Alcester Academy Curriculum Planning: Key Stage 3, Year 7.

Department:		**Year Group:**			
Term	Topic/ subject	Assessment Objectives	Skills Include detail of any differentiation	Literacy, numeracy and SMSC opportunities	Final assessment task and title
Autumn 1 Unit 1 and 2	Unit 1: Collecting and Interpreting Data Unit 2: Calculations and Number Skills	Calculate statistics for small sets of discrete data: Find the mode, median and range, and the modal class for grouped data. Calculate the mean, including from a simple frequency table, using a calculator for a larger number of items • Construct, on paper and using ICT, graphs and diagrams to represent data, including: (i) bar-line graphs (ii) frequency diagrams for grouped discrete data (iii) (simple) pie charts (iv) Scatter graphs • Interpret diagrams and graphs (including pie charts), and draw simple conclusions based on the shape of graphs and simple statistics for a single distribution Order positive and negative integers and decimals in order of size; use the number line as a model for ordering of the real numbers Use the four operations, including formal written methods, applied to integers, negative numbers and decimals. Understand the order of operations. Understand and use place value for decimals, measures and integers of any size. Use the four operations, including formal written methods for proper and improper fractions.	Know how to calculate the mean. Median, mode and range for small sets of data. Collect data to answer a question. Draw a tally chart to collect information. Draw graphs from tally charts. Draw simple pie charts. Read information from different graphs and charts. Draw pie charts using angle knowledge and read information from more difficult graphs. Construct and interpret Scatter graphs. Order different types of numbers. Use standard column addition/subtraction. Use the grid method for long multiplication. Add /subtract simple fractions. Multiply and divide by 10/100/1000 including decimals. Read and write large numbers. Solve problems mentally. Show fractions by shading. Simplify fractions. Use written methods for 4 rules of integers, decimals to 3 or 4 decimal places, directed numbers and fractions. Be able to order fractions with different denominators.	Give definitions for the key words mean, median, mode and range. These statistics based topics provide opportunities for students to work together and allows for discussion and debate on the use and abuse of statistics in the media and how data is best presented to eliminate bias. Formal written methods of the four operations need to be set out clearly. Communications to explain which integer/decimal or fractions are bigger. Problem solving skills and teamwork are fundamental to Mathematics, through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to develop their Mathematical reasoning skills, communicating with others and explaining concepts to each other	Baseline Assessment within the first 2 week to determine sets. Ks3 Assessment on units 1 and 2. Assessments splits into Lower/Middle/Higher
Autumn 2	Unit 3: Expressions, Functions and Formulae	Use letter symbols to represent unknown numbers or variables; know the meanings of the words *term*, *expression* and *equation* . Understand that algebraic operations follow the rules of arithmetic. Simplify linear algebraic expressions by collecting like terms; multiply a single term over	Know that letters stand for numbers. Simplify an expression. Expand a bracket. Substitute integers and decimals into simple expressions. Substitute integers into more complex expressions using BIDMAS.	Create expressions from worded problems and vice versa. Examples of where algebra is useful in the real world.	

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		a bracket (integer coefficients). Substitute positive integers into linear expressions.			
	Unit 4: Higher: Fractions Middle: Decimals and Measures Lower: Graphs and Coordinates	Add/subtract/multiply/divide fractions Work with equivalent fractions, decimals and percentages Convert Fractions, Decimals and Percentages. Convert between different measures. Read scales and round numbers. Add/subtract/multiply decimals. Read and plot coordinates. Interpret graphs	Apply the four operations for fractions. Know the key conversions e.g. ¼,½. Know the rules for rounding. Be able to use standard measuring equipment. Be able to tell the time. Know that you 'go along the corridor and up the staircase'.	Formal written methods of the four operations need to be set out clearly. Communications to explain which integer/decimal or fractions are bigger. Pupils to know why it is important to be able tell the time. Use of estimates in the day to day life.	Ks3 Assessment on units 1-4. Assessments split into Lower/Middle/Higher
Spring 1	Unit 5: Higher: Angles and shape properties Middle: Fractions Lower: Factors and multiples Unit 6: Higher: Decimals and Percentages Middle: Probability	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles. Understand and use the relationship between parallel lines and alternate and corresponding angles. Discover the rules for angles in polygons. See Unit 4 higher Recognise and use multiples, factors, primes (less than 100), common factors, highest common factors and lowest common multiples in simple cases. Use simple tests of divisibility. Recognise the first few triangular numbers, squares of numbers to at least 12 x 12 and the corresponding roots. Understand percentage as the 'number of parts per 100'; calculate simple percentages and use percentages to compare simple proportions Recognise the equivalence of percentages, fractions and decimals. Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale.	Pupils to know the basic angle facts and apply them to problems. List the multiples and factors of a number. Find the LCM and HCF of 2 numbers Know what square numbers up to 12^2, know the first few cube numbers. Understand the 4^5 means 4x4x4x4x4. Know what prime numbers are and recognise those below 20. Calculate percentages of whole without a calculator and use chunking to find other percentages e.g. 15%, 20%. Increase and Decrease by a percentage. Find one number as a percentage of another. Place events on a probability scale using the appropriate language. Calculate probability of an event as a fraction. Know that all probabilities add up to one.	Give the correct reasoning for the different angle problems using the correct vocabulary. Using the correct spelling for key words: Isosceles, perpendicular, parallel etc. Problem solving skills and teamwork are fundamental to Mathematics, through creative thinking, discussion, explaining and presenting ideas. Students Give definitions for the words multiple, factor and prime numbers. Multiples in context of problems. Number fluency through easily converting between fractions, decimals and percentages is a useful skill in making more complex topics easier to understand, especially in problem solving contexts, which is essential in helping students make informed decisions in life. Creating events to place a probability scale. Students will need to able to reason why they have placed different events.	

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	Lower: Decimals and measures	Understand that the probabilities of all possible outcomes sum to 1. Create sample spaces and be able to calculate the probability of an event from this list. See Unit 4 Middle.	Calculate the probability of an event NOT occurring. Know the difference between theoretical and experimental probability and carry out an experiment.	The teaching of probability introduces the idea of gambling and will address issues related with this.	Ks3 Assessment on units 5 and 6. Assessments split into Lower/Middle/Higher
Spring 2	Unit 7: Higher: Equations	Solve linear equations with unknown on one side including brackets. Solve equations with unknowns on both sides. Form and solve equations.	Solve two step equations by understanding that you need to do the inverse operation. Solve equations that involve brackets and simple fractions. Solve equations with decimal and negative answers. Solve equations where there is an unknown on both sides.	Pupils learn to cope with new concepts through perseverance.	
	Middle: Ratio and Proportion	Understand what a ratio actually means. Reduce a ratio to its lowest form. Understand equivalent ratios. Divide quantities in a given ratio with and without a calculator. Understand how to compare proportions when given a ratio of two quantities. Calculate using proportional amounts - the unitary method.	Write ratios and simplify. Divide an amount into a ratio. Show ratios by shading on a diagram. Use the unitary method to solve problems. Calculate ingredients needed for different quantities of a recipe. Solve problems involving ratio in different units. Calculate the best value for money.	Give definitions for the key words ratio, proportion, and share and simplify. Being able to reason proportionally provide useful life skills.	
	Lower: Angles and shape properties	Draw and measure angles. Recognise and estimate angles. Find missing angles.	Pupils able to use standard measuring equipment to find the length of lines and size of angles. Pupils to know the basic angle facts and apply them to problems.	Give the correct reasoning for the different angle problems using the correct vocabulary. Using the correct spelling for key words: Isosceles, perpendicular, parallel etc.	Ks3 Assessment on units 5-7. Assessments split into Lower/Middle/Higher
Summer 1	Unit 8: Higher: Ratio and Proportion	See Unit 7 Middle Solve inverse proportion problems			*End of year Assessments Split into Lower/Middle/Higher*
	Middle: Angles and shape properties	See Unit 5 Higher			
	Lower: Perimeter, Area and Symmetry	Identify different shapes Understand symmetry Find the area of squares and rectangles. Find the perimeter of different shapes.	Pupils are able to name shapes and know what defines them.. Pupils know that the area is inside a shape and the perimeter is outside. Know which measure to select.	Using the correct spelling for key words: Rectangle, Perimeter, Parallelogram, Trapezium etc. **Being able to estimate using different measures, helps students understand the world around**	

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				them.	
Summer 2	Unit 9: Higher: Perimeter, Area and Volume Middle: Sequences and Graphs Lower: Fractions, Decimals and Percentages	Find the area and perimeter of rectangles/ triangles/parallelograms/trapeziums. Find the volume of cuboids and shapes made from cuboids. Find the surface area of cuboids. Describe integer sequences; generate terms of a simple sequence, given a rule (e.g. finding a term from the previous term, finding a term given its position in the sequence) Generate sequences from patterns or practical contexts and describe the general term in simple cases. Be able to plot co-ordinates in all four quadrants of a graph. Use linear expressions to describe the nth term of a simple arithmetic sequence. Generate coordinate pairs that satisfy a simple rule. Plot the graphs of simple linear functions. Plot and interpret the graphs of simple linear functions arising from real-life. Be able to recognise patterns with co-ordinates on a graph. Use fraction notation to describe parts of a shape Simplify fractions and find equivalences Change an improper fraction to a mixed number. Add and subtract simple fractions. Understand percentage as 'the number of parts per 100'. Calculate percentages.	Pupils to know the difference between area/perimeter/volume/surface areas and use the correct units in their answers. Pupils to understand that different shapes have different formulas to find area/volumes. Continue a sequence that goes up/down in equal steps. Continue other sequences that have different rules e.g. doubling. Write a sequence from its rule. Continue picture sequences. Plot coordinates in all four quadrants. Find the nth term of a sequence. Generate coordinate pairs that follow a rule. Solve coordinate problems. Know and recognise the following sequences of numbers; triangular, square numbers, cube numbers, the Fibonacci sequence. Pupils to understand that fractions are part of a whole. Students can apply formal methods for adding and subtracting. Calculate percentages of whole without a calculator and use chunking to find other percentages e.g. 15%, 20%. Understand that percentages can be converted into decimals and fractions. Know the key conversions e.g. ¼,½. Shade in percentages and compare.	Problem solving skills and teamwork are fundamental to Mathematics, through creative thinking, discussion, explaining and presenting ideas. Students are always encouraged to develop their Mathematical reasoning skills, communicating with others and explaining concepts to each other. Give definitions for the key words sequence, term and position. Mathematics applied in different cultures and historical aspects of mathematical development are developed through investigating the Fibonacci sequence. Students are encouraged to discuss the use of mathematics in cultural symbols and patters. Number fluency through easily converting between fractions, decimals and percentages is a useful skill in making more complex topics easier to understand, especially in problem solving contexts, which is essential in helping students make informed decisions in life.	Ks3 Assessment on units 8-9. Assessments split into Lower/Middle/Higher

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	Unit 10: Higher: Sequences and Graphs Middle: Transformations Lower: Transformations	See Above, Unit 9 Middle. Find lines of symmetry and rotational symmetry. Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures. Enlargement of 2-D shapes, including given a centre of enlargement and a positive integer scale factor.	Enlarge shapes with integer and fractional scale factors. Enlarge shapes from a centre on a coordinate grid. Rotate, translate and reflect shapes. Use a column vectors to describe and draw translations.	Written instructions for the different transformations. Links to different cultural patterns and art work. Improves students' spatial awareness.	