

Year 9 MATHS

Intent

The intention of the maths curriculum is to foster pupils' interest, enjoyment and curiosity of maths. By following the National Curriculum, our curriculum will be rigorous, coherent and connected throughout Key Stage 3. We aim to develop competent mathematicians who are able to apply their knowledge across subjects, year on year.

By designing the curriculum around a mastery approach all students will gain depth to their learning leading to secure and sustained progress over time. All students will develop their fluency, reasoning and problem-solving skills.

The department has the strong belief that all students can be successful in maths and teaching for understanding is at the heart of every lesson.

How will knowledge and skills be taught?

applying their knowledge to a broader range of contexts.

Knowledge and skill swill be taught through a combination of teacher-

student explanations and student self-discovery. Teaching will follow the NCETMs Teaching for Mastery approach with lessons consisting of visual representations, modelling ad purposeful practice to help students

There is a focus in year 9 of developing depth to their secure foundations

from years 7 and 8. Students will meet more complex concepts and begin

Links with other subjects

- Averages and data Science
- Geometric reasoning Art
- Fractions Music

Topic Titles

- Logical reasoning computing
- · Measures Tech
- Percentages and negative numbers History

Error intervals, indices and standard form

Graphical representations of equations

Manipulating quadratic expressions and equation

Bisectors and Loci

Solving inequalities

Scatter graphs

Probability

Direct and inverse proportion

Circles, sectors and cylinders

Similarity and congruence

Simultaneous equations Pythagoras' Theorem Transformations

· Graph interpretation and measures - Geography

Recommended Reading and Preparation for Learning

build and link their knowledge together.

How can parents help?

- Present a positive opinion of maths –please change
- 'I was never very good at maths' to 'I had to work really hard at maths
- Encourage your child to attend Sum Up The Week to consolidate their Learning
- Highlight the use of maths in your everyday life calculating change, timings etc
- Speak to your child about the maths they are learning in school and ask them to explain their understanding to you.

Maintain your child's fluency with timestables, mental maths and written
multiplication and division

Murderous Maths – Kjartan Poskitt The Number Devil – Hans Magnus Enzensberger The Man Who Counted – Malba Tahan Alex's Adventures in Numberland – Alex Bellos How Long is a Piece of String – Rob Eastaway How Many Socks Make a Pair – Rob Eastaway Humble Pi – Matt Parker



Subject: Maths		Year Group: 9		Term: 1, 2 and 3	
Module/Theme: Number					
Topic Outline & Aims (Intent) The Number strand of the curriculum is fundamental to successful progression through Key Stage 3. The aim in Year 9 is for students to demonstrate fluency of the fundamentals. Students will deepen their understanding of familiar numerical concepts from years 7 and 8 including negative numbers, indices, roots and standard form.					
 Key Skills and Knowledge taught through this topic: (Intent) Apply the laws of indices to numerical and algebraic problems (including negative and fractional indices) Work competently with roots and use them to manipulate numbers Calculate with numbers written in standard form Identify bounds when a value has been rounded 					
Prior Learning: (Context)Future LearnKS2:Please see Year 7 NumberKS4:Mathematics Programme of Study: KeyCompound interStage 2 (Page 6, 11, 18, 24, 31, 39)Working with sYear7:Please see Year 7 NumberYear 8:HCF and LCM from prime factorsHCF and LCM from prime factorsStandard formOrder of operationsNegative numbers		Future Learning: (KS4: Compound interest Calculating with fraction Working with surds an	onal and negative indices ad recurring decimals	National Curriculum Links: (Context) Mathematics Programme of Study: Key Stage 3 (Page 5 and 6)	
RRSA Links: Article 17 – Access information Article 28 – Access education Article 29 – Goals of education British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect. Eco Schools Links: NL(A)			Assessment of Learning: (Impact) Summative: formal assessments in December, March, June Formative: BAM tasks and homework tasks Informal: low-stakes quizzes, questioning, mini-whiteboard work		
Reading / Enrichment: Useful websites: Mathswatch clips – N1 – N46 Corbettmaths.com In school enrichment: Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor Books: CGP: Key stage 3 complete practice	Key Vocabulary: (Literacy) Place value, square number, cube number, square root, cube root, rounding, significant, estimate, prime, factor, multiple, operation, numerator, denominator, equivalent, simplify, divisor, dividend, quotient, multiplicand		Numeracy Opportunities:	Career Links: Basic numeracy requirement for all careers	



Subject: Maths	Year Group: 9	Year Group: 9 Term: 1, 2			
Module/Theme: Algebra					
Topic Outline & Aims (Intent) Through the algebra topics covered in Year 9 students will take the necessary steps to build on their knowledge from years 7 and 8 and become GCSE ready. The GCSE requires pupils to be proficient with basic algebra and we aim for all students to finish year 9 with the confidence and knowledge to embrace the demands of Key Stage 4. Where appropriate the learning will continue to be structured by working in the concrete and pictorial and moving onto the abstract. The year 9 algebra topics will allow students to consolidate and deeper their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and further develop their understanding of manipulating and solving countings and solving counting countings and solving countings and solving counting countings and solving countings					
Key Skills and Knowledge tau	Key Skills and Knowledge taught through this tonic: (Intent)				
 Expand and factorise double brackets Solve an inequality and represent this on a number line Solve linear inequalities where a variable is on both sides and brackets are involved Use the equation of a straight line - y = mx +c Understand and solve problems involving parallel and perpendicular gradients Find the equation of a line given 2 points and 1 point with a gradient Interpret properties of quadratic graphs (intercept, symmetry, positive or negative, coefficients) Identify solutions from intersecting graphs 					
Solve linear simultaneous e	equations				
Prior Learning: (Context)Future Learning: (Context)KS2:KS4: As above and MPlease see Year 7 AlgebraKey Stage 4 Pg7-8Year 7:Please see Year 7 AlgebraSolving complex equYear 8:Solving simultaneouFactorising expressionsquadratic equationRearranging equationsForming and solvingSolving linear equations with x on bothSolving equations byUnderstand y=mx+cUnderstanding quadArticle 17 - Access informationArticle 28 - Access educationArticle 29 - Goals of educationBritish Values Links:Mutual respect - Working together with tolerance and mutual		Context) Mathematics Programme of Study uations us equations involving a linear and g equations by numerical methods dratic equations and identifying Assessment of Learning: (In Summative: formal assessments i Formative: BAM tasks and homey Informal: low-stakes quizzes, que	National Curriculum Links: (Context) Mathematics Programme of Study: Key Stage 3 npact) n December, March June vork tasks		
Eco Schools Links: N/A					
Reading / Enrichment:Useful websites:Mathswatch clips – A1a – A28Corbettmaths.comIn school enrichment:Sum up the weekMaths challenge clubWeekly maths challengeNumeracy in tutorBooks:CGP: Key stage 3 completepractice	Key Vocabulary: (Literacy) Expression, equation, formulae, term, function, variable, simplify, expand, substitute, solve,	Numeracy Opportunities:	Career Links: Engineer Economist Accountant Financial analyst Data analyst Research scientist Computer programmer		



Subject: Maths		Year Group: 9			Term: 1, 2 and 3
Module/Theme: Geometry					
Topic Outline & Aims (Intent) During year 8 students will build upon their prior learning of geometry. Through discovery, students will be able to deepen their understanding of the properties of shapes, surface area, congruence and similarity					o deepen their
 Key Skills and Knowledge taught through this topic: (Intent) Construct and interpret bisectors of angles and line segments Understand and solve problems involving loci Calculate the area of sectors and arc lengths Calculate the surface area of triangular prisms and cylinders Understand, recognise and solve problems involving similarity between shapes Understand, recognise and solve problems involving congruence of shapes 					
Prior Learning: (Context)Future Learning: (Context)KS2:KS4: As above and NPlease see Year 7 GeometryTrigonometryMathematics programme of study: KeyPythagorasStage 2 Pg 43 – 45Area of a triangle usYear 7:Sine Rule and CosinePlease see Year 7 GeometryCircle theoremsYear 8:YectorsPlans, elevations and scale drawingAlternate and corresponding anglesInterior and exterior angles in polygonsCircles, circumference and areaVolume of cylindersVelocations		ontext) Aathematics Programme of Study: Key Stage 4 ing Sin e Rule		National Curriculum Links: (Context) Mathematics Programme of Study: Key Stage 3	
RRSA Links: Article 17 – Access information Article 28 – Access education Article 29 – Goals of education British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.			Assessment of Learning: (Impact) Summative: formal assessments in December, March and May Formative: BAM tasks and homework tasks Informal: low-stakes quizzes, questioning, mini-whiteboard work		
N/A Reading / Enrichment: Useful websites: Mathswatch clips – A1a – A28 Corbettmaths.com In school enrichment: Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor Books: CGP: Key stage 3 complete practice	Key Vo Comm imperia	cabulary: (Literacy) on metric and al units, multiplier	Numeracy Opportunities:	Career Lin Basic numera careers. Engineer Builder Banker	ks: acy requirement for all



Subject: Maths		Year Group: 9			Term: 1, 2 and 3
Module/Theme: Ratio and Proportion					
Topic Outline & Aims (Intent) Students will build on their ability to draw comparisons between two or more measures or objects using the idea of ratio and proportion. They will continue to use the correct notation for ratio and use this to solve problems involving parts of a whole. They will build on their knowledge of the unitary and multiplier methods to solve problems involving proportion. Key Skills and Knowledge taught through this topic: (Intent) Direct and inverse proportion Compound units (speed and density) 					
Prior Learning: (Context)Future Learning: (Context)KS2:Future Learning: (Context)Please see year 7 Ratio and ProportionKS4: As above and NMathematics programme of study: KeyCompare lengths, arStage 2Compare lengths, arYear 7:Construct and interpPlease see Year 7 Ratio and ProportionproportionYear 8:Interpret the gradienDivide an amount into a given ratio andset up, solve and intConvert and compare quantitiesSet up, solve and intinvolving scaling (recipes)Use multipliers within percentage change		ontext) Iathematics Programme of Study: eas and volumes using ratio (linking pret equations that describe nt as a rate of change (linear and erpret equations involving growth g compound interest)		National Curriculum Links: (Context) Mathematics Programme of Study: Key Stage 3	
RRSA Links:			Assessment of Learning: (Impact)		
Article 17 – Access information Article 28 – Access education			Summative. Tormal assessments in December, March, June		
Article 29 – Goals of education British Values Links:			Formative: BAM tasks and homework tasks		
Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.			Informal: low-stakes quizzes, que	estio	ning, mini-whiteboard work
Reading / Enrichment: Useful websites: Mathswatch clips Corbettmaths.com In school enrichment: Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor Books: CGP: Key stage 3 complete practice	Key Vo Commo imperia	cabulary: (Literacy) on metric and al units, multiplier	Numeracy Opportunities:	Ca Bas car Eng Bui Bar	reer Links: iic numeracy requirement for all eers. gineer lder lker



Subject: Maths	Subject: Maths		oup: 9	Term: 1, 2 and 3	
Module/Theme: Probability and Statistics					
Topic Outline & Aims (Intent) During Year 9 students will meet the idea of combined events in probability. They will use tree diagrams to represent events and calculate chances of different outcomes. Within statistics students will be introduced to further ways of presenting data and use this to analyse, draw conclusion and identify trends.					te nds.
 Key Skills and Knowledge taught through this topic: (Intent) Interpret, analyse and construct time series graphs, frequency polygons and scatter diagrams Calculate probabilities of independent combined events Calculate probabilities of dependent combined events Construct and interpret tree diagrams Understand and solve problems involving relative frequency and theoretical probabilities 					
Prior Learning: (Context) KS2: Please see Year 7 Probability and Statistics Mathematics programme of study: Key Stage 2 Year 7: Please see Year 7 Probability and Statistics Year 8: Basics of probability (scales) Probability from Venn diagrams, frequency trees and possibility spaces Types of data Averages from tables Compound and composite bar charts Pie charts Scatter graphs		Future Learning: (Context) KS4: As above and Mathematics Programme of Study: Key Stage 4 Sampling methods Histograms Box plots and interquartile range Interpolate and extrapolate bivariate data		National Curriculum Links: of (Context) Mathematics Programme of Stu Key Stage 3	ıdy:
RRSA Links: Article 17 – Access information Article 28 – Access education Article 29 – Goals of education			Assessment of Learning: (Impact) Summative: formal assessments in October, February and June Formative: BAM tasks and homework tasks		
British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect. Eco Schools Links:			Informal: low-stakes quizzes, questioning, mini-whiteboard work		
N/A					
Reading / Enrichment: <u>Useful websites:</u> Mathswatch clips – A1a – A28 Corbettmaths.com <u>In school enrichment:</u> Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor <u>Books:</u> CGP: Key stage 3 complete practice	Key Vocabulary: Common metric imperial units, m	: (Literacy) and nultiplier	Numeracy Opportunities:	Career Links: Basic numeracy requirement for all Data analyst Actuary Statistician Business leader	