style-type: none"> <li>• 8.06 &amp; 8.07- Solving Linear Equations</li> <li>• 8.08- Coordinates and basic graphs</li> </ul>	<p><b>9. Geometric reasoning</b></p> <p>Building on the work from year 7, pupils develop their understanding of angle rules, to include angles in parallel lines. They also build on their understanding of perimeter by investigating the circumference of a circle. Understanding the following KPI's are studied in term 3:</p> <ul style="list-style-type: none"> <li>• 8.09- Units of Measurement</li> <li>• 8.10 &amp; 8.11- Angles</li> <li>• 8.12- Circumference</li> </ul>	<p><b>10. Proportional reasoning</b></p> <p>In this module pupils look at how multiplicative relationships can be expressed and begin to develop their proportional reasoning. They will be building on their understanding of fractions and percentages throughout the term, investigating how these concepts can be applied to real world situations. The following KPI's will be studied in term 4:</p> <ul style="list-style-type: none"> <li>• 8.13- Proportional reasoning</li> <li>• 8.14- Fractions, decimals and percentages</li> <li>• 8.15- Ratio</li> </ul>	<p><b>11. Statistics</b></p> <p>After extending their knowledge of area through looking at trapezia and circles, pupils are given the opportunity this term to develop their understanding of data, with a focus on how data can be best presented. They also investigate the benefits and limitations of the different averages. The KPI's studied in term 5 are:</p> <ul style="list-style-type: none"> <li>• 8.16- Area of circles and trapezia</li> <li>• 8.17- presenting and interpreting data</li> <li>• 8.18- Averages</li> </ul>	<p><b>12. Geometry</b></p> <p>In the final term of year 8 pupils develop their understanding of geometry, and begin to investigate shapes in 3D. Pupils begin to see the connections between the geometry they have studied earlier in their schooling and real world application such as design and engineering. The KPI's studied this term are:</p> <ul style="list-style-type: none"> <li>• 8.19- 3-D visualisation</li> <li>• 8.20- Volume</li> </ul> <p style="text-align: center;"><b>Revision of all topics in preparation for the assessment</b></p> <p style="text-align: center;"><b>END OF YEAR ASSESSMENT</b></p>

Mid-Year Assessment

<p><b>Year 9</b></p>	<p><b>13. Number sense 3</b></p> <p>All pupils begin year 9 by reviewing and recapping the underlying content from years 7 and 8 with a particular focus on mathematical fluency. All key operations will be revisited. The following topics will be addressed in this first term:</p> <ul style="list-style-type: none"> <li>• 9.01- Decimal Manipulation</li> <li>• 9.02- Estimation and Limits of Accuracy</li> <li>• 9.03- Related Calculations</li> <li>• 9.04- HCF and LCM of large numbers</li> <li>• 9.05- Fraction Calculations</li> </ul> <p>It is key that students master these topics this term as they are applied throughout year 9, 10 and 11.</p>	<p><b>14. Algebraic Manipulation</b></p> <p>All pupils begin year 9 by reviewing and recapping the underlying content from years 7 and 8 with a particular focus on mathematical fluency. All key operations will be revisited. The following topics will be addressed in this first term:</p> <ul style="list-style-type: none"> <li>• 9.06- Algebraic manipulation</li> <li>• 9.07- Index Laws</li> <li>• 9.08- Expanding and Factorising</li> <li>• 9.09- Expressions and Substitution</li> </ul> <p>It is key that students master these topics this term as they are applied throughout year 9, 10 and 11.</p>	<p><b>15. Proportional Reasoning and Probability</b></p> <p>This is a very significant half term in year 9. Students will build on their knowledge of percentage from year 8. A mastery of percentages is key to life as it helps students understand financial concepts like investment, mortgages and tax rates. It is key that they master this knowledge as it is needed when further percentages are studied in year 10. They will then look at proportion, with many real-life applications like recipes and currency conversion, and is applied throughout later GCSE topics. They will then study probability for the first time, before extending their understanding further in year 10. Probability has many day-to-day applications, including in weather forecasts, Sports Strategies, Insurance Options, Games and Recreational Activities, Making Business. It is important that our pupils understand how probability assessments are made, and how they contribute to decisions. They will be building on their understanding of fraction manipulation and Venn Diagrams from year 7.</p> <ul style="list-style-type: none"> <li>• 9.10- Percentages with Calculators</li> <li>• 9.11- Proportion</li> <li>• 9.12- Probability</li> </ul>	<p><b>16. Linear Equations and Geometry</b></p> <p>Students build on their year 8 unit of linear equations and extend this understanding into inequalities. This is essential knowledge if they are to master the many further algebra units of key stage 4. They will then look at sequences which are useful in several mathematical disciplines. Sequences are the basis for series, which are important in differential equations and analysis. Through studying sequences, in particular the Fibonacci sequence, pupils are exposed to the beauty of mathematics in the real world. Students will then learn Pythagoras for the first time. This is a key skill that will be built on in the first half term of year 11.</p> <ul style="list-style-type: none"> <li>• 9.13- Linear Equations</li> <li>• 9.14- Linear Inequalities</li> <li>• 9.15- Sequences</li> <li>• 9.16- Pythagoras</li> </ul>	<p><b>17. Geometry</b></p> <p>Year 9 spend this term building on the units of polygons and parallel lines that they studied in year 8, extending their understanding and applying it to more advanced problems.</p> <p>They also look at vectors for the first time. Only column vectors are studied at this stage, as pupils will build on their knowledge in years 10 and 11.</p> <ul style="list-style-type: none"> <li>• 9.17- Interior and Exterior angles</li> <li>• 9.18- Parallel lines</li> <li>• 9.19- Basic Vectors</li> </ul>	<p><b>18. Geometry</b></p> <p>In the final half term of year 9, students study transformations for the first time. They only study basic forms of transformations, as this topic is built on in more detail in year 11. They also build on their year 8 geometry, by developing their understanding of plans &amp; elevations, circles and surface area, and how to apply these skills.</p> <ul style="list-style-type: none"> <li>• 9.20- Basic Transformations</li> <li>• 9.21- Plans and Elevations</li> <li>• 9.22- Circles</li> <li>• 9.23- Surface Area</li> </ul> <p><b>Revision of all topics in preparation for the assessment</b></p> <p><b>END OF YEAR ASSESSMENT</b></p>
----------------------	--	---	--	--	---	--

TERM	1	2		3	4	5	6	
<b>Year 10</b>	<p><b>19. Graphs and Compound Measures</b></p> <p>At the start of year 10 pupils build on their work on algebra and coordinates from years 7, 8 &amp; 9. The units studied are:</p> <ul style="list-style-type: none"> <li>Rearranging formulae. They study this first as it is prerequisite knowledge for graphs.</li> <li>Plotting linear graphs</li> <li>The equation of a straight line</li> <li>Compound measures. This is the only time students study these, focussing on Speed, Density and Pressure.</li> </ul>	<p><b>20. Further algebra and Graphs</b></p> <p>At this point in the 5-year plan, pupils begin to split off into higher tier and foundation tier. Although both will be studying the same topic, pupils sitting the higher tier will develop their knowledge further.</p> <p>Both higher and foundation classes will be focussing on:</p> <ul style="list-style-type: none"> <li>Quadratic graphs</li> <li>Simultaneous equations</li> <li>Further graphs.</li> </ul> <p>Higher tier students will also study</p> <ul style="list-style-type: none"> <li>Further expanding and factorising</li> </ul>	<b>MOCK 1</b>	<p><b>21. Probability</b></p> <p>Pupils investigate the concept of probability this term. Probability has many day-to-day applications, including in weather forecasts, Sports Strategies, Insurance Options, Games and Recreational Activities, Making Business. It is important that our pupils understand how probability assessments are made, and how they contribute to decisions. They will be building on their understanding of fraction manipulation and Venn Diagrams from year 7. Higher tier candidates will also apply their understanding of algebraic manipulation.</p> <p>All students will also study standard form.</p> <p><b>22. Higher: Proportional reasoning</b></p> <p>Pupils will also be developing their understanding of proportional reasoning this term, building in the concept of capture/recapture.</p>	<p><b>23. Number sense</b></p> <p>Pupils will be further developing their understanding of percentage increase and decrease to look at growth and decay. All students will study:</p> <ul style="list-style-type: none"> <li>Simple interest</li> <li>Growth and Decay</li> <li>Further ratio</li> </ul> <p>Students on Higher tier will also look at</p> <ul style="list-style-type: none"> <li>Recurring decimals</li> </ul>	<b>MOCK 2</b>	<p><b>10. Statistics</b></p> <p>Pupils will build on their understanding of statistics from year 8 and study most of the statistics topics they need for GCSE. There are many real-world applications for which understanding statistics is key, ranging from science to finance and sport.</p>	<p><b>11. Revision Program / Geometry</b></p> <p>Foundation pupils will use this half term for an End of Year 10 Revision Program, where they consolidate much of what they have learnt since year 7 to prepare them for Year 11.</p> <p>Higher tier pupils study the topics</p> <ul style="list-style-type: none"> <li>Right Angled Trigonometry</li> <li>Similar shapes</li> <li>Quadratic Sequences</li> </ul> <p><b>END OF YEAR ASSESSMENT</b></p>
<b>Year 11</b>	<p><b>12. Foundation- Geometry</b></p> <p>Foundation pupils will spend this term investigating and building on their knowledge of right-angled triangles. They will revisit Pythagoras and then move on to right-angled trigonometry. Pupils will spend time looking at when to apply each method and solving problems in context. They will be required to draw on their knowledge of substitution, as well as their basic geometry from year 7 &amp; 8. They will also study bearings and scale drawings. This has many real-world applications and cross-curricular links to geography.</p> <p><b>13. Higher- Further Algebra</b></p> <p>Higher tier pupils will continue to develop with algebraic reasoning by introducing the concept of proof. To be successful pupils will need to have a strong grasp of algebraic manipulation. Pupils will also be looking at solving quadratics, further simultaneous equations, functions, iteration and quadratic inequalities.</p>	<p><b>14. Foundation- Geometry</b></p> <p>Foundation pupils will spend this term studying transformations and congruence. They will also begin their long-term revision program, building their knowledge of everything they have ever studied in maths since year 7.</p> <p><b>Higher- Further Geometry</b></p> <p>Pupils will revisit geometry modules to ensure mastery has been achieved. They will then learn how to calculate bearings, apply and prove circle theorems, and develop their understanding of trigonometry.</p>	<b>MOCK 1</b>	<p><b>16. Foundation- Geometry</b></p> <p>Foundation pupils will learn the last new content of their GCSE curriculum this term. They will build on their year 9 unit of vectors, similar shapes, and constructions &amp; loci. They will then continue to revise and prepare for the GCSE with lots of exam practice.</p> <p><b>17. Higher- Statistics &amp; Geometry</b></p> <p>Higher tier students will continue with the penultimate half term of new content, developing their understanding of further statistics, transformations, congruence and vectors.</p>	<p><b>18. Higher - Geometry</b></p> <p>Higher tier students complete their GCSE curriculum this term with the final topics of gradients, kinematics, graphical transformations and constructions &amp; loci.</p> <p>Foundation tier students have finished the GCSE curriculum and are focussing on consolidating their mathematical fluency and developing their ability to problem solve and tackle applied questions.</p>	<b>MOCK 2</b>	<p style="text-align: center;">GCSE Revision Programs</p>	

*To ensure that all students make good progress, students sit a fortnightly KPI test which assesses their progress in the most recent module and Fluency test which assesses their mastery of the fluency topics they have been revising. These assessments will feed into the teachers' trackers and teaching and interventions will be adapted accordingly. Key vocabulary will be taught and assessed through knowledge organisers. Pupil engagement in homework and intervention is also closely monitored through Sparx and Hegarty Maths. Through the curriculum we aim to develop pupils' appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity for the subject. The success of this will be monitored through engagement in enrichment activities such as the UKMT maths challenge, and uptake of the subject at KS5.*