Year/ time	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	<u>Making generalisations about the number system 1</u> Numbers and numerals Axioms and arrays Factors and multiples Order of operations A good understanding of number and algebra underpins all processes in mathematics. As such, our focus this half term is about building on the number skills learnt in primary school to develop fluency and ensure solid foundations are in place using, following and amending the Mathematics Mastery approach and programme for our students	<u>Making generalisations about the number system 2</u> Positive and negative numbers Expressions, equations and inequalities Pupils continue to develop their number skills, applying them to new contexts. We also start to apply skills to the essential concepts of algebra which underpins all aspects of pure mathematics developing students ability to reason and express themselves using abstract notation.	<u>2D geometry</u> Angles Classifying 2D shapes Area of 2D shapes Coordinates The focus for this term is geometry. All of the number and algebra skills which have been studied so far this year, can now start to be applied to topics such as perimeter, area and volume as well as angles in different 2D shapes. We also start to introduce problem solving skills when looking at complex geometric problems at the end of each topic.	<u>The Cartesian plane</u> Transforming 2D figures Constructing triangles and quadrilaterals Students continue to develop their understanding of geometry and shape and space by developing the understanding of the Cartesian plane and representing shapes using this method. In addition, qualities of 2D shapes are explored further allowing students to construct shapes (looking at different polygons when challenging and extending the most able).	<u>Fractions</u> Prime factor decomposition Conceptualising and comparing fractions Manipulating and calculating with fractions Pupils continue to develop their number skills, whilst applying them to new contexts such as fractions, learning to manipulate and calculator with fractions. We also look at prime factorisation as the system in which all numbers can be constructed and formed (extending this to prime numbers and prime factorisation).	<u>Ratio and proportion</u> Ratio Percentages We start to apply number skills to the essential concepts of ratio and proportion which are essential for developing mathematical reasoning skills. We end this half term by starting to look at some real-world applications of mathematics through problem solving and word problem tasks.

8	<u>Fractions and percentages</u> Prime factorisation Conceptualising and comparing fractions, all operations acting on fractions, percentages We revisit the essential number skills of fractions and percentages, whilst extending to more complex topics which also start to bring in more complex word problems and real life problems	<u>Equations and inequalities</u> Percentage operation Sequences Forming and solving equations and inequalities We revisit the algebra topics before extending this to solving inequalities and equations that were first met in Year 7. Pupils will recap the basic skills, before deepening their understanding by applying them to more challenging topics. In addition, time is taken to recap on sequences, looking at forming algebraic sequences.	<u>Proportional reasoning</u> Ratio Real life graphs and rates of change Direct and inverse proportion We revisit the essential number skills of ratio and proportion, whilst extending to more complex topics. Students will also extend this to representing these on graphs and solving real-life problems. Pupils will also start to look at more complex ideas within proportion, looking at direct and inverse proportionality.	<u>Graphical representations</u> Transforming 2D Figures Coordinates and linear graphs Real life graphs Rate of change We revisit the topics studied at in Year 7, but start to apply them to more complex situations, building on the 3D work that was introduced previously for example by studying transformations of 2D objects. More work is completed on interpreting and analysing real life graphs which are then used to extend understanding and ideas related to rates of change.	<u>Data</u> Univariate data bivariate data Accuracy and estimation The focus of this half term, is applying the number skills developed so far to real-life contexts through the topics of compound measures, data and statistics. Pupils further develop an understanding of how statistics and graphs can be used in the real-world to analyse and represent data. Students are also introduced to methods of rounding and problems using estimation in their calculations.	<u>Area, volume and surface area</u> Circles and composite shapes Volume of prisms Surface area of prisms We revisit the geometry topics which were first met in Year 7. The emphasis is on building on the basic skills and formulae that were learnt, whilst bringing in more complex concepts such as algebra, and linking back to solving equations formed from geometric problems as well as developing basic awareness of circles, volume and surface area of 3D shapes.
9	Coordinates, midpoints, and linear graphs (including	Sequences Algebraic reasoning Expanding and	Circles: parts, circumference, and area	Ratio review, real life graphs, solving linear	Probability including Venn diagrams Averages	Transformations, similarity, quadratics review and solving

	parallel and perpendicular) Proportion (direct and inverse) Conversion graphs Standard form, rounding, estimation and accuracy We revisit the coordinate work and estimation/accuracy topics from Year 7 and Year 8, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts.	factorising (linear and quadratics) Rearranging formula and solving linear equations We revisit the number and algebra topics from Year 7 and Year 8, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts such as rearranging algebraic formulae and solving algebraic equations (which can involve algebraic fractions).	3D shapes including plans and elevations, surface area and volume. Angles review, solving linear equations review, inequalities and solving inequalities We revisit the geometry topics from Year 7 and Year 8, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts such as problems involving circles and forming algebraic equations from geometric problems.	simultaneous equations graphically Constructions, congruence and loci Pythagoras theorem Review of key topics in preparation for spring term assessments We revisit the algebra topics from Year 7 and Year 8, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts such as solving simultaneous equations. In addition, at the end of this half-term, we re-visit geometry, this time specifically looking at right-angled triangles and the topics of Pythagoras' Theorem.	including calculating from tables, scatter graphs, correlation, and causation We revisit the statistics, data handling and analysis work from Year 7 and Year 8, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts especially looking at the ideas of causation vs. Correlation, and using estimation from graphs to solve real-world problems.	quadratic equations by factorisation and trigonometry Review of key topics in preparation for end of year assessments We revisit the algebra work from Year 7 and Year 8 as well as earlier on in Year 9, aiming to recap the basic skills that were learnt and build fluency, before studying each topic to a greater depth, thus improving understanding and providing the opportunity to tackle more challenging concepts. In addition, at the end of the year, we re-visit geometry, this time looking at and developing our understanding of right-angled triangles and the topic of Trigonometry.

10	**Higher tier** Calculations, checking and rounding Indices, roots, reciprocals and hierarchy of operations, Factors, multiples, primes, standard form and surds Algebra: the basics, setting up, rearranging, and solving equations Sequences **Foundation tier** Integers and place value Decimals Indices, powers and roots Factors, multiples and primes Algebra: the basics Expressions and substitution into formulae Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more	**Higher tier** Averages and range Representing and interpreting data and scatter graphs Fractions and percentages Ratio and proportion **Foundation tier** Tables, charts and graphs Pie charts Scatter graphs Fractions, decimals and percentages Percentage Equations and inequalities Sequences Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more basic skills, before	**Higher tier** Polygons, angles and parallel lines Pythagoras' Theorem and trigonometry Perimeter, area and circles 3D forms and volume, cylinders, cones and spheres Accuracy and bounds **Foundation tier** Statistics, sampling and the averages Properties of shapes, parallel lines and angle facts Interior and exterior angles of polygon Perimeter, area and volume Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more basic skills, before	**Higher tier** Graphs: the basics and real-life graphs Linear graphs and coordinate geometry Quadratic, cubic and other graphs Transformations Constructions, loci and bearings **Foundation tier** Real-life graphs Straight-line graphs Transformations Ratio Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more basic skills, before	**Higher tier** Probability Multiplicative reasoning Similarity and congruence in 2D and 3D Graphs of trigonometric functions Further trigonometry **Foundation tier** Proportion Right-angled triangles: Pythagoras and trigonometry Probability Multiplicative reasoning Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more basic skills, before	**Higher tier** Collecting data Cumulative frequency, box plots and histograms Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics **Foundation tier** Multiplicative reasoning Plans and elevations Constructions, loci and bearings Quadratic equations: expanding and factorising Quadratic equations: graphs Throughout Year 10 the same topics are studied as in Key Stage 3, with an aim to recapping the more basic skills, before

	basic skills, before moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.	moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.	moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.	moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.	moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.	moving on to applying the concepts to more challenging contexts and the next and new level of complexity studied at a GCSE level. By revisiting and reviewing each topic, our students will form stronger links between topics, and become more confident in applying their skills to unfamiliar situations and to real-life problem-solving questions.
11	**Higher tier** Algebraic reasoning Linear Graphs, Other Graphs **Foundation tier** Area and Volume Transformations	**Higher tier** Sequences, bounds and iterations Data representation **Foundation tier** Fractions	**Higher tier** Pythagoras Trigonometry Data representation Surds **Foundation tier**	**Higher tier** Percentages Ratio and proportion Circle Theorems Circle Graphs Vectors Constructions and loci Probability **Foundation tier** Transformations	**Higher tier** Angle review Revision through to GCSE exams **Foundation tier** Revision through to GCSE exams	

	Pythagoras Trigonometry Types of number including use of Venn diagrams for PFD Throughout Year 11 the same topics are studied as in Year 10, but at a faster pace to ensure there is plenty of time for revision during half term 5 to prepare for the exams at the end of the year. There is a continued aim of ensuring that strong foundations are in place for each topic, before building on these with ever-increasing depth and a particular focus on application to unfamiliar contexts and developing problem-solving techniques.	Percentages Linear Graphs Throughout Year 11 the same topics are studied as in Year 10, but at a faster pace to ensure there is plenty of time for revision during half term 5 to prepare for the exams at the end of the year. There is a continued aim of ensuring that strong foundations are in place for each topic, before building on these with ever-increasing depth and a particular focus on application to unfamiliar contexts and developing problem-solving techniques.	Ratio and Proportion (including conversion graphs) Standard Form Perimeter and Area including circles Angle review Algebraic reasoning Throughout Year 11 the same topics are studied as in Year 10, but at a faster pace to ensure there is plenty of time for revision during half term 5 to prepare for the exams at the end of the year. There is a continued aim of ensuring that strong foundations are in place for each topic, before building on these with ever-increasing depth and a particular focus on application to unfamiliar contexts and developing problem-solving techniques.	Constructions and loci Data representation Probability Throughout Year 11 the same topics are studied as in Year 10, but at a faster pace to ensure there is plenty of time for revision during half term 5 to prepare for the exams at the end of the year. There is a continued aim of ensuring that strong foundations are in place for each topic, before building on these with ever-increasing depth and a particular focus on application to unfamiliar contexts and developing problem-solving techniques.	In this half term, the focus shifts to revision, to ensure that students are fully prepared for their GCSE exams at whichever tier of entry best suits their needs and their opportunity to achieve the best rest. Students complete weekly mocks which their teachers mark and give feedback of areas of strength and areas which need more focus. These areas are then targeted through revision lessons as well as intervention to ensure that students become more confident and able to tackle examination-style questions.	