

Curriculum Overview

Maths

Subject Leader

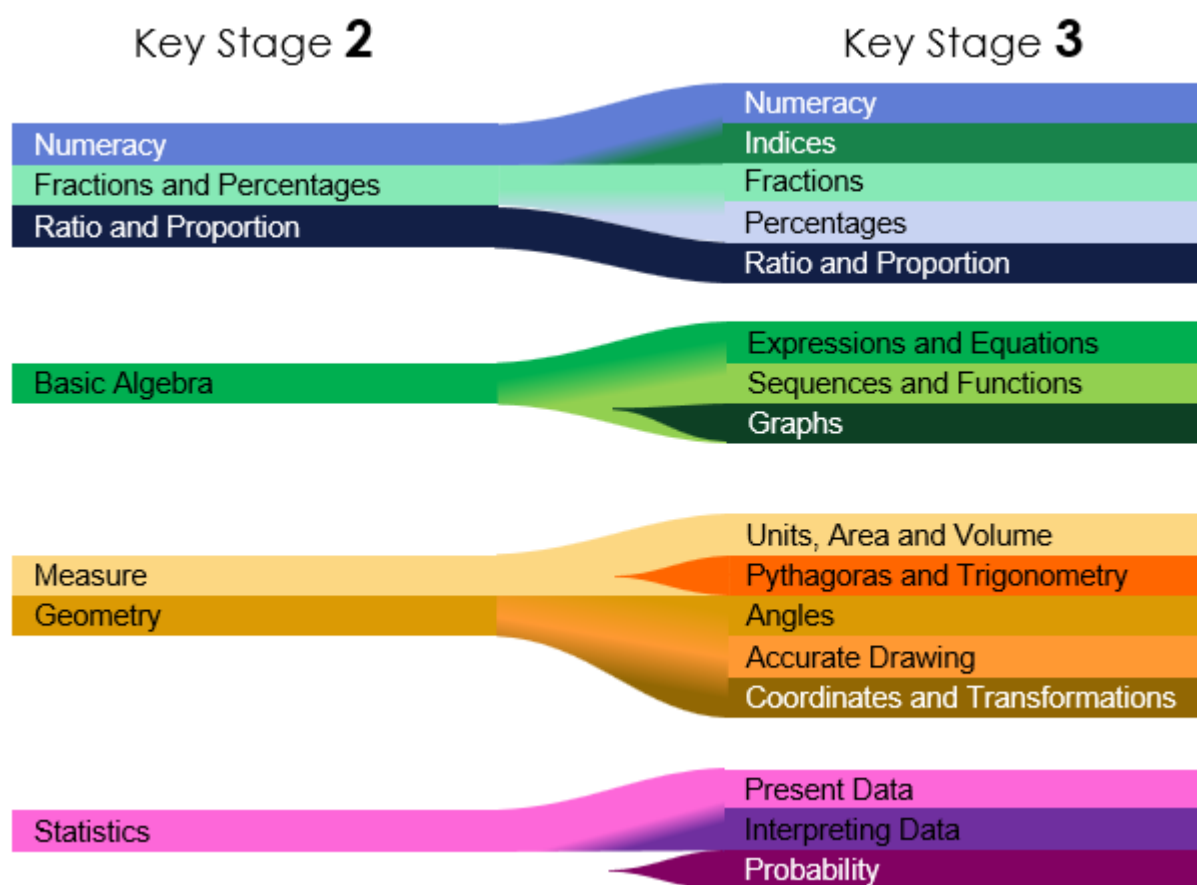
Mr R Cole and Mrs J Cole

Intent

Key stage 3

Our Key Stage 3 curriculum intends to develop in students a deep appreciation of the patterns and relationships between numbers and to provide a firm foundation with the tools of algebra, geometry and statistics to enable students to solve problems in both abstract and real-world contexts.

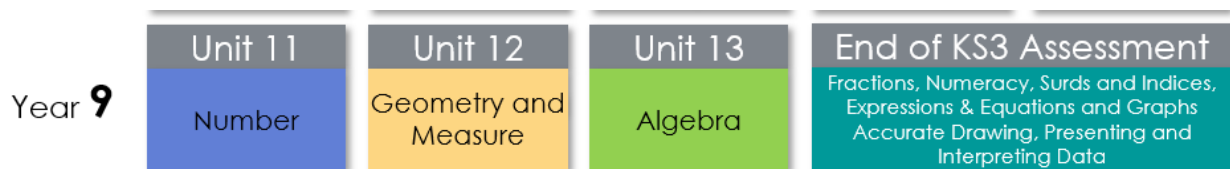
The curriculum builds on prior knowledge by consolidating concepts and standardising techniques learnt at Key Stage 2, developing and enhancing understanding of all six areas of the secondary Mathematics curriculum and introducing new concepts such as Pythagoras and Trigonometry that provide essential foundations for Key Stage 4 Mathematics.



Implementation

Key stage 3

All areas of the curriculum are covered over 9 units with each topic enriched through mastery lessons which consolidate recall and retention and enable a deeper exploration of problem solving with each concept.

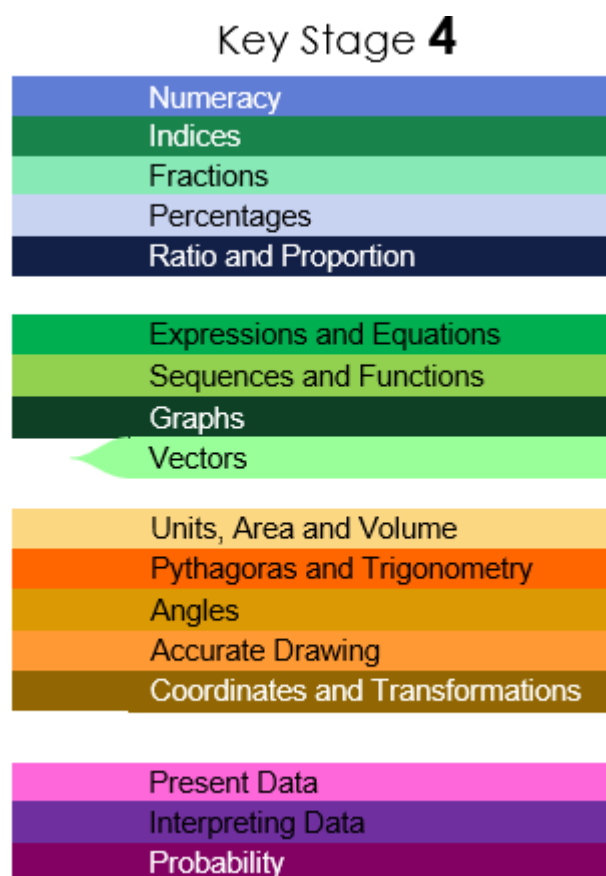


The final term of Year 8 and the first three terms of Year 9 are used to consolidate and enrich understanding of the 4 branches of Key Stage 3 mathematics. The last 3 terms of year 9 focus on preparing for an extended End of Key Stage 3 Assessment. Students study for two terms and then revise for one term before sitting three papers. This process builds students ability to retain and organise their key stage 3 knowledge over a longer time frame.

Key stage 4

Our Key Stage 4 curriculum intends to continue the development of all the areas of the mathematics curriculum encountered in Key Stage 3 with an additional strand covering vectors.

In Key Stage 4 problem-solving and reasoning skills are further developed and refined up to, and in many cases, beyond the standard required in GCSE Mathematics examinations.



The curriculum also recognises that in many cases GCSE Mathematics will be the final Mathematics qualification most students pursue and that the core numeracy, problem-solving, systematic deduction, critical reasoning and ability to interpret statistics acquired in Key Stage 4 are crucial to future employability and quality of life.

Key stage 4

The Key Stage 4 curriculum is divided into 3 carefully assembled modules of mutually reinforcing concepts. The year 10 modules last for 3 terms and conclude with a fortnight of revision before a comprehensive assessment split over 3 papers (1 non-calculator, 2 calculator). Year 11 commences with a module of work explicitly focussed on developing problem solving and application of knowledge to GCSE exam questions.

Year 10	Key Stage 4 Assessment 1 Percentages and Ratio Further Equations and Sequences Pythagoras & Trigonometry, Transformations and Angle Reasoning	Key Stage 4 Assessment 2 Numerical Problem Solving Functions, Inequalities and Graphs Vectors, Units, Area and Volume Charts & Graphs and Probability
	Key Stage 4 Assessment 3 Algebraic and Geometric Problem Solving Application of knowledge to GCSE style questions	Revision and Exam Preparation

Lesson resources are interspersed with content explaining the relevance of Mathematics topic to a broad range of further study and careers.

Allocated curriculum time

	Y9	Y10	Y11
Fortnightly lesson allocation	8	7	9

Year 9



	Intent
Unit 11 Number	<p>The intention of this unit is to consolidate knowledge from Key Stage 3 and to revise and refresh concepts that will underpin the End of Key Stage 3 Assessment and future Assessments in Key Stage 4.</p> <p>We want all students to become keen problem solvers and agile mathematical reasoners. This unit in particular develops these skills with:</p> <p>Reasoning with money, percentage profit or loss and interest in savings accounts</p> <p>Solving problems with a combination of fractions, percentages and ratio</p>
Unit 12 Geometry and Measure	<p>The intention of this unit is to consolidate knowledge from Key Stage 3 and to revise and refresh concepts that will underpin the End of Key Stage 3 Assessment and future Assessments in Key Stage 4.</p> <p>We want all students to become keen problem solvers and agile mathematical reasoners. This unit in particular develops these skills with:</p> <p>Multiple step angle reasoning problems</p> <p>Formal deductive reasoning with angles</p> <p>Multiple step Pythagoras' Theorem and trigonometry</p> <p>Real- life area and volume question s</p> <p>Loci and bearing problems</p>
Unit 13 Algebra	<p>The intention of this unit is to consolidate knowledge from Key Stage 3 and to revise and refresh concepts that will underpin the End of Key Stage 3 Assessment and future Assessments in Key Stage 4.</p> <p>We want all students to become keen problem solvers and agile mathematical reasoners. This unit in particular develops these skills with:</p> <p>Forming and solving linear equations from a variety of problems</p> <p>Setting up and solving simultaneous equations</p>
End of Key Stage	<p>The intention of this unit is to consolidate key concepts covered in Year 7, 8 and 9</p>

3 Assessment

whilst also setting students up for new concepts in the key stage 4 curriculum.

The areas of the key stage 3 curriculum that are consolidated are

Manipulation of fractions

Accurate drawing

Factors, multiples and primes

Standard form, powers and roots

Algebraic manipulation with brackets

Presenting and interpreting data in charts

The new concepts in this unit that foreshadow Key Stage 4 are

Angle reasoning with circles leading to Circle Theorems

Manipulation of surds

Recognition and features of non-linear graphs

Maths GCSE

Course

- Edexcel GCSE Mathematics (9-1) 1MA1

Exams

- Paper 1 (1h30m) Non-calculator – 80 Marks
- Paper 2 (1h30m) Calculator – 80 Marks
- Paper 3 (1h30m) Calculator – 80 Marks

Any topic can be assessed in any paper and may be assessed more than once

Tiers

- Higher Tier – Grades 9 to 4
- Foundation Tier – Grades 5 to 1
- The tier of entry is only finalised in January of Year 11, after the November mock

Homework

Homework will usually be set weekly. These will cover a mixture of current skills that have been worked on in class, and a revisit of topics from earlier in the year. They will alternate between a single page Knowledge Check and a longer double page fold-out task.

How Can I Help My Child

- Please ensure that students have all the correct mathematical equipment, including a scientific calculator (we recommend the Aurora AX595, which is available for purchase in school at a subsidy)
- Help with homework where necessary and do so in the student's book so that we can see. Support them to use the QR codes that are on all the homework sheets
- Encourage them to use the MET website - <https://met.midsomernortonschoolspartnership.com/> using the QR codes below. The MET website provides links to other Maths revision sites.
- Many students find Revision Guides useful throughout Key Stage 4 (these are available to buy through Parent Pay at a reduced price)

Year 10 Maths

Term	Unit
1/2 /3	<p>Assessment focus 1</p> <p>The intention of this unit is to build on and increase the level of rigour in students' mathematical understanding from Key Stage 3, whilst introducing new Key Stage 4 concepts.</p> <p>Students develop a flexible understanding of percentage multipliers to solve a range of abstract and financial problems</p> <p>Students extend their understanding of transformations to include negative scale factors, invariant points and transformations of graphs.</p> <p>Students extend their algebraic manipulation to algebraic fractions and their equation solving to simultaneous equations.</p> <p>Students extend their trigonometric reasoning and problem solving to non-right-angled triangles.</p> <p>Students extend their ratio and proportional reasoning to formulae for direct and inverse proportion</p> <p>Students extend their angle reasoning to proving congruency and appreciate the links with trigonometry.</p> <p>Students extend their reasoning with rounding to upper and lower bound calculations</p>
4/ 5/ 6	<p>Assessment focus 2</p> <p>The intention of this unit is to build on and increase the level of rigour in students' mathematical understanding from Key Stage 3, whilst introducing new Key Stage 4 concepts.</p> <p>Students extend their numerical reasoning to algebraically prove results about odd, even and consecutive numbers.</p> <p>Students extend their understanding of formulae to function notation and composite and inverse functions. As well as how an iterative formula can produce approximate solutions to equations</p> <p>Students extend their graphical understanding to calculate and interpret the gradient and area under curved graphs.</p> <p>Students develop an understanding of column vectors and diagrammatic and algebraic manipulation of vectors.</p> <p>Students look at the full range of area and volume formulae and solve geometric problems that lead to linear or quadratic equations.</p> <p>Students extend their knowledge of charts and measures of location and spread to cumulative, frequency, box-plots and histograms.</p> <p>Students extend their probabilistic reasoning to look at combinations of independent and conditional events.</p>

Y11 Maths

Term	Unit
1-3	<p>Assessment focus 3</p> <p>The intention of this unit is to start the process of readying students for the GCSE Mocks and exams.</p> <p>There is no new content in this unit, instead students focus on a collection of problem solving strategies that will help them with a broad range of high frequency exam questions.</p>
4	Revision and exam preparation