STANTONBURY
SCHOOL

Edexcel (9-1)

Mathematics- Foundation, Higher and Middle

Scheme of learning

STANTONBURY SCHOOL

Scheme of learning

In Year 8 students will continue to deepen their understanding of topics taught in Year 7 and at primary school. For example, their work on algebraic expressions will be extended to include index laws, expanding double brackets and factorising. Students will also further their understanding of percentages by learning methods involving decimal multipliers, and continue to work with the fundamental concepts of ratio and proportion that were first introduced at primary school. In Year 8, students will be introduced to new and exciting mathematical concepts which draw on previously taught skills and knowledge. For example, Pythagoras' Theorem uses powers, roots, substitution, equations and rounding to calculate missing lengths in right angled triangles. These topics give students the opportunity to develop their critical thinking skills and their ability to answer more complex problem-solving questions. In Year 8 students will also extend their knowledge of number systems, meeting their first irrational number: π. Calculator use will feature heavily throughout the year. In preparing students for the work there will be doing in Year 9, they will be introduced to some of these topics towards the end of summer 2. It is expected that topics that were a bit more challenging to students, judging from assessment data, will be reviewed. This will ensure the embedding of skills for later work they will meet.

TERM	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
AUTUMN 1 FOUNDATION Week 1-3				
3 Weeks (12 hours)	**1 Number properties and calculations** 1.1 Adding and subtracting with larger numbers 1.2 More calculations 1.3 Negative numbers	1. Add and subtract larger numbers. 1. Multiply larger numbers 1. Use brackets. 2. Add and subtract with negative numbers.	Building on… Arithmetical operations at Key Stage 2. Students will revisit and deepen their understanding of written methods of arithmetic and the order of operations Building on …. Solving problems that involve unequal sharing and grouping using knowledge of fractions and multiples at Key Stage 2.	N2 N3 R4 R5 R6 R7 R8 R10

	1.4 STEM: Writing ratios 1.5 Using ratios to solve problems 1.6 Multiplicative reasoning	1. Multiply and divide negative numbers. 1. Work with ratios 1. Find equivalent ratios. 2. Solve simple word problems involving ratio. 3. Use proportion to solve simple problems. 1. Use proportion to solve simple problems.	Building towards… Application of ratios to geometrical, statistical and numerical problems at Key Stage 4.	
		Learning Checkpoint 1 **Unit 1 : End of Unit Assessment and Feedback**		

AUTUMN 1 FOUNDATION **TOPIC** **WEEk 4-6**		**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
3 Weeks (12 hrs)	**2 Shapes and measures in 3D** 2.1 3D solids 2.2 Nets of 3D solids	1. Recognise and name 3D shapes. 2. Count faces edges and vertices. 3. Deduce properties of 3D shapes from 2D representations 1. Identify nets of 3D solids including cubes and cuboids.	Building on… The area of 2D shapes covered at Key Stage 2 and in Year 7, plus areas of circles covered earlier in Year 8. This unit also draws on other previously taught skills including substitution, equations and rounding. Building towards… Answering questions that require the application of volume and surface area in various contexts in Key	N13 R1 G1 G2 G12 G13 G14 G16 G17

	2.3 Surface area 2.4 Volume 2.5 Working with measures	2. Draw nets of 3D solids using a ruler and protractor 1. Calculate the surface area of cubes and cuboids. 1. Find the volume of a cube or cuboid by counting cubes. 2. Know the formula for calculating the volume of a cube or cuboid. 1. Solve problems involving units of length, area and capacity. 1. Convert between cm^3 and litres.	Stage 4 as well as working with area and volume of similar shapes. Building on… This unit pulls together multiple units that were covered throughout Years 7 and 8 such as fractions, proportion, substitution, units and solving equations. Students will also have to round answers to a specified number of significant figures or decimal places, as taught in the previous unit. Building towards… Further work on compound measures in physics at Key Stage 3 and 4. Plus working with kinematic graphs at Key Stage 4 in maths	
	Half Term	**Learning Checkpoint 2 Unit 2: End of Unit Assessment and Feedback**		

AUTUMN 2 FOUNDATION Week 7-10 TOPIC		CORE LEARNING	SEQUENCING	SPECIFICATION LINK
3 weeks (12 hrs)	**3 Statistics** 3.1 Data collection sheets 3.2 Interpreting bar charts 3.3 Drawing bar charts 3.4 STEM: Pie charts	1. Design a data collection sheet 2. Group data into equal class intervals. 1. Interpret complex bar charts. 1.Draw bar charts for more than one set of data. 3.4 STEM: Pie charts	Building on… Interpreting and presenting data using bar charts and time graphs at Key Stage 2. Building towards… Constructing and interpreting statistical diagrams including scatter graphs, pie charts, box plots, histograms and cumulative frequency curves	S2 S4
		Learning Checkpoint 3 **Unit 3 : End of Unit Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
AUTUMN 2 FOUNDATION Week 11-13				
3 Weeks (12 hrs)	**4 Expressions and equations** 4.1 Simplifying expressions 4.2 Functions 4.3 Solving equations 4.4 Using brackets	1. Simplify expressions by collecting like terms. 1. Find outputs and inputs of function machines. 2. Construct functions. 1. Solve simple equations and	Building on… The laws of arithmetic introduced at Key Stage 1 and 2. Building towards… Writing algebraically and manipulating expressions are fundamental skills	A1 A2 A3 A4 A5 A6 A7

		check the solution is correct. 2. Understand the difference between an expression and an equation, and identify the unknown in an equation. 1. Use brackets with numbers and letters	that underpin a large proportion of secondary mathematics.	
	END OF TERM 1 TEST	**Learning Checkpoint 4 Unit 4 : End of Unit Assessment and End of Term Test and Feedback**		

WEEK	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 1 FOUNDATION **Week 14-16**				
3 Weeks **(12 hrs)**	**5 Decimal calculations** 5.1 Adding and subtracting decimals 5.2 Multiplying decimals 5.3 Ordering and rounding decimals 5.4 STEM: Problem-solving with decimals	A core and consistent trajectory through	Building on… Number work and operations with decimals in Year 6 Building towards… This unit covers a fundamental skill that is needed for many other units covered throughout Key Stage 3 and 4.	**N1 N2 N13 N15 R2 G14**

		s. Multiply decimals. Rounddecima		

		ls. Order decimals solve problems involv		

		ingcecinals.		
		LearningCheckpoint5Unit5:E		

		End of Unit Assessment and Feedback		
SPRING 1 FOUNDATION TOPIC SEQUENCING **Week 17-19**	**CORE LEARNING**	**SPECIFICAT**		

				I O N L I N K
3 weeks **(12 hrs)**	**6 Angles** 6.1 Measuring and drawing angles 6.2 Vertically opposite angles 6.3 Angles in triangles 6.4 Drawing triangles accurately 6.5 Designing nets	1. Use a protractor to measure and draw obtuse and reflex angle 2. Estimate the size of reflex angles. 1. Use vertically opposite angles. 1. Work out the size of unknown angles in a triangle. 1. Accurately draw triangles using a ruler and protractor.	Building on… Understanding angles as a measure of turn at Key Stage 2, as well as using a protractor to measure angles and using angle facts to solve angles problems. We will also draw on equation solving skills learnt earlier in Year 7. Building towards … Angles in parallel lines in Year 8, angles in polygons and bearings in Year 9, and circle	**G 1 G 2 G 3 G 6**

		1. Accurately draw a net of a 3D shape. 2. Investigate the sides of a right-angled triangle.	theorems in Year 11.	
	HALF TERM TEST	**Learning Checkpoint 6 Unit 6 : End of Unit Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 2 FOUNDATION				
WEEK 20-22 3 Weeks	**7 Number properties** 7.1 Squares, cubes and roots 7.2 Calculating with brackets and indices 7.3 LCM and HCF 7.4 Prime factor decomposition	1. Use the lowest common multiple (LCM) and highest common factor (HCF) to solve problems. Calculate squares and square roots, mentally and using a calculator. 1. Calculate cubes and cube roots, mentally and using a calculator. 2. Carry out calculations involving brackets and square numbers. 3. Use the brackets keys on a calculator. 4. Use index notation. 1. Find the factor pairs of any whole number 2. Use the lowest common multiple (LCM) and highest common factor (HCF) to solve problems.	Building on… Work on factors and multiples down at primary school, plus prime factorisation and divisibility laws taught in Year 7. Building towards… Algebraic HCF and LCM, plus more complex problem solving at Key Stage 4.	N2 N3 N4 N6

		1. Find the prime factor decomposition of a number less than 100		
	END OF HALF TERM TEST	**Learning Checkpoint 6** **Unit 6 End of Unit Assessment and Half Term and Feedback**		
Week	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
SUMMER 1 FOUNDATION **WEEK 23-26**				
3 Weeks (12 hrs)	**8 Sequences** 8.1 Generating sequences 8.2 Extending sequences 8.3 Special sequences 8.4 Position-to-term rules	1. Recognise, describe and continue number sequences 2. Find and use pattern and term-to-term rules. 1. Use the term-to-term rule to work out terms in a sequence 2. Recognise an arithmetic sequence 3. Describe sequences arising in real life. 1. Describe and continue special sequences 2. Recognise a geometric sequence. 1. Generate terms of a sequence using the position-to-term rule.	Building on… Patterns and sequences introduced at Key Stage 2, plus algebraic expressions and substitution taught in Year 7. Students will also work with sequences involving fractions decimals and negative numbers. Building towards… Quadratic sequences at Key Stage 4	A23 A24 A25

WEEK 27-29	8.5 Finding the nth term	1. Find the nth term of a simple sequence.		
3 Weeks (12 hrs)	**9 Fractions and percentages** 9.1 Comparing fractions 9.2 Fractions of amounts 9.3 Adding and subtracting fractions 9.4 Fractions and percentages 9.5 Calculating percentages	1. Compare fractions. 2. Simplify fractions. 3. Identify equivalent fractions. 1. Calculate with fractions mentally. 2. Calculate fractions of quantities. 3. Multiply a fraction by a whole number. 1. Add and subtract fractions. 2. Write a number as a fraction of another number 1. Change between fractions and percentages. 2. Calculate percentages.	Building on… Work on percentages at Key Stage 2 and in Year 7. Building towards Building towards …. Compound percentage change in Year 9, and growth and decay at Key Stage 4.	N1 N2 N8 N11 N12 R3 R9

	9.6 STEM: Percentages and proportion	1. Compare proportions using percentages. 2. Write one number as a percentage of another number.		
	Half Term Test	**Learning Checkpoint 9** **Unit 9 : End of Unit Assessment and Feedback**		
Week	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
SUMMER 2 FOUNDATION WEEK 30-31				
3 Weeks (12 hrs)	10 Probability 10.1 The language of probability 10.2 Outcomes 10.3 Probability calculations 10.4 Experimental probability	1. Use the language of probability. 2. Use a probability scale with words and numbers. 3. Write probabilities as fractions, decimals and percentages 1. Find all the possible outcomes of an event. 2. Use equally likely outcomes to calculate probabilities. 1. Learn and use probability notation.	Building on… Basic probability concepts and the probability of single events covered in Year 7. Building towards… More complex probability problems at Key Stage 4.	**P1 P3 P4**

	10.5 FINANCE: Comparing probabilities	2. Calculate the probability of an event not happening. 1. Find all the possible outcomes of two simple events. 2. Use data from an experiment to estimate probabilities. 3. Collect data from an experiment, and make calculations based on results. 1. Compare and interpret probabilities.		
	END OF YEAR TESTS	**Learning Checkpoint 10 Unit 10: End of Unit Assessment and Feedback**		
Week 32-34	**Review and introduction of Year 9 and KS4 topics**			

HIGHER

TERM	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
AUTUMN 1	**HIGHER WEEK 1-2**			
2 Weeks (8 hours)	**1 Factors and powers** 1.1 Prime factor decomposition 1.2 Laws of indices 1.3 STEM: Powers of 10	1. Write the prime factor decomposition of a number. 2. Use prime factor decomposition to find the HCF or LCM or two numbers. 1. Work out the laws of indices for positive powers. 2. Show that any number to the power of zero is 1. 3. Use the laws of indices for multiplying and dividing. 1. Use and understand powers of 10. 2. Use the prefixes associated with powers of 10.	Building on… Work on factors and multiples down at primary school, plus prime factorisation and divisibility laws taught in Year 7. Building towards… Algebraic HCF and LCM, plus more complex problem solving at Key Stage 4.	N2 N4 N6 N7 N14 N15

	1.4 Calculating and estimating	3. Understand the effect of multiplying and dividing by any integer power of 10. 1. Calculate with powers. 2. Round to a number of significant figures.		
		Learning Checkpoint 1 **Unit 1 : End of Unit Assessment and Feedback**		

AUTUMN 1 HIGHER **Week 3-5**	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
3 Weeks (12 hrs)	**2 Working with powers** 2.1 simplifying expressions 2.2 More simplifying 2.3 Expanding and simplifying	1. Simplify expressions involving powers and brackets 2. Understand the meaning of an identity. 1. Use the index laws in algebraic calculations and expressions. 2. Simplify expressions with powers.	Building on… Building towards…	A1 A3 A4 A6

	2.4 Substituting and solving	1. Write and simplify expressions involving brackets and powers 2. Factorise an algebraic expression. 1. Substitute integers into expressions. 2. Construct and solve equations.		
	Half Term	**Learning Checkpoint 2** **Unit 2: End of Unit Assessment and Feedback**		

AUTUMN 2 HIGHER **Week 6-8**	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
3 weeks (12 hrs)	**3 2D shapes and 3D solids** 3.1 Plans and elevations 3.2 Surface area of prisms	1. Use 2D representations of 3D solids 2. Sketch nets of 3D solids. 1. Sketch nets of 3D solids	Building on… Building towards…	**G6 G9 G11 G13 G16 G17 G20**

		2. Calculate the surface area of prisms.		
	3.3 Volume of prisms	1. Calculate the volume of right prisms.		
	3.4 Circumference of a circle	1. Name the different parts of a circle. 2. Calculate the circumference. 3. Calculate the radius or diameter when you know the circumference.		
	3.5 Area of a circle	1. Calculate the area of a circle. 2. Calculate the radius or diameter when you know the area.		
	3.6 Cylinders	1. Calculate the volume and surface area of a cylinder.		
	3.7 Pythagoras' theorem	1. Use Pythagoras' theorem in right-angled triangles.		

		Learning Checkpoint 3 Unit 3 : End of Unit Assessment and Feedback		

WEEK	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
AUTUMN 2 HIGHER Week 9-10				
3 Weeks (12 hrs)	**4 Reallifegraphs** 4.1Di	1. Recognise when values are in direct proportion. 2. Plot graphs and read values to solve problems. 1. Interpret graphs from different sources.	Building on.. Student	**A8 A9 A10 R10 R14 R15**

	rectproportion 4.2FINANCE: Interpre	2. Understand financial graphs. 1. Draw and interpret distance –time graphs. 2. Use distance –time graphs to solve problems. 1. Interpret graphs that are curved. 2. Interpret real-life graphs. 1. Understand when graphs are misleading.	sdialotofworkonproportionatKeySt	

	tingfinancialgraphs 4.3Distance-time		age2,bothdirectlyanddirectlythr	

	graphs 4.4 Rates of change 4.5 Misle		oughotherto pics. Theyhaveal readyus	

	adinggraphs		edproportionreasoningtosolvemanyp	

			r o b l e m s i n Y e a r 7 a n d 8 , f o r e x a m p l e s i n u	

			nitconversion. Building towards.. Thi	

			s u n i t b u i l d s t o w a r d s a l g e b r a i c p r o p o r	

			tioninYear9andKeyStage4,butalsoco	

			versafundamentalskilllthatcanbeapp	

			lied to many units throughout Key Stage	

			3 and 4.	
	END OF TERM 1 TEST	**Learning Checkpoint 4 Unit 4 : End of Unit Assessment and End of Term Test and Feedback**		

WEEK	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 1 HIGHER **Week 11-13**				
3 Weeks (12 hrs)	**5 Transformations** 5.1 Reflection and translation 5.2 Rotation	 1. Describe and carry out translations. 2. Describe and carry out reflections. 1. Describe and carry out rotations. 1. Enlarge a shape.	Building on… Reflection and symmetry work done in Year 7 and at Key Stage 2. Building towards ….	**R2 G4 G6 G7 G8 G24 G25**

	5.3 Enlargement 5.4 More enlargement 5.5 STEM: Combining transformations 5.6 2D shapes and 3D solids	2. Describe an enlargement. 1. Enlarge a shape using negative scale factors. 2. Enlarge a shape using fractional scale factors. 1. Transform 2D shapes using a combination of reflection, rotation, enlargement and translation. 1. Identify planes of reflection symmetry in 3D solids. 2. Find the perimeter and area of 2D shapes after enlargement. 3. Find the volume of 3D solids after enlargements.	Translation, reflection and symmetry at Key Stage 3, as well as equations of horizontal and vertical lines taught in Year 9 an More complex transformations at Key Stage 4.	
		Learning Checkpoint 5 **Unit 5 : End of Unit Assessment and Feedback**		

SPRING 1 HIGHER **TOPIC** **CORE LEARNING SEQUENCING** **Week 14-15**				**SPECIFICATION LINK**
2 weeks **(8 hrs)**	**6 Fract**			**N3 N10 N12 R9 R16**

	ions, decimals, and percentages 6.1 Recurr	1. Recognise fractional equivalents to important recurring decimals 2. Recognise which denominators of simple fractions produce recurring decimals 3. Change a recurring decimal into a fraction. 1. Calculate percentages 2. Work out an original quantity before a percentage increase or decrease.	Building on… Basic percentage work in	

	ingdecimals 6.2Usingpercentages	1. Calculate percentage change. 1. Calculate the effect of repeated percentage changes.	Year7. Buildingtowards..Per	

	6.3 Percentage change 6.4 FINANCE: Repea		centages of amounts, percentage incre	

	tedpercentagechange		aseanddecrease,multipliersandreve	

			rsepercentages. Also, percentageisb	

			eingtaughtinscience.	
	HALFTERMTEST	**Learning Checkpoint 6 Unit 6 : End of Unit Assessment and HTT and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 2 HIGHER WEEK 16-18				
3 Weeks (12 hrs)	**7 Constructions and loci** 7.1 Accurate drawings 7.2 Constructing shapes 7.3 Constructions 1 7.4 Constructions 2	1. Draw triangles accurately using a ruler and protractor. 2. Draw diagrams to scale. 1. Draw accurate nets of 3D solids. 2. Construct triangles using a ruler and compasses. 3. Construct nets of 3D solids using a ruler and compasses. 1. Bisect a line using a ruler and compasses. 2. Construct perpendicular lines using a ruler and compasses. 1. Bisect angles using a ruler and compasses.	Building on… Angles in lines in Year 8, and protractor and measurement skills from Key Stage 2 and Year 7. Scale drawings will also draw on pupils' prior knowledge of proportion and units from Year 7. Building towards… Trigonometric problems including those involving bearings at Key Stage 4.	**N2 N3 N4 N6**

	7.5 Loci	2. Draw accurate diagrams to solve problems. 1. Draw a locus. 2. Use loci to solve problems.		
	END OF TERM TEST	**Learning Checkpoint 7** **Unit 7 End of Unit Assessment and Term and Feedback**		
WEEK	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
SUMMER 1 HIGHER **WEEK 19-21**				
3 Weeks (12 hrs)	**8 Probability** 8.1 Comparing probabilities 8.2 Mutually exclusive events 8.3 Estimating probability 8.4 Experimental probability	1. Calculate and compare probabilities. 2. Decide if a game is fair. 1. Identify mutually exclusive outcomes and events. 2. Find the probabilities of mutually exclusive outcomes and events. 3. Find the probability of an event not happening. 1. Carry out a probability experiment.	Building on… Basic probability concepts and the probability of single events covered in Year 7. Building towards… working with sample space diagrams and tree diagrams in Year 8. Solving more complex probability problems at Kay Stage 4, including those involving conditional probability.	P1 P2 P3 P4 P5 P6 P7 P8 P9

	8.5 Probability diagrams 8.6 Tree diagrams	2. Estimate probability using data from an experiment. 3. Work out the expected results when an experiment is repeated. 1. List all the possible outcomes of one or two events in sample space diagrams or Venn diagrams. 2. Calculate probabilities of repeated events. 1. Use tree diagrams to find the probabilities of two or more events		
		Learning Checkpoint 8 **Unit 8 End of Unit Assessment and Term and Feedback**		
WEEK 22-24 **HIGHER**				
3 Weeks (12 hrs)	**9 Scale drawings and measures** 9.1 Maps and scales 9.2 Bearings	1. Use scales in maps and plans. 2. Use and interpret maps. 1. Measure and use bearings.	Building on… Similar shapes and length scale factors from Key Stage 2 as well proportional reasoning covered in Year 8.	**R2 G2 G3 G4 G5 G6 G7 G15 G19**

	9.3 Scales and ratio 9.4 Congruent and similar shapes 9.5 Solving geometry problems	2. Draw diagrams to scale using bearings. 1. Draw diagrams to scale. 2. Use and interpret scale drawings. 1. Identify congruent and similar shapes. 2. Use congruence to solve problems in triangles and quadrilaterals. 1. Use similarity to solve problems in 2D shapes.	Building towards …. Similar shapes and length scale factors from Key Stage 2 as well proportional reasoning covered in Year 8. Building towards …. Problems involving similar area and volume at Key Stage 4, and loci problems at Key Stage 4. The skill of building a chain of reasoning will also develop understanding of geometrical proofs in Key Stage 4 and beyond.	
	Half Term Test	**Learning Checkpoint 9** **Unit 9 : End of Unit Assessment and Feedback**		
Week	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
SUMMER 2 HIGHER **WEEK 25-27**				
3 Weeks (12 hrs)	**10 Graphs** 10.1 Plotting linear graphs 10.2 The gradient 10.3 y = mx + c	1. Plot straight-line graphs. 2. Find the y-intercept of a straight-line graph.	Building on… Plotting coordinates and substitution into expressions. Building towards…	**A8 A9 A10 A12 A14 A24 R10 R14**

	10.4 Parallel and perpendicular lines 10.5 Inverse functions 10.6 STEM: Non-linear graphs	1. Find the gradient of a straight-line graph. 2. Plot graphs using the gradient and y-intercept. 1. Use y = mx + c 2. Find the equation of a straight-line graph. 1. Identify parallel and perpendicular lines. 1. Find the inverse of a linear function. 1. Plot and use non-linear graphs.	Solving simultaneous equations at Key Stage 4, and further work on linear and non-linear graphs at Key Stage 4.	
	End of Year Test	**Learning Checkpoint 10** **Unit 10: End of Unit and EOY Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
ATUMUN 1	MIDDLE			

Week 1-3	**1 NUMBER** 1.1 Calculation	1. Use written methods to add and subtract with decimals. 2. Calculate mentally. 3. Calculate with money. 4. Estimate answers to calculations.	Building on… Arithmetical operations at Key Stage 2. Students will revisit and deepen their understanding of written methods of arithmetic and the order of operations	**N2 N3 N4 N6**
	1.2 Calculating with negative integer	1. Add, subtract, multiply and divide positive and negative numbers.		
	1.3 Powers and roots	1. Calculate using squares, square roots, cubes and cube roots. 2. Use index notation for powers of numbers 3. Estimate the square root of a number.	Building on …. Solving problems that involve unequal sharing and grouping using knowledge of fractions and multiples at Key Stage 2.	
	1.4 Powers, roots and brackets	1. Use mental methods to calculate combinations of powers, roots and brackets. 2. Use a calculator to check answers. 3. Substitute numbers into formulas involving power, roots and brackets.		
	1.5 Multiples and factors	1. Use index notation. 2. Write a number as a product of its prime factors. 3. Write a number as a product of its prime factors.		
		Learning Checkpoint 1 Unit 1: End of Unit and Assessment and Feedback		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK

ATUMUN 1	MIDDLE			
Week 4-6	**2 Area and volume** 2.1 Area of a triangle 2.2 Area of a parallelogram and trapezium 2.3 Volume of cubes and cuboids 2.4 3D shapes 2.5 Surface area of cubes and cuboids 2.6 Problems and measures	1. Derive and use the formula for the area of a triangle. 2. Find areas of compound shapes. 1. Calculate areas of parallelograms and trapezia. 1. Calculate the volume of cubes and cuboids. 1. Sketch nets of 3D solids. 1. Calculate the surface area of cubes and cuboids. 1. Calculate the volume of cubes and cuboids. 1. Calculate the volume of cubes and cuboids. 2. Calculate the surface area of cubes and cuboids.	Building on… The area of 2D shapes covered at Key Stage 2 and in Year 7, plus areas of circles covered earlier in Year 8. This unit also draws on other previously taught skills including substitution, equations and rounding. Building towards… Answering questions that require the application of volume and surface area in various contexts in Key Stage 4 as well as working with area and volume of similar shapes.	G14 G16 G17
	HALF TERM TEST	**Learning Checkpoint 2 Unit 2: End of Unit and Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
AUTUMN 2	**MIDDLE**			
Week 7-9	**3 Statistics, graphs and charts** 3.1 Pie charts 3.2 Using tables 3.3 Stem and leaf diagrams 3.4 Comparing data 3.5 Scatter graphs 3.6 FINANCE: Misleading graphs	1. Interpret simple pie charts. 2. Calculate angles and draw pie charts. 1. Drawing and interpreting two-way tables. 2. Calculating the mean from a simple frequency table. 3. Tallying data into a grouped frequency table, designing a grouped frequency table, using a ≤ x < b notation, finding modal class and estimating range. 1. Drawing and interpreting stem and leaf diagrams with different stem values. 2. Finding mode, median and range from stem and leaf diagrams, and comparing them for different data sets. 1. Compare data using averages and range, including mean calculated from frequency table. 2. Compare data using the shape of a line graph or pie chart. 3. Draw line graphs to compare sets of data. 4. Decide on the most appropriate average to use 1. Draw scatter graphs. 2. Describe types of correlation.	Building on… Interpreting and presenting data using bar charts and time graphs at Key Stage 2. Building towards… Constructing and interpreting statistical diagrams including scatter graphs, pie charts, box plots, histograms and cumulative frequency curves	**S2 S4 S6**

Weeks 10-12	**End of Unit 4 Expressions and equations** 4.1 Algebraic powers 4.2 Expressions and brackets 4.3 Factorising expressions 4.4 One-step equations 4.5 Two-step equations 4.6 The balancing method	1. identify graphs and charts that are misleading because of the scales used and missing axis labels, mainly in financial contexts. **Learning Checkpoint 3 Unit 3: End of Unit and Assessment and Feedback** 1. Understand and simplify algebraic powers. 2. Substitute values into formulas involving powers. 1. Expand brackets. 2. Make and simplify algebraic expressions. 1. Factorise expressions. 2. Make and simplify algebraic expressions. 1. Find the inverse of a function. 2. Solve simple equations using function machines. 3. Solve real life problems using equations. 1. Solve two-step equations using function machines. 2. Solve real life problems using equations. 1. Solve equations using the balancing method. 2. Solve equations with the unknown number on both sides.	Building on… Year 7 work on manipulating algebraic expressions that include powers. Building towards… Working with surds and more complex indices at Key Stage 4	**A1 A2 A3 A4 A5 A6 A7**
	END OF AUTUMN TERM TEST	**Learning Checkpoint 4 Unit 4: End of Unit and Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 1	**MIDDLE**			
Week 13-15	**5 Real-life graphs** 5.1 Conversion graphs 5.2 Distance-time graphs 5.3 Line graphs 5.4 Complex line graphs 5.5 STEM: Graphs of functions	1. Reading values from conversion graphs. 2. Plotting conversion graphs from a table of data. 1. Interpreting distance-time graphs. 2. Plotting distance-time graphs from descriptive text. 3. Using distance-time graphs to solve problems. 1. Plotting line graphs from tables of data. 2. Interpreting line graphs. 1. Reading values from real-life graphs. 2. Describing trends and making predictions based on information presented graphically. 3. Working out percentages. 1. Draw, use and interpret conversion graphs. 2. Draw, use and interpret distance-time graphs.	Building on… Interpreting and presenting data using bar charts and time graphs at Key Stage 2 and in previous statistics topic completed in Year 8 Building towards… Constructing and interpreting statistical diagrams including scatter graphs, pie charts, box plots, histograms and cumulative frequency curves	**A9 A10 A14**

	5.6 More real-life graphs	3. Draw and interpret line graphs. 4. Draw, use and interpret real-life graphs. 5. Discuss and interpret linear and non-linear graphs. 1. Interpreting graphs. 2. Using graphs to solve problems and make predictions.		
		Learning Checkpoint 5 Unit 5: End of Unit and Assessment and Feedback		

WEEK	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 1	**MIDDLE**			
Week 16-18 3 weeks	**6 Decimals and ratio** 6.1 Ordering decimals and rounding 6.2 Place-value calculations	1. Rounding whole numbers and decimals. 2. Writing large numbers as a decimal number of millions. 3. Ordering positive and negative decimals. 4. Using the symbols > and < between two negative decimals. 1. Multiplying larger numbers 2. Multiplying decimals with up to two decimal places. 3. Multiplying any number by 0.1 and 0.01. 1. Adding and subtracting decimals of any size.	Building on …. Solving problems that involve unequal sharing and grouping using knowledge of fractions and multiples at Key Stage 2. Building towards… Application of ratios to geometrical, statistical and numerical problems at Key Stage 4.	**N1 N2 N15**

	6.3 Calculations with decimals 6.4 Ratio and proportion with decimals 6.5 STEM: Using ratios	2. Multiplying and dividing by decimals. 3. Dividing by 0.1 and 0.01. 1. Using ratios involving decimals 2. Solving proportion problems involving decimals. 1. Solving engineering problems using ratio and proportion. 2. Using unit ratios.		
	HALF TERM TEST	**Learning Checkpoint 6 Unit 6: End of Unit and Assessment and Feedback**		

WEEK	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SPRING 2	**MIDDLE**			
Week 19-21 3 weeks	**7 Lines and angles** 7.1 Quadrilaterals 7.2 Alternate angles and proof 7.3 Geometrical problems	1. Matching quadrilaterals to their descriptions. 2. Using known facts about quadrilaterals to solve problems. 1. Using alternate angles to find unknown angles. 2. Using reasoning to complete mathematical proofs. 1. Solving geometrical problems using side and angle properties of triangles and quadrilaterals.	Building on… Understanding angles as a measure of turn at Key Stage 2, as well as using a protractor to measure angles and using angle facts to solve angles problems. We will also draw on equation solving skills learnt earlier in Year 7. Building towards …	**G3 G4**

	7.4 Exterior and interior angles 7.5 Solving geometric problems	2. Identifying corresponding angles. 3. Solving problems using properties of angles in parallel and intersecting lines. 1. Calculating the sum of the interior and exterior angles of a polygon. 2. Calculating the interior and exterior angles of a polygon. 1. Finding unknown angles by forming and solving equations. 2. Solving geometrical problems showing reasoning. **Learning Checkpoint 7 Unit 7: End of Unit and Assessment and Feedback**	Angles in parallel lines in Year 8, angles in polygons and bearings in Year 9, and circle theorems in Year 11.	
WEEK	**TOPIC**	**CORE LEARNING**	**SEQUENCING**	**SPECIFICATION LINK**
SPRING 2	**MIDDLE**			
Week 22-24 3 weeks	**8 Calculating with fractions** 8.1 Adding and subtracting fractions 8.2 Multiplying fractions 8.3 Fractions, decimals and reciprocals	1. Adding and subtracting fractions with any size denominator. 1. Multiply integers and fractions by a fraction 2. Use appropriate methods for multiplying fractions. 1. Convert fractions to decimals.	Building on… Fraction work from Key Stage 2 that includes calculating a fraction of an amount, comparing and order fractions and basic operations with fractions. Building towards…	**N8 N10**

	8.4 Dividing fractions 8.5 Calculating with mixed numbers	2. Write one amount as a fraction of another. 3. Find the reciprocal of a number. 1. Divide integers and fractions by a fraction. 2. Use strategies for dividing fractions. 1. Use the four operations with mixed numbers.	Later in Key Stage 3, fraction arithmetic will be used in units on probability. At Key Stage 4, students will need a good understanding of fraction arithmetic in order to perform complex operations with algebraic fractions.	
	END OF SPRING TERM TEST	**Learning Checkpoint 8 Unit 8: End of Unit and Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SUMMER 1	**MIDDLE**			
Week 25-27 3 weeks	**9 Straight-line graphs** 9.1 Direct proportion on graphs 9.2 Gradients	1. Recognising when values are in direct proportion. 2. Plotting graphs and reading values to solve problems.		**A9 A10 R10 R11 R14**

	9.3 Equations of straight lines 9.4 STEM: Direct proportion problems	1. Plot a straight-line graph and work out its gradient. 1. Plot the graphs of linear functions. 2. Find midpoints of line segments. 3. Write the equations of straight line graphs in the form y = mx + c 1. Identify and describe practical examples of direct proportion. 2. Solve problems involving direct proportion with or without a graph.	Building on… Working with coordinates and graphs at Key Stage 2, and knowledge of quadrilateral properties from earlier in Year 7. Building towards… Plotting graphs through Key Stage 3 and 4 in both maths and science	
		Learning Checkpoint 9 Unit 9: End of Unit and Assessment and Feedback		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SUMMER 1	**MIDDLE**			
Week 25-27 3 weeks	**10 Percentages, decimals and fractions** 10.1 Fractions and decimals 10.2 Equivalent proportions	1. Recall equivalent fractions and decimals. 2. Recognise recurring and terminating decimals. 3. Order fractions by converting them to decimals or equivalent fractions. 1. Recall equivalent fractions, decimals and percentages.	Building on… Work on percentages at Key Stage 2 and in Year 7. Building towards	**N10 N12 R9**

	10.3 Writing percentages 10.4 Percentages of amounts 10.5 FINANCE: Solving problems	2. Use different methods to find equivalent fractions, decimals and percentages. 3. Use the equivalence of fractions, decimals and percentages to compare proportions. 1. Working out one number as a percentage of another. 2. Working out percentage increase and decrease. 1. Use a multiplier to calculate percentage increase and decrease. 2. Use the unitary method to solve percentage problems. 1. Use strategies for calculating fractions and decimals of a given number. 2. Use mental strategies of conversion and equivalence of fractions, decimals and percentages to solve word problems mentally.	Building towards …. Compound percentage change in Year 9, and growth and decay at Key Stage 4.	
	END OF HALF TERM TEST	**Learning Checkpoint 10 Unit 10: End of Unit and Assessment and Feedback**		

Week	TOPIC	CORE LEARNING	SEQUENCING	SPECIFICATION LINK
SUMMER 2	**MIDDLE**			

Week 28-30 3 weeks	**11 Expressions and equations** 11.1 Simplifying expressions 11.2 Functions 11.3 Solving equations 11.4 Using brackets	1. Simplify expressions by collecting like terms. 1. Find outputs and inputs of function machines. 2. Construct functions. 1. Solve simple equations and check the solution is correct. 2. Understand the difference between an expression and an equation, and identify the unknown in an equation. 1. Use brackets with numbers and letters.	Building on… The laws of arithmetic introduced at Key Stage 1 and 2. Building towards… Writing algebraically and manipulating expressions are fundamental skills that underpin a large proportion of secondary mathematics.	**A1 A2 A3 A4 A5 A6 A7**
	Revision/introduction of Year 9 Topics			
	END OF TERM AND YEAR TEST	**Learning Checkpoint 10 Unit 10: End of Unit and Assessment and Feedback**		