Curriculum Vision
Our vision is to create a curriculum and climate in which we support and challenge our students to be their best. We aim for our students to be fluent mathematicians that are capable of applying the skills they have learnt to a variety of problems and situations. This requires the students to have a positive mind set and to be willing to think, discuss and explain their solutions, offer alternative methods and be confident in their abilities.
Curriculum Mission
Pupils are fearless mathematicians and approach maths with confidence and determination. Maths inspires them, thrills them and makes them feel proud. Through dynamic, knowledgeable and ambitious teaching, pupils are courageous mathematical risk takers, irrespective of their academic ability. Independence and resilience are nurtured and celebrated constantly during their time at the school. Pupils attain mastery of crucial skills at every stage and leave ASFA as accomplished mathematicians. They grow up feeling confident to embrace Maths in their everyday life and have a love of Maths that will abide throughout their lives

	Unit 1			Unit 2			Unit 3			Unit 4		
Year 7	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**
	1 Analysing and displaying data	Write a set of numbers in order of size. Subtract mentally pairs of two-digit numbers	Interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms	**2 Number skills**	Recognise multiples of 10, Understand the effect of multiplying or dividing a given number by 10, 100 or 1000	Order positive and negative integers, decimals and fractions; use the symbols =, ≠, <, > , ≤, ≥	**3 Expressions, functions and formulae**	Describe simple functions in words (e.g. add 3, multiply by 6, subtract 4)	Substitute numerical values into formulae and expressions, including scientific formulae	**4 Decimals and measures**	Round 3-digit numbers up or down to the nearest 100 and 10. Write a set of numbers in order of size. Measure lines to the nearest centimetre	Apply the four operations, including formal written methods, to integers, decimals and simple fractions

Lesson Breakdown:	1.1 Mode, median and range 1.2 Displaying data 1.3 Grouping data 1.4 Averages and comparing data 1.5 Line graphs and more bar charts	2.1 Mental maths 2.2 Addition and subtraction 2.3 Multiplication 2.4 Division 2.5 Money and time 2.6 Negative numbers 2.7 Factors, multiples and primes 2.8 Square numbers	3.1 Functions 3.2 Simplifying expressions 1 3.3 Simplifying expressions 2 3.4 Writing expressions 3.5 Substituting into formulae 3.6 Writing formulae	4.1 Decimals and rounding 4.2 Length, mass and capacity 4.3 Scales and measures 4.4 Working with decimals mentally 4.5 Working with decimals 4.6 Perimeter 4.7 Area 4.8 More units of measure

Culture Capital:	Managers of school canteens need to know how many of each type of snack are sold Athletes use statistics to compare and improve their performance. Nurses use line graphs to show how a patient's temperature changes The grounds staff of a football stadium use area to work out the amount of turf needed for a new pitch When advertising furniture on auction websites you need to give exact measurements so that the buyer knows it will fit in their house.

	Unit 5			Unit 6			Unit 7			Unit 8		
Year 7	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**
	5 Fractions and percentages	Identify the total number of fractional parts in several wholes. Find the HCF of two numbers.	Work interchangeably with terminating decimals and their corresponding fractions	**6 Probability**	Divide an amount into equal parts. Divide and multiply with integers. Divide integers. Calculate the mean.	Apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments	**7 Ratio and proportion**	Write a ratio in its simplest form. Divide integers	Express one quantity as a fraction of another, where the fraction is less than 1 or greater than 1	**8 Lines and angles**	Use a ruler to measure a line in millimetres.	Use conventional terms and notation

Lesson Breakdown:

5.1 Comparing fractions	6.1 The language of probability	7.1 Direct proportion	8.1 Measuring and drawing angles
5.2 Simplifying fractions	6.2 Calculating probability	7.2 Writing ratios	8.2 Lines, angles and triangles
5.3 Working with fractions	6.3 More probability calculations	7.3 Using ratios	8.3 Drawing triangles accurately
5.4 Fractions and decimals	6.4 Experimental probability	7.4 Ratios, proportions and fractions	8.4 Calculating angles
5.5 Understanding percentages	6.5 Expected outcomes	7.5 Proportions and percentages	8.5 Angles in a triangle
5.6 Percentages of amounts			8.6 Quadrilaterals

Culture Capital:

Many artists find inspiration in maths and construct triangles in their works of art
The shapes and angles in a bicycle frame affect the strength of the bicycle
You can calculate and compare tennis players' match statistics to see how well they are performing
When adapting a recipe for any number of people you must keep the ingredients in the same proportion. For concrete to be strong you need to use the correct ratio of cement, sand and aggregate

		Unit 9			Unit 10								
Year 7		Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link						
		9 Sequences and graphs	Identify term-to-term rules. Generate terms of a sequence	work with coordinates in all four quadrants	**10 Transformations**	Identify identical shapes. Simple single-digit multiplication and division.	use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)						
Lesson Breakdown:	9.1 Sequences 9.2 Pattern sequences 9.3 Coordinates and midpoints 9.4 Extending sequences 9.5 Straight-line graphs 9.6 Position-to-term rules				10.1 Congruency and enlargements 10.2 Symmetry 10.3 Reflection 10.4 Rotation 10.5 Translations and combined transformations								
Culture Capital:	The army has used coordinates for hundreds of years to pinpoint locations Many things around us follow a pattern. Knowing how a pattern continues can help us know what to expect Logo designers must think about what a logo will look like when enlarged from their small computer screen on to big advertisements.												

	Unit 1			Unit 2			Unit 3			Unit 4		
Year 8	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link
	1 Number	Addition and subtraction using a written method. Estimate by rounding.	apply the four operations, including formal written methods, to integers	**2 Area and volume**	Work out the area of a triangle by counting squares. Work out the perimeter and area of a compound shape made from rectangles only	identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres	**3 Statistics, graphs and charts**	Drawing a circle and radius Drawing acute and obtuse angle Working out simple fractions and percentages of 360	interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms	**4 Expressions and equations**	Index notation for a product. Simplifying like terms	substitute numerical values into formulae and expressions, including scientific formulae

Lesson Breakdown:

Unit 1	Unit 2	Unit 3	Unit 4
1.1 Calculations	2.1 Area of a triangle	3.1 Pie charts	4.1 Algebraic powers
1.2 Divisibility and division	2.2 Area of a parallelogram and trapezium	3.2 Using tables	4.2 Expressions and brackets
1.3 Calculating with negative integers	2.3 Volume of cubes and cuboids	3.3 Stem and leaf diagrams	4.3 Factorising expressions
1.4 Powers and roots	2.4 2D representations of 3D solids	3.4 Comparing data	4.4 One-step equations
1.5 Powers, roots and brackets	2.5 Surface area of cubes and cuboids	3.5 Scatter graphs	4.5 Two-step equations
1.6 Multiples and factors	2.6 Measures	3.6 Misleading graphs	4.6 The balancing method

Culture Capital:

Companies compare their performance to other companies, to work out whether they are doing better or worse than their competitors.
The tourist industry uses pie charts to see which types of tourist attraction are most popular
Glass manufacturers often have to work out the areas of triangles to calculate the amount of glass required for some window
The lowest common multiple helps us predict when orbiting satellites will line up.
Surveyors, engineers and architects use square roots to find unknown lengths

	Unit 5			Unit 6			Unit 7			Unit 8		
Year 8	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**
	5 Real-life graphs	Reading values from a conversion graph.	identify and interpret gradients and intercepts of linear functions graphically and algebraically	**6 Decimals and ratio**	Arranging in ascending order (including negative and decimal numbers)	order positive and negative integers, decimals and fractions; use the symbols =, ≠, <, > , ≤, ≥	**7 Lines and angles**	Describe line and rotational symmetry of quadrilaterals.	apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	**8 Calculating with fractions**	Calculate fractions of quantities Simplify fractions.	apply the four operations, including formal written methods, to integers, decimals and simple fractions

Lesson Breakdown:	5.1 Conversion graphs 5.2 Distance-time graphs 5.3 Line graphs 5.4 More line graphs 5.5 Real-life graphs 5.6 Curved graphs	6.1 Ordering decimals and rounding 6.2 Place-value calculations 6.3 Calculations with decimals 6.4 Ratio and proportion with decimals	7.1 Quadrilaterals 7.2 Alternate angles and proof 7.3 Angles in parallel lines 7.4 Exterior and interior angles 7.5 Solving geometric problems	8.1 Ordering fractions 8.2 Adding and subtracting fractions 8.3 Multiplying fractions 8.4 Dividing fractions 8.5 Calculating with mixed numbers

Culture Capital:	Opticians add reciprocal fractions to find out what type of lens you need in your glasses Lengths and areas in real life are not usually whole numbers, so you need to be able to calculate with fractions and decimals too. Bridge designers need to work out angles to provide the maximum amount of support for a bridge. Symmetrical frames give a bridge stability. Triangular frames are very strong. Rectangular frames are often braced with angular reinforcement Snooker players use angle properties to help plan their next shot. A snooker ball bounces off a cushion at the same angle it meets it. Around a corner, the middle leg of the path makes a right-angled triangle. All other angles can be found using this information, e.g. the first and last legs are parallel.

	Unit 9			Unit 10		
Year 8	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**
	9 Straight-line graphs	Use a straight line graph and multiplication and division to solve direct proportion word problems.	solve problems involving direct and inverse proportion, including graphical and algebraic representations	**10 Percentages, decimals and fractions**	Use long division to divide by a single digit and obtain a decimal answer. Know the equivalence of simple fractions and decimals.	interpret fractions and percentages as operators
Lesson Breakdown:	9.1 Direct proportion on graphs 9.2 Gradients 9.3 Equations of straight lines			10.1 Fractions and decimals 10.2 Equivalent proportions 10.3 Writing percentages 10.4 Percentages of amounts		

	Unit 1			Unit 2			Unit 3			Unit 4		
Year 9 (F)	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link
	1 Number	Understand the meaning of the words 'less than'. Find a fraction of a number. Recall square numbers. Understand the meaning of 'total'.	order positive and negative integers, decimals and fractions; use the symbols =, ≠, <, > , ≤, ≥	**2 Algebra**	Use the four operations with positive and negative integers.	understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors	**3 Graphs, tables and charts**	Read scales on graphs and plot coordinates in the first quadrant.	Undertake creative projects that involve selecting, using, and combining multiple applications	**4 Fractions and percentages**	Have a basic understanding of fractions as being 'parts of a whole' and be able to write one value as a fraction of another.	use the concepts and vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple

Lesson Breakdown:

1.1 Calculations	2.1 Algebraic expressions	3.1 Frequency tables	4.1 Working with fractions
1.2 Decimal numbers	2.2 Simplifying expressions	3.2 Two-way tables	4.2 Operations with fractions
1.3 Place value	2.3 Substitution	3.3 Representing data	4.3 Multiplying fractions
1.4 Factors and multiples	2.4 Formulae	3.4 Time series	4.4 Dividing fractions
1.5 Squares, cubes and roots	2.5 Expanding brackets	3.5 Stem and leaf diagrams	4.5 Fractions and decimals
1.6 Index notation	2.6 Factorising	3.6 Pie charts	4.6 Fractions and percentages
1.7 Prime factors	2.7 Using expressions and formulae	3.7 Scatter graphs	4.7 Calculating percentages 1
		3.8 Line of best fit	4.8 Calculating percentages 2

Culture Capital:

Fractions can be found in ancient Indian writings. The fractions 1/2 and 3/4 have been found in a manuscript dating back to around 1000BC.
From as early as 1800BC, the Egyptians were working with fractions
A theme park could use a pie chart to show which of its rides was most popular
A scatter graph allows you to see the relationship between two sets of data, for example how house prices change as you get closer to a city centre.

Year 9 (F)	Unit 5			Unit 6			Unit 7			Unit 8		
	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link
	5 Equations, inequalities and sequences	Use negative numbers with the four operations, recall and use the hierarchy of operations and understand inverse operations.	understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors	**6 Angles**	Name angles and distinguish between acute, obtuse, reflex and right angles.	apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles	**7 Averages and range**	Understand that sharing equally involves dividing a total.	construct and interpret diagrams for grouped discrete data and continuous data	**8 Perimeter, area and volume 1**	Identify and name common 3D solids: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres.	identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres

Lesson Breakdown:

Unit 5	Unit 6	Unit 7	Unit 8
5.1 Solving equations 1	6.1 Properties of shapes	7.1 Mean and range	8.1 Rectangles, parallelograms and triangles
5.2 Solving equations 2	6.2 Angles in parallel lines	7.2 Mode, median and range	8.2 Trapezia and changing units
5.3 Solving equations with brackets	6.3 Angles in triangles	7.3 Types of average	8.3 Area of compound shapes
5.4 Introducing inequalities	6.4 Exterior and interior angles	7.4 Estimating the mean	8.4 Surface area of 3D solids
5.5 More inequalities	6.5 More exterior and interior angles	7.5 Sampling	8.5 Volume of prisms
5.6 More formulae	6.6 Geometrical patterns		8.6 More volume and surface area
5.7 Generating sequences			
5.8 Using the nth term of a sequence			

Culture Capital:

	Unit 1			Unit 2			Unit 3			Unit 4		
Year 9 (H)	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**	**Topic**	**Key Stage 2 Link**	**National Curriculum Link**
	1 Number	Have a firm grasp of place value and be able to order integers and decimals and use the four operations.	apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper)	**2 Algebra**	Use negative numbers with the four operations and recall and use hierarchy of operations and understand inverse operations.	generate terms of a sequence from either a term-to-term or a position-to-term rule	**3 Interpreting and representing data**	Read scales on graphs, draw circles, measure angles and plot coordinates in the first quadrant.	interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms	**4 Fractions, ratio and percentages**	Have a basic understanding of fractions as being 'parts of a whole'.	interpret fractions and percentages as operators

Lesson Breakdown:	1.1 Number problems and reasoning	2.1 Algebraic indices	3.1 Statistical diagrams 1	4.1 Fractions
	1.2 Place value and estimating	2.2 Expanding and factorising	3.2 Time series	4.2 Ratios
	1.3 HCF and LCM	2.3 Equations	3.3 Scatter graphs	4.3 Ratio and proportion
	1.4 Calculating with powers (indices)	2.4 Formulae	3.4 Line of best fit	4.4 Percentages
	1.5 Zero, negative and fractional indices	2.5 Linear sequences	3.5 Averages and range	4.5 Fractions, decimals and percentages
	1.6 Powers of 10 and standard form	2.6 Non-linear sequences	3.6 Statistical diagrams 2	
	1.7 Surds	2.7 More expanding and factorising		

Culture Capital:	Convert between currencies and measures. Statistics are a major part of our everyday lives whether at work, rest or play. How does our salary compare to others? What about our physical properties such as height and weight? How does our phone and internet usage compare to others? Hairdressers use ratios to mix different dyes together to get the correct hair colour

	Unit 5			Unit 6			Unit 7			Unit 8		
	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link	Topic	Key Stage 2 Link	National Curriculum Link
Year 9 (H)	**5 Angles and trigonometry**	Recognise special types of triangles and quadrilaterals.	Derive and apply the properties and definitions of special types of quadrilaterals	**6 Graphs**	Identify coordinates of given points in the first quadrant or all four quadrants.	use standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate	**7 Area and volume**	Know the names and properties of 3D shapes.	identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres	**8 Transformations and constructions**	Recognise 2D shapes.	use scale factors, scale diagrams and maps

Lesson Breakdown:	5.1 Angle properties of triangles and quadrilaterals 5.2 Interior angles of a polygon 5.3 Exterior angles of a polygon 5.4 Pythagoras' theorem 1 5.4 Pythagoras' theorem 1 5.6 Trigonometry 1 5.7 Trigonometry 2	6.1 Linear graphs 6.2 More linear graphs 6.3 Graphing rates of change 6.4 Real-life graphs 6.5 Line segments 6.6 Quadratic graphs 6.7 Cubic and reciprocal graphs 6.8 More graphs	7.1 Perimeter and area 7.2 Units and accuracy 7.3 Prisms 7.4 Circles 7.5 Sectors of circles 7.6 Cylinders and spheres 7.7 Pyramids and cones	8.1 3D solids 8.2 Reflection and rotation 8.3 Enlargement 8.4 Transformations and combinations of transformations 8.5 Bearings and scale drawings 8.6 Constructions 1 8.7 Constructions 2
Culture Capital:	Traditional architects use compasses and rulers to draw accurate scale drawings. Bearings are used for both air and sea travel. Speedometers record the number of revolutions of the wheel and the time taken. Using the circumference you can then work out the distance. Goods are packaged in shapes that pack easily on shelves, have space to show the name of the product and attractive pictures and are not easily knocked over. Packaging needs to be cheap to produce and not have too much spare space around the product inside.			

	Unit 9			Unit 10			Unit 11			Unit 12		
	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link
Year 10 (F)	**9 Graphs**	"Draw a graph of an equation in the form y = mx + c."	plot graphs of equations that correspond to straight-line graphs in the coordinate plane	**10 Transformations**	Reflect a shape in a mirror line.	identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement	**11 Ratio and proportion**	Write ratios using correct notation.	identify and work with fractions in ratio problems	**12 Right-angled triangles**	Calculate of simple squares and square roots.	calculate with roots, and with integer and fractional indices
Lesson Breakdown:	9.1 Coordinates 9.2 Linear graphs 9.3 Gradient 9.4 y = mx + c 9.5 Real-life graphs 9.6 Distance-time graphs 9.7 More real-life graphs			10.1 Translation 10.2 Reflection 10.3 Rotation 10.4 Enlargement 10.5 Describing enlargements 10.6 Combining transformations			11.1 Writing ratios 11.2 Using ratios 1 11.3 Ratios and measures 11.4 Using ratios 2 11.5 Comparing using ratios 11.6 Using proportion 11.7 Proportion and graphs 11.8 Proportion problems			.12.1 Pythagoras' theorem 1 12.2 Pythagoras' theorem 2 12.3 Trigonometry: the sine ratio 1 12.4 Trigonometry: the sine ratio 2 12.5 Trigonometry: the cosine ratio 12.6 Trigonometry: the tangent ratio 12.7 Finding lengths and angles using trigonometry		
Culture Capital:	Pythagoras was a mathematician who lived in Greece around 2700 years ago. He is still remembered today for his work on geometry. Outdoor pursuits need to have the correct supervision ratios Reflection is used by scientists and engineers to measure distance. Radar, telescopes and X-ray machines all use reflection to construct maps and pictures											

	Unit 13			Unit 14			Unit 15			Unit 16		
Year 10(F)	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link
	13 Probability	Write probability as a fraction, a decimal and a percentage.	Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides	**14 Multiplicative reasoning**	Convert percentages to decimals.	use standard units of mass, length, time, money and other measures	**15 Constructions, loci and bearings**	Identify names of 2D shapes from faces of 3D solids.	use scale factors, scale diagrams and maps	**16 Quadratic equations and graphs**	Copy and complete a table of values and plot a straight line graph.	plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts

Lesson Breakdown:	13.1 Calculating probability 13.2 Two events 13.3 Experimental probability 13.4 Venn diagrams 13.5 Tree diagrams 13.6 More tree diagrams	14.1 Percentages 14.2 Growth and decay 14.3 Compound measures 14.4 Distance, speed and time 14.5 Direct and inverse proportion	15.1 3D solids 15.2 Plans and elevations 15.3 Accurate drawings 1 15.4 Scale drawings and maps 15.5 Accurate drawings 2 15.6 Constructions 15.7 Loci and regions 15.8 Bearings	16.1 Expanding double brackets 16.2 Plotting quadratic graphs 16.3 Using quadratic graphs 16.4 Factorising quadratic expressions 16.5 Solving quadratic equations algebraically
Culture Capital:	Quadratic functions produce a curve called a parabola. An example of this is the headlights on a car Architects use constructions to draw plans for new buildings Plans and elevations are used to see if a new building can be built like a house. The force from gravity and the distance from Earth are inverse square proportion. The further away from earth you go, the weaker the pull.			

	Unit 17		
	Topic	**Key Stage 3 Link**	**National Curriculum Link**
Year 10(F)	**17 Perimeter, area and volume 2**	Round accurately to a given number of significant figures or decimal place..	round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places or significant figures)
Lesson Breakdown:	17.1 Circumference of a circle 1 17.2 Circumference of a circle 2 17.3 Area of a circle 17.4 Semicircles and sectors 17.5 Composite 2D shapes and cylinders 17.6 Pyramids and cones		
Culture Capital:	Knowing the circumference of a circle can help to know how far a bike has travelled. International pi day is the 14th of March. 3.14 Weather charts show different climates with red and blue semicircles		

	Unit 9			Unit 10			Unit 11			Unit 12		
Year 10(H)	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link
	9 Equations and inequalities	Substitute into, solve and rearrange linear equations.	understand and use the concepts and vocabulary of expressions, equations, formulae, identities, inequalities, terms and factors	**10 Probability**	Understand that a probability is a number between 0 and 1, and distinguish between events which are impossible, unlikely, even chance, likely, and certain to occur.	apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments	**11 Multiplicative reasoning**	Find a percentage of an amount and relate percentages to decimals.	express a multiplicative relationship between two quantities as a ratio or a fraction	**12 Similarity and congruence**	Know how to calculate area and volume in various metric measures.	identify, describe and construct congruent and similar shapes, including on coordinate axes, by considering rotation, reflection, translation and enlargement (including fractional and negative scale factors)

Lesson Breakdown:	
9.1 Solving quadratic equations 1	10.1 Combined events
9.2 Solving quadratic equations 2	10.2 Mutually exclusive events
9.3 Completing the square	10.3 Experimental probability
9.4 Solving simple simultaneous equations	10.4 Independent events and tree diagrams
9.5 More simultaneous equations	10.5 Conditional probability
9.6 Solving linear and quadratic simultaneous equations	10.6 Venn diagrams and set notation
9.7 Solving linear inequalities	

11.1 Growth and decay
11.2 Compound measures
11.3 More compound measures
11.4 Ratio and proportion

12.1 Congruence
12.2 Geometric proof and congruence
12.3 Similarity
12.4 More similarity
12.5 Similarity in 3D solids

Culture Capital:

Many designs use congruent and similar shapes. The designer can draw a shape once then copy or enlarge it to complete a design.
Police accident investigation teams use a kinematic formula to work out the speed of cars in serious accidents.
Pressure and density are compound measures. Water pressure increases with depth, which is an important factor for divers.

Year 10(H)	Unit 13			Unit 14			Unit 15			Unit 16		
	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	Topic	Key Stage 3 Link	National Curriculum Link	16 Circle theorems	Key Stage 3 Link	National Curriculum Link
	13 More trigonometry	Recall and apply Pythagoras' Theorem and trigonometric ratios.	know the formulae for: Pythagoras' theorem $a^2 + b^2 = c^2$, and the trigonometric ratios	**14 Further statistics**	Understand the different types of data: discrete/ continuous.	infer properties of populations or distributions from a sample, while knowing the limitations of sampling	**15 Equations and graphs**	Solve quadratics and linear equations.	solve linear inequalities in one or two variable(s), and quadratic inequalities	**16 Circle theorems**	Recall the words, centre, radius, diameter, circumference, arc, sector and segment	identify and apply circle definitions and properties

| Lesson Breakdown: | 13.1 Accuracy

13.2 Graph of the sine function

13.3 Graph of the cosine function

13.4 The tangent function

13.5 Calculating areas and the sine rule

13.6 The cosine rule and 2D trigonometric problems

13.7 Solving problems in 3D

13.8 Transforming trigonometric graphs 1

13.9 Transforming trigonometric graphs 2 | 14.1 Sampling

14.2 Cumulative frequency

14.3 Box plots

14.4 Drawing histograms

14.5 Interpreting histograms

14.6 Comparing and describing populations | 15.1 Solving simultaneous equations graphically

15.2 Representing inequalities graphically

15.3 Graphs of quadratic functions

15.4 Solving quadratic equations graphically

15.5 Graphs of cubic functions | 16.1 Radii and chords

16.2 Tangents

16.3 Angles in circles 1

16.4 Angles in circles 2

16.5 Applying circle theorems |
|---|---|---|---|---|

| Culture Capital: | Circle thoerems were proven around 300BC
The ancient Greeks considered a circle to be the perfect shape - a symbol of symmetry and balance in nature. Many civilisations have built circular structures. Stonehenge is the most famous and largest stone circle in Britain.
The ancient Egyptians left behind a scroll leaving a solution to a quadratic equation. It is over 4000 years old.
The ancient Babylonians used quadratic equations to work out how much tax to pay. |
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	Unit 17		
Year 10(H)	**Topic**	**Key Stage 3 Link**	**National Curriculum Link**
	17 More algebra	Use negative numbers with all four operations.	understand and use standard mathematical formulae; rearrange formulae to change the subject

Lesson Breakdown:	17.1 Rearranging formulae
	17.2 Algebraic fractions
	17.3 Simplifying algebraic fractions
	17.4 More algebraic fractions
	17.5 Surds
	17.6 Solving algebraic fraction equations
	17.7 Functions
	17.8 Proof
Culture Capital:	Algebraic fractions are used to design aeroplanes. Pharmacists use algebraic fractions when calculating medication Bridge designers use algebraic fractions to make sure the bridge is safe.

	Unit 17		
	Topic	**Key Stage 3 Link**	**National Curriculum Link**
Year 11(F)	**18 Fractions, indices and standard form**	Convert between fractions, mixed numbers and improper fractions.	recognise and use relationships between operations, including inverse operations
Lesson Breakdown:	18.1 Multiplying and dividing fractions 18.2 The laws of indices 18.3 Writing large numbers in standard form 18.4 Writing small numbers in standard form 18.5 Calculating with standard form		
Culture Capital:	Before decimalisation in the UK, measurements were given in whole inches and fractions of inches. When dealing with very large numbers it is useful to be able to express them using indices.		

	Unit 18			Unit 19		
	Topic	**Key Stage 3 Link**	**National Curriculum Link**	**Topic**	**Key Stage 3 Link**	**National Curriculum Link**
Year 11(H)	**18 Vectors and geometric proof**	Understand the components of a vector and use vectors to describe translations.	apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors; use vectors to construct geometric arguments and proofs	**19 Proportion and graphs**	Draw linear and quadratic graphs.	understand and use proportion as equality of ratios
Lesson Breakdown:	13.1 Accuracy 13.2 Graph of the sine function 13.3 Graph of the cosine function 13.4 The tangent function 13.5 Calculating areas and the sine rule 13.6 The cosine rule and 2D trigonometric problems 13.7 Solving problems in 3D 13.8 Transforming trigonometric graphs 1 13.9 Transforming trigonometric graphs 2			19.1 Direct proportion 19.2 More direct proportion 19.3 Inverse proportion 19.4 Exponential functions 19.5 Non-linear graphs 19.6 Translating graphs of functions 19.7 Reflecting and stretching graphs of functions		

Culture Capital:	Exponential graphs are used by scientists to describe population growth. You can use inverse proportion to work out how long it will take different people to perform a task. Programmers use vectors to measure collisions between people and objects in games.