



H3 CURRICULUM MAP



SUBJECT AREA:	Mathematics	YEAR / GROUP:	11 aimed at grade 4 – 5 aimed at grade 6 - 9
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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.

It is the intent that the mathematics curriculum at HPRS is:

- To set ambitious targets with high expectations of all students
- To offer a variety of approaches to teaching and learning to engage and motivate students
- Coherently planned and sequences
- Successfully adapted, designed and developed for students with special educational needs, and/or disabilities
- Broad and balanced for all students

The curriculum delivery in mathematics relies on:

- Embedding quality teaching and learning opportunities in lessons
- Verbal and/ or written weekly feedback focused on positive aspects of the student in lessons
- Marking in such a way that it is personalised to identify and correct misconceptions in student friendly language
- Assessing progress regularly and reporting this to parents/carers each term
- Comparing student progress with their individual learning profiles
- 1 to 1 conversations focused on personal ability, progression, self-reflection and support
- Supporting students who are struggling to work in the mathematics room by offering 1 : 1 support with a TA
- Purposeful questioning allowing for development in mathematical through reasoning and discussion within the lessons.
- A baseline assessment that exposes knowledge gaps. Developing a personalised plan

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

- Using the BKSBS Functional Skills Baseline Assessment to expose knowledge gaps, attitude, anxieties and development needs towards maths.
- Initially removing formal aspects of 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

If it is deemed beneficial to an individual student, we will have them sit Functional Skills Level 2 Maths qualification in the Autumn Term. In our experience the confidence gained from achieving a Maths exam qualification early in the year, increases self-confidence and resilience in students of all abilities.

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

Timing	Key Skills <i>What pupils are learning to do</i>	Teaching & Learning Themes & Styles <i>Topics, Activities, Learning Styles</i>	Assessment Focus <i>including dates and suggested assessments and methods of assessment</i>	Additional Features <ul style="list-style-type: none"> • Literacy Elements • Curriculum Links • Visits / Events
AUTUMN Half term 1	Review Algebra <ul style="list-style-type: none"> • solve quadratic equations by completing the square and by using the quadratic formula • deduce turning points of quadratic functions by completing the square • deduce roots of quadratic functions algebraically • work with general iterative processes • solve quadratic inequalities in one variable • solve two simultaneous equations in two variables where one is quadratic algebraically Statistics <ul style="list-style-type: none"> • construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and know their appropriate use 	Teaching & Learning Themes Algebra <ul style="list-style-type: none"> • Explore graphs of exponential functions • Explore graphs of trigonometric functions • Investigate the connections between graphs of functions and their translations Statistics <ul style="list-style-type: none"> • Construct and interpret cumulative frequency graphs • Construct and interpret box plots • Analyse distributions of data sets • Construct and Interpret histograms Teaching & Learning Styles <ul style="list-style-type: none"> • Teacher led new content, through Modelling and Scaffolding • Visuals and Images • Paired Learning • Group Discussion • Collaborative Learning • Independent Learning • ICT and Online Learning • Game Based Learning • Inquiry Based Learning 	Summative Assessment <ul style="list-style-type: none"> • End of unit tests relevant to the topics covered this half term. • 1:1 discussion following the completion of an end of topic assessment. • Written Feedback following the completion of an end of topic assessment. Formative Assessment <ul style="list-style-type: none"> • Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language. • Opportunities to self-assess and assess peers to further understanding and identify progress Verbal feedback throughout lessons	Literacy Elements <ul style="list-style-type: none"> • Spelling • Definitions • understanding of mathematical vocabulary • developing the ability to read and understand mathematical language • use mathematical language and representations to communicate problems and solutions • use mathematics in a range of contexts • develop exam technique

Timing	Key Skills <i>What pupils are learning to do</i>	Teaching & Learning Themes & Styles <i>Topics, Activities, Learning Styles</i>	Assessment Focus <i>including dates and suggested assessments and methods of assessment</i>	Additional Features <ul style="list-style-type: none"> • Literacy Elements • Curriculum Links • Visits / Events
		<ul style="list-style-type: none"> • Personalised Learning • Repetition and Reinforcement • Differentiated Lessons using multiple intelligences. 		
AUTUMN Half term 2	<p>Geometry and Measures</p> <ul style="list-style-type: none"> • know the formulae for Pythagoras' theorem, $a^2 + b^2 = c^2$, and apply it to find lengths in three dimensional figures • know the trigonometric ratios, $\sin\theta = \text{opposite/hypotenuse}$, $\cos\theta = \text{adjacent/hypotenuse}$, $\tan\theta = \text{opposite/adjacent}$ and apply them to find angles and lengths in three dimensional figures • know and apply the sine rule, $a/\sin A = b/\sin B = c/\sin C$, and the cosine rule, $a^2 = b^2 + c^2 - 2bc \cos A$, to find unknown lengths and angles • know and apply $\text{area} = \frac{1}{2}ab \sin C$ to calculate the area, sides or angles of any triangle • identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement (including negative scale factors) <p>Ratio & Proportion</p> <ul style="list-style-type: none"> • construct equations that describe direct and inverse proportion <p>Review</p>	<p>Teaching & Learning Themes</p> <p>Geometry and Measures</p> <ul style="list-style-type: none"> • Explore three-dimensional shapes • Apply Pythagoras' theorem in three dimensions • Apply trigonometry in three dimensions • Know and use the sine rule • Know and use the cosine rule • Explore enlargement of 2D shapes <p>Ratio & Proportion</p> <ul style="list-style-type: none"> • Explore differences between direct and inverse proportion • Solve problems involving proportion <p>Teaching & Learning Styles</p> <ul style="list-style-type: none"> • Teacher led new content, through Modelling and Scaffolding • Visuals and Images • Paired Learning • Group Discussion • Collaborative Learning • Independent Learning • ICT and Online Learning • Game Based Learning • Inquiry Based Learning • Personalised Learning • Repetition and Reinforcement • Differentiated Lessons using multiple intelligences. 	<p>Summative Assessment</p> <ul style="list-style-type: none"> • Assessments before week beginning the 28th of November • Pupils may sit Functional Skills past paper • Pupils may sit Functional Skills Exams • Students will sit a full GCSE paper • End of unit tests relevant to the topics covered this half term. • 1:1 discussion following the completion of an end of topic assessment. • Written Feedback following the completion of an end of topic assessment. <p>Formative Assessment</p> <ul style="list-style-type: none"> • Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language. • Opportunities to self-assess and assess peers to further understanding and identify progress. • Verbal feedback throughout lessons 	<p>Literacy Elements</p> <ul style="list-style-type: none"> • Spelling • Definitions • understanding of mathematical vocabulary • developing the ability to read and understand mathematical language • use mathematical language and representations to communicate problems and solutions • use mathematics in a range of contexts • develop exam technique
SPRING Half term 3	<p>Algebra</p> <ul style="list-style-type: none"> • interpret the succession of two functions as a 'composite function' 	<p>Teaching & Learning Themes</p> <p>Algebra</p> <ul style="list-style-type: none"> • Solve problems involving functions • Explore graphs of exponential functions 	<p>Summative Assessment</p> <ul style="list-style-type: none"> • End of unit tests relevant to the topics covered this half term. 	<p>Literacy Elements</p> <ul style="list-style-type: none"> • Spelling • Definitions

Timing	Key Skills <i>What pupils are learning to do</i>	Teaching & Learning Themes & Styles <i>Topics, Activities, Learning Styles</i>	Assessment Focus <i>including dates and suggested assessments and methods of assessment</i>	Additional Features
	<ul style="list-style-type: none"> interpret the reverse process as the 'inverse function' recognise, sketch and interpret graphs of exponential functions $y = k^x$ for positive values of k, and the trigonometric functions (with arguments in degrees) $y = \sin x$, $y = \cos x$ and $y = \tan x$ for angles of any size sketch translations and reflections of a given function apply the concepts of average and instantaneous rate of change (gradients of chords and tangents) in numerical, algebraic and graphical contexts) <p>Probability</p> <ul style="list-style-type: none"> apply systematic listing strategies including use of the product rule for counting calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams 	<ul style="list-style-type: none"> Explore graphs of trigonometric functions Investigate the connections between graphs of functions and their translations Manipulate quadratic functions Solve problems involving graphs of quadratic functions Explore rates of change <p>Probability</p> <ul style="list-style-type: none"> Understand and use the product rule for counting Use Venn diagrams to represent probability situations Use two-way tables to represent probability situations Solve probability problems involving combined events <p>Teaching & Learning Styles</p> <ul style="list-style-type: none"> Teacher led new content, through Modelling and Scaffolding Visuals and Images Paired Learning Group Discussion Collaborative Learning Independent Learning ICT and Online Learning Game Based Learning Inquiry Based Learning Personalised Learning Repetition and Reinforcement Differentiated Lessons using multiple intelligences. 	<ul style="list-style-type: none"> 1:1 discussion following the completion of an end of topic assessment. Written Feedback following the completion of an end of topic assessment. <p>Formative Assessment</p> <ul style="list-style-type: none"> Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language. Opportunities to self-assess and assess peers to further understanding and identify progress Verbal feedback throughout lesson 	<ul style="list-style-type: none"> Literacy Elements Curriculum Links Visits / Events <ul style="list-style-type: none"> understanding of mathematical vocabulary developing the ability to read and understand mathematical language use mathematical language and representations to communicate problems and solutions use mathematics in a range of contexts develop exam technique

SPRING Half term 4	Probability	Teaching & Learning Themes Probability	Summative Assessment <ul style="list-style-type: none"> Assessments before week beginning the 20th of March 	Literacy Elements <ul style="list-style-type: none"> Spelling Definitions
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	<ul style="list-style-type: none"> • apply systematic listing strategies including use of the product rule for counting • calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams <p>Number</p> <ul style="list-style-type: none"> • simplify surd expressions involving squares (e.g. $\sqrt{12} = \sqrt{4 \times 3} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3}$) and rationalise denominators <p>Algebra</p> <ul style="list-style-type: none"> • recognise and use simple geometric progressions (r^n where n is an integer, and r is a rational number > 0 or a surd) and other sequences 	<ul style="list-style-type: none"> • Understand and use the product rule for counting • Use Venn diagrams to represent probability situations • Use two-way tables to represent probability situations • Solve probability problems involving combined events <p>Number</p> <ul style="list-style-type: none"> • Manipulate expressions by simplifying surds <p>Algebra</p> <ul style="list-style-type: none"> • investigate geometric progressions <p>Teaching & Learning Styles</p> <ul style="list-style-type: none"> • Teacher led new content, through Modelling and Scaffolding • Visuals and Images • Paired Learning • Group Discussion • Collaborative Learning • Independent Learning • ICT and Online Learning • Game Based Learning • Inquiry Based Learning • Personalised Learning • Repetition and Reinforcement • Differentiated Lessons using multiple intelligences. 	<ul style="list-style-type: none"> • Students will sit a full GCSE paper. • End of unit tests relevant to the topics covered this half term. • 1:1 discussion following the completion of an end of topic assessment. • Written Feedback following the completion of an end of topic assessment. <p>Formative Assessment</p> <ul style="list-style-type: none"> • Paired and small group assessment tasks focusing on reasoning and discussion to develop mathematical language. • Opportunities to self-assess and assess peers to further understanding and identify progress • Verbal feedback throughout lessons 	<ul style="list-style-type: none"> • understanding of mathematical vocabulary • developing the ability to read and understand mathematical language • use mathematical language and representations to communicate problems and solutions • use mathematics in a range of contexts • develop exam technique
<p>SUMMER Half term 5</p>	<p>Revision Number Algebra Ratio, Proportion and Rates of Change Geometry and Measures Probability Statistics</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Follow a revision course designed to identify and then support areas for improvement in students' understanding and in the application of their knowledge. • Complete past exam papers in order to become familiar with the layout and language used. • Create revision cards • Marking their own work with a marking scheme • Revisiting the language of exam questions 	<p>GCSE Examinations</p>	<p>Literacy Elements</p> <ul style="list-style-type: none"> • Spelling • Definitions • understanding of mathematical vocabulary • developing the ability to read and understand mathematical language • use mathematical language and representations to

		<ul style="list-style-type: none"> • Student presentations of their own work using PowerPoint • Use of mnemonics • Development of mind maps • Teaching content to peers 		<p>communicate problems and solutions</p> <ul style="list-style-type: none"> • use mathematics in a range of contexts • develop exam technique
SUMMER Half term 6	Exams		GCSE Examinations	