



### H3 CURRICULUM MAP



<b>SUBJECT AREA:</b>	<b>Mathematics</b>	<b>YEAR / GROUP:</b>	9	aimed at grade 4 – 5 <b>aimed at grade 6 - 9</b>
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#### BRIEF SUMMARY OF CURRICULUM INTENT

At H3 our Maths vision is to ensure every pupil feels supported and confident to achieve their maximum potential as we lay the foundations in algebra, number, geometry, and data handling for work at GCSE level. We promote mathematical fluency as an essential life skill and create a positive culture of deep understanding, confidence, independence, and competence. Lessons are carefully planned and sequenced to meet the individual needs of our students with special educational needs, and /or disabilities. 1:1 TA support may be appropriate.

Assessment of progress is made based on the teachers' classroom questioning, the review of pupils' work, and their performances in tests. Feedback is given to pupils orally, in written form in exercise books and as part of analysis of tests. Feedback focuses on positive aspects and corrects misconceptions.

Re-engaging students in Mathematics at H3 will be established by:

- Using the BKSB Functional Skills Baseline Assessment to expose knowledge gaps, attitude, anxieties and development needs towards maths.
- Initially removing formal aspects of Key Stage 3 maths lessons from the learning
- Trusted staff members investigating the student's apprehension towards maths and development needs
- Designing a personalised plan that focuses on building personal and mathematical resilience and targets key skills in the gaps in their knowledge
- Through verbal discussion and maths games highlighting and recording student's strengths
- Developing strategies to access support at H3 and understanding the importance of making mistakes
- A methodical progression of integrating formal aspects of learning back into lessons; a workbook, lesson objectives, assessment terminology

**Due to pupils being on a part-time timetable, coverage of this curriculum map will be proportional to the amount of time spent covering the subject and differentiated to meet their SEN needs and best ways of working. Pupils arrive at H3 with significant gaps in their learning and individual learning programmes (often from lower year groups or key stages) are developed to meet their needs.**

An induction period of two weeks to precede the curriculum map below.

### How SMSC and British Values are delivered in this subject

Spiritual – using maths as a tool to make sense of the world around us. Encourage interest in the power of mathematics in everyday life and use spiritual examples to exemplify this – Rangoli patterns in symmetry and tessellation, Fibonacci sequence and the golden ratio etc.

Moral – teachers provide good role models on how to interact with each other and students are encouraged to value the contributions of other students without judgement. Handouts and worked examples avoid stereotypes regarding gender, race, sexual orientation through the use of OFQUAL approved past papers questions.

Social – students in seating plan to facilitate good working practise, collaboration and the opportunity to work with students from a variety of different backgrounds. Students will learn to support each other with the complexities of maths and provide self and peer reviews. Work within the British values of rule of law, individual liberty and mutual respect of each other.

Cultural – students are taught methods for mathematics from around the world such as the Singapore Bar Method, the Chinese lattice method of multiplication etc. Students learn about the traditional methods of mathematics which their parents/grandparents/carers may have been taught as part of the “teaching for mastery” initiative.

### KEY DATES / NOTES

Assessment will be a mixture of on-going formative assessments and summative assessments at the end of specific topics.

Questioning throughout lessons will take place to allow students to gain a deeper understanding of topics through reasoning and discussion, marking will be timely and detailed.

A combination of these, along with teacher judgement, will form a half termly grade for each subject on the assessment tracker and a comment explaining overall progress will be reported back to parents/carers at the end of each term

Assessments will be a combination of Corbett maths past papers, Dr Frost Maths, Chapter reviews, BKSb assessments and AQA past papers

<b>Timing</b>	<b>Key Skills</b> <i>What pupils are learning to do</i>	<b>Teaching &amp; Learning Themes &amp; Styles</b> <i>Topics, Activities, Learning Styles</i>	<b>Assessment Focus</b> <i>including dates and suggested assessments and methods of assessment</i>	<b>Additional Features</b>
<b>AUTUMN</b> Half term 1	Review Number <ul style="list-style-type: none"> <li>• calculate with roots, and with integer indices</li> </ul>	Teaching & Learning Themes Number <ul style="list-style-type: none"> <li>• Calculate with powers and roots</li> <li>• Explore the use of standard form</li> <li>• Explore the effects of rounding</li> </ul>	Summative Assessment <ul style="list-style-type: none"> <li>• End of unit tests relevant to the topics covered this half term.</li> </ul>	Literacy Elements <ul style="list-style-type: none"> <li>• Spelling</li> <li>• Definitions</li> </ul>

<b>Timing</b>	<b>Key Skills</b> <i>What pupils are learning to do</i>	<b>Teaching &amp; Learning Themes &amp; Styles</b> <i>Topics, Activities, Learning Styles</i>	<b>Assessment Focus</b> <i>including dates and suggested assessments and methods of assessment</i>	<b>Additional Features</b> <ul style="list-style-type: none"> <li>• Literacy Elements</li> <li>• Curriculum Links</li> <li>• Visits / Events</li> </ul>
	<ul style="list-style-type: none"> <li>• calculate with standard form <math>A \times 10^n</math>, where <math>1 \leq A &lt; 10</math> and <math>n</math> is an integer</li> <li>• use inequality notation to specify simple error intervals due to truncation or rounding</li> <li>• apply and interpret limits of accuracy</li> </ul> <p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle)</li> <li>• use these to construct given figures and solve loci problems; know that the perpendicular distance from a point to a line is the shortest distance to the line</li> <li>• construct plans and elevations of 3D shapes</li> </ul>	<p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• Know standard mathematical constructions</li> <li>• Apply standard mathematical constructions</li> <li>• Explore ways of representing 3D shapes</li> </ul> <p><b>Teaching &amp; Learning Styles</b></p> <ul style="list-style-type: none"> <li>• Teacher led new content, through Modelling and Scaffolding</li> <li>• Visuals and Images</li> <li>• Paired Learning</li> <li>• Group Discussion</li> <li>• Collaborative Learning</li> <li>• Independent Learning</li> <li>• ICT and Online Learning</li> <li>• Game Based Learning</li> <li>• Inquiry Based Learning</li> <li>• Personalised Learning</li> <li>• Repetition and Reinforcement</li> <li>• Differentiated Lessons using multiple intelligences.</li> </ul>	<ul style="list-style-type: none"> <li>• 1:1 discussion following the completion of an end of topic assessment.</li> <li>• Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>• Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>• Opportunities to self-assess and assess peers to further understanding and identify progress</li> <li>• Verbal feedback throughout lessons</li> </ul>	<ul style="list-style-type: none"> <li>• understanding of mathematical vocabulary</li> <li>• developing the ability to read and understand mathematical language</li> <li>• use mathematical language and representations to communicate problems and solutions</li> <li>• use mathematics in a range of contexts</li> <li>• develop exam technique</li> </ul>
<b>AUTUMN</b> Half term 2	<p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• understand and use the concepts and vocabulary of identities</li> <li>• know the difference between an equation and an identity</li> <li>• simplify and manipulate algebraic expressions by expanding products of two binomials and factorising quadratic expressions of the form <math>x^2 + bx + c</math></li> <li>• argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments</li> <li>• translate simple situations or procedures into algebraic expressions or formulae</li> </ul>	<p><b>Teaching &amp; Learning Themes</b></p> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• Understand equations and identities</li> <li>• Manipulate algebraic expressions</li> <li>• Construct algebraic statements</li> </ul> <p><b>Ratio, Proportion and Rates of Change</b></p> <ul style="list-style-type: none"> <li>• Solve problems involving different types of proportion</li> <li>• Investigate ways of representing proportion</li> <li>• Understand and solve problems involving congruence</li> <li>• Understand and solve problems involving similarity</li> </ul>	<p><b>Summative Assessment</b></p> <ul style="list-style-type: none"> <li>• End of unit tests relevant to the topics covered this half term.</li> <li>• 1:1 discussion following the completion of an end of topic assessment.</li> <li>• Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>• Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>• Opportunities to self-assess and assess peers to further</li> </ul>	<p><b>Literacy Elements</b></p> <ul style="list-style-type: none"> <li>• Spelling</li> <li>• Definitions</li> <li>• understanding of mathematical vocabulary</li> <li>• developing the ability to read and understand mathematical language</li> <li>• use mathematical language and representations to communicate problems and solutions</li> </ul>

<b>Timing</b>	<b>Key Skills</b> <i>What pupils are learning to do</i>	<b>Teaching &amp; Learning Themes &amp; Styles</b> <i>Topics, Activities, Learning Styles</i>	<b>Assessment Focus</b> <i>including dates and suggested assessments and methods of assessment</i>	<b>Additional Features</b>
	<p><b>Ratio and Proportion, Rates of Change</b></p> <ul style="list-style-type: none"> <li>• solve problems involving direct and inverse proportion including graphical and algebraic representations</li> <li>• apply the concepts of congruence and similarity, including the relationships between lengths in similar figures</li> <li>• change freely between compound units (e.g. density, pressure) in numerical and algebraic contexts</li> <li>• use compound units such as density and pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Know and use compound units in a range of situations</li> </ul> <p><b>Teaching &amp; Learning Styles</b></p> <ul style="list-style-type: none"> <li>• Teacher led new content, through Modelling and Scaffolding</li> <li>• Visuals and Images</li> <li>• Paired Learning</li> <li>• Group Discussion</li> <li>• Collaborative Learning</li> <li>• Independent Learning</li> <li>• ICT and Online Learning</li> <li>• Game Based Learning</li> <li>• Inquiry Based Learning</li> <li>• Personalised Learning</li> <li>• Repetition and Reinforcement</li> <li>• Differentiated Lessons using multiple intelligences.</li> </ul>	<p>understanding and identify progress.</p> <ul style="list-style-type: none"> <li>• Verbal feedback throughout lessons</li> </ul>	<ul style="list-style-type: none"> <li>• Literacy Elements</li> <li>• Curriculum Links</li> <li>• Visits / Events</li> </ul> <ul style="list-style-type: none"> <li>• use mathematics in a range of contexts</li> <li>• develop exam technique</li> </ul>
<p><b>SPRING</b> Half term 3</p>	<p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• understand and use the concepts and vocabulary of inequalities</li> <li>• solve linear inequalities in one variable</li> <li>• represent the solution set to an inequality on a number line</li> <li>• recognise and use Fibonacci type sequences, quadratic sequences</li> </ul> <p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• identify and apply circle definitions and properties, including: tangent, arc, sector and segment</li> <li>• calculate arc lengths, angles and areas of sectors of circles</li> <li>• calculate surface area of right prisms (including cylinders)</li> <li>• calculate exactly with multiples of <math>\pi</math></li> </ul>	<p><b>Teaching &amp; Learning Themes</b></p> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• Investigate Fibonacci numbers</li> <li>• Investigate Fibonacci type sequences</li> <li>• Explore quadratic sequences</li> <li>• Explore the meaning of an inequality</li> <li>• Solve linear inequalities</li> </ul> <p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• Solve problems involving arcs and sectors</li> <li>• Solve problems involving prisms</li> <li>• Investigate right-angled triangles</li> </ul> <p><b>Teaching &amp; Learning Styles</b></p> <ul style="list-style-type: none"> <li>• Teacher led new content, through Modelling and Scaffolding</li> <li>• Visuals and Images</li> <li>• Paired Learning</li> <li>• Group Discussion</li> <li>• Collaborative Learning</li> <li>• Independent Learning</li> </ul>	<p><b>Summative Assessment</b></p> <ul style="list-style-type: none"> <li>• End of unit test relevant to the topics covered this half term.</li> <li>• 1:1 discussion following the completion of an end of topic assessment.</li> <li>• Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>• Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>• Opportunities to self-assess and assess peers to further understanding and identify progress</li> <li>• Verbal feedback throughout lesson</li> </ul>	<p><b>Literacy Elements</b></p> <ul style="list-style-type: none"> <li>• Spelling</li> <li>• Definitions</li> <li>• understanding of mathematical vocabulary</li> <li>• developing the ability to read and understand mathematical language</li> <li>• use mathematical language and representations to communicate problems and solutions</li> <li>• use mathematics in a range of contexts</li> <li>• develop exam technique</li> </ul>

<b>Timing</b>	<b>Key Skills</b> <i>What pupils are learning to do</i>	<b>Teaching &amp; Learning Themes &amp; Styles</b> <i>Topics, Activities, Learning Styles</i>	<b>Assessment Focus</b> <i>including dates and suggested assessments and methods of assessment</i>	<b>Additional Features</b> <ul style="list-style-type: none"> <li>• Literacy Elements</li> <li>• Curriculum Links</li> <li>• Visits / Events</li> </ul>
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<p><b>SPRING</b> Half term 4</p>	<p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• know the formulae for: Pythagoras' theorem, <math>a^2 + b^2 = c^2</math>, and apply it to find lengths in right-angled triangles in two dimensional figures</li> <li>• use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)</li> <li>• apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs</li> </ul> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• identify and interpret gradients and intercepts of linear functions algebraically</li> <li>• use the form <math>y = mx + c</math> to identify parallel lines</li> <li>• find the equation of the line through two given points, or through one point with a given gradient</li> </ul>	<p><b>Teaching &amp; Learning Themes</b></p> <p><b>Geometry</b></p> <ul style="list-style-type: none"> <li>• Solve problems involving Pythagoras' theorem</li> <li>• Explore the congruence of triangles</li> <li>• Investigate geometrical situations</li> <li>• Form conjectures</li> <li>• Create a mathematical proof</li> </ul> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>• Investigate features of straight line graphs</li> </ul> <p><b>Teaching &amp; Learning Styles</b></p> <ul style="list-style-type: none"> <li>• Teacher led new content, through Modelling and Scaffolding</li> <li>• Visuals and Images</li> <li>• Paired Learning</li> <li>• Group Discussion</li> <li>• Collaborative Learning</li> <li>• Independent Learning</li> <li>• ICT and Online Learning</li> <li>• Game Based Learning</li> <li>• Inquiry Based Learning</li> <li>• Personalised Learning</li> <li>• Repetition and Reinforcement</li> <li>• Differentiated Lessons using multiple intelligences.</li> </ul>	<p><b>Summative Assessment</b></p> <ul style="list-style-type: none"> <li>• End of unit tests (Kangaroo Maths) relevant to the topics covered this half term.</li> <li>• 1:1 discussion following the completion of an end of topic assessment.</li> <li>• Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>• Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>• Opportunities to self-assess and assess peers to further understanding and identify progress</li> <li>• Verbal feedback throughout lessons</li> </ul>	<p><b>Literacy Elements</b></p> <ul style="list-style-type: none"> <li>• Spelling</li> <li>• Definitions</li> <li>• understanding of mathematical vocabulary</li> <li>• developing the ability to read and understand mathematical language</li> <li>• use mathematical language and representations to communicate problems and solutions</li> <li>• use mathematics in a range of contexts</li> <li>• develop exam technique</li> </ul>
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<p><b>SUMMER</b> Half term 5</p>	<p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>interpret the gradient of a straight line graph as a rate of change</li> <li>recognise, sketch and interpret graphs of quadratic functions</li> <li>recognise, sketch and interpret graphs of simple cubic functions and the reciprocal function <math>y = 1/x</math> with <math>x \neq 0</math></li> <li>plot and interpret graphs (including reciprocal graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration</li> </ul>	<p><b>Teaching &amp; Learning Themes</b></p> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>Explore graphs of quadratic functions</li> <li>Explore graphs of other standard non-linear functions</li> <li>Create and use graphs of non-standard functions</li> <li>Solve kinematic problems</li> <li>Use graphs to solve equations</li> </ul> <p><b>Teaching &amp; Learning Styles</b></p> <ul style="list-style-type: none"> <li>Teacher led new content, through Modelling and Scaffolding</li> <li>Visuals and Images</li> <li>Paired Learning</li> <li>Group Discussion</li> <li>Collaborative Learning</li> <li>Independent Learning</li> <li>ICT and Online Learning</li> <li>Game Based Learning</li> <li>Inquiry Based Learning</li> <li>Personalised Learning</li> <li>Repetition and Reinforcement</li> <li>Differentiated Lessons using multiple intelligences.</li> </ul>	<p><b>Summative Assessment</b></p> <ul style="list-style-type: none"> <li>End of unit tests relevant to the topics covered this half term.</li> <li>1:1 discussion following the completion of an end of topic assessment.</li> <li>Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>Opportunities to self-assess and assess peers to further understanding and identify progress</li> <li>Verbal feedback throughout lessons</li> </ul>	<p><b>Literacy Elements</b></p> <ul style="list-style-type: none"> <li>Spelling</li> <li>Definitions</li> <li>understanding of mathematical vocabulary</li> <li>developing the ability to read and understand mathematical language</li> <li>use mathematical language and representations to communicate problems and solutions</li> <li>use mathematics in a range of contexts</li> <li>develop exam technique</li> </ul>
<p><b>SUMMER</b> Half term 6</p>	<p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>solve, in simple cases, two linear simultaneous equations in two variables algebraically</li> <li>derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution</li> <li>find approximate solutions to simultaneous equations using a graph</li> </ul> <p><b>Probability</b></p> <ul style="list-style-type: none"> <li>calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions</li> </ul>	<p><b>Teaching &amp; Learning Themes</b></p> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>Solve simultaneous equations</li> <li>Solve problems involving simultaneous equations</li> </ul> <p><b>Probability</b></p> <ul style="list-style-type: none"> <li>Understand and use tree diagrams</li> <li>Develop understanding of probability in situations involving combined events</li> <li>Use probability to make predictions</li> </ul> <p><b>Statistics</b></p> <ul style="list-style-type: none"> <li>Construct and interpret graphs of time series</li> <li>Interpret a range of charts and graphs</li> <li>Interpret scatter diagrams</li> <li>Explore correlation</li> </ul>	<p><b>Summative Assessment</b></p> <ul style="list-style-type: none"> <li>End of unit tests relevant to the topics covered this half term.</li> <li>1:1 discussion following the completion of an end of topic assessment.</li> <li>Written Feedback following the completion of an end of topic assessment.</li> </ul> <p><b>Formative Assessment</b></p> <ul style="list-style-type: none"> <li>Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language.</li> <li>Opportunities to self-assess and assess peers to further understanding and identify progress</li> </ul>	<p><b>Literacy Elements</b></p> <ul style="list-style-type: none"> <li>Spelling</li> <li>Definitions</li> <li>understanding of mathematical vocabulary</li> <li>developing the ability to read and understand mathematical language</li> <li>use mathematical language and representations to communicate problems and solutions</li> <li>use mathematics in a range of contexts</li> </ul>

	<ul style="list-style-type: none"> <li>• enumerate sets and combinations of sets systematically, using tree diagrams</li> <li>• understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size</li> </ul> <p>Statistics</p> <ul style="list-style-type: none"> <li>• interpret and construct tables, charts and diagrams, including tables and line graphs for time series data and know their appropriate use</li> <li>• draw estimated lines of best fit; make predictions</li> <li>• know correlation does not indicate causation; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing</li> </ul>	<p>Teaching &amp; Learning Styles</p> <ul style="list-style-type: none"> <li>• Teacher led new content, through Modelling and Scaffolding</li> <li>• Visuals and Images</li> <li>• Paired Learning</li> <li>• Group Discussion</li> <li>• Collaborative Learning</li> <li>• Independent Learning</li> <li>• ICT and Online Learning</li> <li>• Game Based Learning</li> <li>• Inquiry Based Learning</li> <li>• Personalised Learning</li> <li>• Repetition and Reinforcement</li> <li>• Differentiated Lessons using multiple intelligences.</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal feedback throughout lessons</li> <li>• End of year test</li> </ul>	<ul style="list-style-type: none"> <li>• develop exam technique</li> </ul>
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