Cartmel Priory C of E School

‘I have come that you may have life and live it to the full’ John 10:10

KS3 Curriculum
Order for teaching topics may vary between sets as gaps in learning are identified. Adaptive teaching ensures lack of fluency in prior maths knowledge is addressed through responsive teaching.

Year 7 – Basic Skills
Year 7 students need to recap basic arithmetic skills which are usually well embedded through KS2 SATS preparation. To address arithmetic skills ‘Do Now Activities’ are a regular feature of maths lessons to support students in practice of techniques. The maths department use a common approach to calculations. Students are tested formally every term both on maths content, problem solving and arithmetic. Students identified as requiring greater fluency in multiplication tables are expected to regularly use the online package Times Tables Rock Stars to improve these essential skills.

Year 8 and 9 – Content
Any gaps in curriculum content and in comprehension due to online learning and missed opportunities to strengthen knowledge and understanding through peer discussion are being addressed as follows: ‘Do Now Activities’ are a regular feature of maths lessons used to recap prior knowledge as well as to practise basic arithmetic skills. Timing and content of the current scheme of work may vary between sets to give more focussed support. Students are tested formally in the Autumn and Spring terms on maths content, problem solving and arithmetic.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Number Rounding Negative numbers Fractions Decimals Percentages **CALCULATIONS TEST**	Ratio Proportion Probability Bar charts Pie charts Averages Venn Diagrams	**TEST** BIDMAS Using a calculator Collecting terms Brackets Substitution Equations Area and volume	Angles 2D shapes Measures Coordinates Sequences Squares Cubes Roots **EXAMS**	Multiples Factors Primes Constructions 3D Shapes Surface area Volume	Real life graphs Speed distance and time Straight line graphs 2D Shapes Transformations
8	Number Fractions Decimals Percentages Algebra review Area & volume	**TEST** Factors Multiples Primes Squares Cubes Roots Sequences Constructions	Straight Line Graphs Angles Probability Circles	Proportional reasoning **EXAMS**	Averages Statistical Graphs Measures Bearings Scale drawings Loci	Standard Form Real life graphs Speed distance and time Plans & elevations Transformations
9	Estimation Approximation Angles Pythagoras Circles Trigonometry (Higher only) Fractions **TEST**	Constructions Loci Sequences Algebra: Equations Brackets Factorising Straight line graphs Inequalities	Simultaneous equations Indices Plotting curves Data: Averages Frequency tables Graphs	Proportional reasoning Standard form **EXAMS**	Units of measure Compound measures: Speed Density Pressure	**GCSE commences** **Statistics 1** (charts, graphs) **Statistics 2** (scatter graphs) **Statistics 3** (averages, spread) **Statistics 4** **Higher only:** Box plots cumulative frequency

KS4 Curriculum

Quality first teaching ensures lack of fluency in prior maths knowledge is addressed through responsive teaching. Regular informal assessment takes place and timings and order of teaching the scheme of work is adjusted accordingly to support students learning.

10 F	**Statistics 1** (charts, graphs) **Statistics 2** (scatter graphs) **Statistics 3** (averages, spread) **Statistics 4** (project)	**Number 1** (basic skills) **Number 2** (factors multiples primes) **Number 3** (decimals,bounds) **Number 4 and 5** (four rules with fractions)	**Ratio 1** (percentages) **Geometry 1** (similarity, congruence) **Algebra 1** (basics) **Algebra 2** (brackets,factorise quadratics)	**Algebra 3** (linear equations) **Algebra 4** (formulae, substitution) **Ratio 2** (direct and inverse proportion)	**Geometry 2** (angle facts) **Geometry 3** (properties of shape) **Geometry 4** (perimeter, area) **Geometry 5** (circles)	**Number 6** (compound measures, travel graphs) **Geometry 6** (volume, surface area) **Geometry 7** (plans, elevations)
10 H	**Statistics 1** (charts, graphs) **Statistics 2** (scatter graphs) **Statistics 3** (averages, spread) **Statistics 4** (box plots cumulative frequency)	**Number 1** (basic skills) **Number 2** (factors multiples primes) **Number 3** (bounds) **Number 4 and 5** (fractions) **Ratio 1** (percentages) **Geometry 1** (similarity, congruence) **Algebra 1** (basics) **Algebra 2** (brackets,factorise quadratics)	**Algebra 3** (linear equations) **Algebra 4** (formulae, substitution) **Ratio 2** (direct and inverse proportion) **Geometry 2** (angle facts) **Geometry 3** (properties shape) **Geometry 4** (perimeter, area) **Geometry 5** (circles)	**Geometry 6** (circle theorems) **Number 6** (compound measures, d/t graphs)	**Geometry 6** (volume and surface area) **Geometry 7** (plans, elevations) **Geometry 8** (constructions and loci)	**Geometry 9** (transformations) **Ratio 3** (ratio)
11 F	**Geometry 8** (constructions and loci) **Geometry 9** (transformations)	**Ratio 3** (ratio) **Number 7** (standard form) **Geometry 10** (Pythagoras and trigonometry) **Algebra 5** (coordinates) **Algebra 6** (linear graphs and y = mx + c)	**Algebra 7** (simult equations) **Algebra 8** (inequalities) **Number 8** (indices) **MOCKS**	**Algebra 9** (graphs and turning points) **Algebra 10** (cubic, reciprocal, trig graphs)	**Probability 1** (sets and Venn diagrams) **Probability 2** (sample space, tree diagrams) **Statistics 6** (sampling) **Algebra 11** (sequences)	**Geometry 13** (vectors) **Algebra 12** (functions)
11 H	**Number 7** (standard form) **Geometry 10** (Pythagoras and trigonometry) **Geometry 11** (3D Pythagoras and trigonometry)	**Geometry 12** (sine, cosine rule) **Algebra 5** (coordinates) **Algebra 6** (linear graphs and y = mx + c) **Algebra 7** (simult equations) **Algebra 8** (inequalities) **Number 8** (indices, surds)	**Algebra 9** (graphs and turning points) **Algebra 10** (cubic, reciprocal, trig graphs) **Probability 1** (sets and Venn diagrams) **MOCKS**	**Probability 2** (sample space, tree diagrams) **Statistics 6** (sampling) **Algebra 11** (sequences)	**Geometry 13** (vectors) **Algebra 12** (gradient, area under curves) **Statistics 7** (histograms) **Algebra 13** (iteration)	**Algebra 14** (functions) **Algebra 15** (quadratic simultaneous equations and circles) **Algebra 16** (curve transformations)
	https://qualifications.pearson.com/content/dam/pdf/GCSE/mathematics/2015/specification-and-sample-assesment/gcse-maths-2015-specification.pdf					

Structure of the maths curriculum

Our intent in maths is to provide a well-rounded mathematical curriculum which enables students to perform to their potential with confidence. We teach the National Curriculum which provides clear skills and knowledge progression. Skills and knowledge are sequenced appropriately to maximise learning for all children and this is built on year by year. Numeracy underpins all strands of the maths curriculum so this is delivered first in each year group. There is great emphasis on arithmetic processes at Key Stage 3; numerous students have experienced loss of proficiency in basic skills through the impact of the pandemic.

The Key Stage 4 curriculum is designed to build upon skills learnt at Key Stage 3. On commencing GCSE students follow one of two pathways: the foundation tier or the higher tier scheme of work. All students will sit the Edexcel GCSE Mathematics. Entry level is offered alongside GCSE for students who struggle to access GCSE content.

The schemes of work relate through the sequencing of concepts and methods so that previously knowledge can be linked to new learning, helping students to recap and build on skills acquired. For example, student's knowledge of coordinates in Year 7 will be used again in Year 8 when students plot straight line graphs then in Year 9 knowledge of graphs is extended to quadratic and cubic curves. At GCSE coordinate and graphs skills from Key Stage 3 extend to roots and turning points of quadratic graphs. Students consolidate learning through using and applying their maths in a variety of contexts.

Lesson structure:

Lessons begin with a "Do Now Activity" which is revisits prior content taught. Homework is used to consolidate content taught in class and teaches students to work independently.

Regular practise of key skills is essential for students to make progress as well as gain confidence in familiarity of topics. Repeat practice helps skills to become routine and knowledge to be transferred to long term memory there by supporting exam technique. Problem solving is a skill to be developed when basic knowledge is secured.

Assessment

Teachers assess students' understanding in a variety of ways throughout lessons to identify those students who are able to start independent work and those whom need extra support. Students use peer and self-assessment throughout lessons to gain immediate feedback and to gauge progress. Students complete weekly homework which is closely monitored by the teacher. Students are formally assessed at each reporting period. Tests are designed to recap a variety of topics from previous learning and to provide an element of challenge through some problem solving and embedded questions. At Key Stage 3 students complete a termly arithmetic test to monitor development of basic numeracy skills. Once in Year 11 students' homework is revision and exam preparation in the form of weekly GCSE practice papers.

Enrichment
Higher ability students work through the curriculum at much greater depth, they do not fast track.
The individual UKMT Maths Challenges are available to the most able students in KS3 and KS4.
In Year 10 two students are selected to attend the Royal Institution of Mathematics Masterclasses at Lancaster University which present an opportunity to explore advanced maths and statistics.
In Year 11 girls attend The Florence Nightingale Day hosted by Lancaster University to specifically promote the participation of women in mathematics and statistics.
Partnered with Axiom Maths we run “maths circles” for able students to immerse themselves in recreational maths helping them to realise the potential of their powerful mathematical ability.

Support
There is Homework Club at lunchtimes to ensure students who need to, gain access to support with homework and do not struggle on their own.
Students who are unable to perform quick recall of timetables are placed on Times Tables Rock Stars for further support. There is great emphasis on and encouragement to learn times tables as without them students will struggle to access the wider curriculum such as adding fractions and area of shapes.
Maths lessons are inclusive to all students. Teachers anticipate the needs of all individuals, using seating plans, demonstrating correct worked examples for students to follow and scaffolding worksheets to assist access where necessary.
Maths teachers offer ‘drop in’ sessions at lunchtimes for students requiring additional support.

Linking the study of maths to Primary
We have strong links with our cluster Primary schools. The Maths Faculty Lead meets annually with Primary Maths Coordinators and Year 6 teachers to liaise with Year 6 to Year 7 maths transition and to understand their maths journey. Cartmel Priory delivers CPD on a common approach to teaching calculations (and some algebra skills) to promote confidence and to provide support for students on their maths learning journey.

Linking the study of maths to Post 16 and the workplace
By linking maths to real life problems students are able to understand the importance of mathematics in the world in which we live and the potential it has within many career options. We reference cross-curricular links to other GCSE subjects such as compound measures like mass, density, volume and speed, distance, time in science as well as presentation and interpretation of data in geography. We foster links with Post 16 establishments to encourage students to study maths related courses beyond Cartmel. The curriculum is mapped to Gatsby benchmarks and teachers relate much the curriculum to the relevance of maths in the world of work referring to the many and varied careers which rely on mathematical knowledge and skills.