Alcester Academy Curriculum Planning: Key Stage 3 (Year 8)

Department: Maths	**Year Group: 8 (Support)**						
Term	Topic/ subject	Assessment Objectives	Knowledge acquisition	Skill building ***Intent***	Wider reading opportunities to include numeracy and SMSC	Final assessment task and title	SEND & PP Identify where access and learning is supported
Autumn 1	Unit 11: Number	Recognise and use multiples, factors, primes (common factors, highest common factors and lowest common multiple. Recognise triangular numbers, squares numbers and cube numbers and corresponding roots. Find the prime factor decomposition of a number using index notation for small positive integer powers.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	List the multiples and factors of a number. Find the LCM and HCF of 2 numbers (3 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. Find a number as its product of prime factors.	Give definitions for the words multiple, factor and prime numbers. Pupils investigating different number sequences and where they occur in the real world.		Use of manipulatives to represent negative numbers and the understanding of subtracting (or removing) a negative.
	Unit 12: Area and Volume	Visualise and use 2D representations of 3D objects; analyse 3D shapes through 2D projections, including plans and elevations. Sketch nets of 3D solids. Calculate the surface area and volume of right prisms. Name the different parts of a circle. Know and use the formulae for the circumference and area of a circle.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Find the area and perimeter of different 2D shapes including compound shapes. Label the parts of a circle. Know how to find the area and circumference of a circle. Solve functional problems involving area of compound shapes. Find the area and perimeter of shapes that involve circles.	Key words: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. Solving functional problems involving area and perimeter. Pupils will calculate how much paint would be needed to decorate a room.	Ks3 Assessment on units 11 and 12.	Use of attribute blocks and geoboards to give visual aids to help support understanding on angles in shapes. GeoModel folding shapes to give a visual aid on the difference between volume and surface area.

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Autumn 2	Unit 13: Statistics, Graphs and Charts	Choose a suitable sample size and what data to collect. Identify factors that may affect data collection and plan to reduce bias. Interpret and draw pie charts. Drawing and interpreting two-way tables. Drawing and interpreting stem and leaf diagrams with different stem values. Draw and interpret scatter graphs. Describe types of correlation.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Draw and interpret information from tables and graphs. Draw and interpret scatter graphs. Calculate mean, median, mode and range from a list.	Read information from table and graphs and write conclusions. Students to understand how the media could use different graphs and averages to influence our decisions.		Manipulatives can also be used to represent tally charts and to support grouped frequency tables. Students have access to Geogebra to show graph transformations at a higher level.
	Unit 14: Expressions and Equations	Collecting like terms. Solve linear Equations. Substitute integer values into expressions and formulae. Use function machines in both directions. Solve one step equations Solve linear equations with unknown on one side including brackets.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Standard algebraic techniques including collecting like terms, substitution of numbers into simple formulae. Understand that solving equations in doing the inverse operation. Use of function machines to build.	Create expressions from worded problems and vice versa. Examples of where algebra is useful in the real world.	Ks3 Assessment on units 11-14.	Use of algebra tiles to represent values and get students to understand how algebra is used. The tiles also support the skill of forming expressions and solving linear equations.
Spring 1	Unit 15: Real life Graphs	Generate coordinate pairs that satisfy a simple rule. Plot and interpret the graphs of linear functions arising from real-life. Interpret distance-time graphs and be able to plot them from descriptive text. Use graphs to convert between two variables including exchange rates.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Pupils to be able to decide on scales and draw axis. Pupils recognise different features of speed-distance time graphs. Plot and interpret a conversion graph. Spot when graphs are misleading. Pupils being able to understand the importance of graphs and make sure they have meaning and provide suitable information.	Writing a story to describe real life graphs. Students to understand how the media could use different graphs to influence our decisions.		Geoboards can also be used to represent graphs. Students have access to Geogebra to show graph transformations at a higher level.

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	Unit 16: Decimal and Ratio	Round decimals appropriately. Multiple and divide by decimals. 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.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Able to calculate using decimals. Write ratios and simplify. Divide an amount into a ratio. Show ratios by shading on a diagram. Calculate ingredients needed for different quantities of a recipe. Solve problems involving ratio in different units. Calculate the best value for money.	Pupils learn to cope with new concepts through perseverance. Give definitions for the key words ratio, proportion, and share and simplify. Being able to reason proportionally provide useful life skills.	Ks3 Assessment on units 15 and 16.	Number tiles available to use to help students see visually parts of integers as decimals and how they can be built together to represent other decimals including above 1. Use of Cuisenaire rods and algebra tiles to represent ratios and proportion. Also, the use of coloured counters to show how proportion is scalable.
Spring 2	Unit 17: Lines and angles	Draw, measure and name angles. Matching quadrilaterals to their descriptions. Using known facts about quadrilaterals to solve problems. Using alternate /corresponding and allied angles to find unknown angles. Solving geometrical problems using side and angle properties of triangles and quadrilaterals. Solving problems using properties of angles in parallel and intersecting lines. Finding unknown angles by forming and solving equations.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	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. Pupils to solve angle problems involving parallel lines.	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 are always encouraged to develop their Mathematical reasoning skills, communicating with others and explaining concepts to each other	Ks3 Assessment on units 5-7.	Use of attribute blocks and geoboards to give visual aids to help support understanding on angles in shapes. GeoModel folding shapes to give a visual aid on the difference between volume and surface area.
Summ	Unit 18: Calculating with Fractions	Compare fractions. Simplify and identify equivalent fractions. Calculate with simple fractions mentally. Calculate fractions of quantities.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular	Use formal methods for the four operations with fractions. Understanding the relationship between numerator and denominator.	Creating opportunities to explain and explore the relationship and proportionality of the numerator and denominator. Looking at fractions and percentages students start to gain		Use of fraction circles as manipulatives to help support students understanding of the relationship between numerator and denominator.

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e r		Add and subtract fractions. Write a number as a fraction of another number.	quick fire assessments throughout the term.		and understanding of real life applications such as marketing offers and discounts.		
1	Unit 19: Straight line graphs	Able to plot points in all four quadrants. Be able to use a table of values to plot a sequence of points to create a linear graph. Substituting values to create a table of values to then plot. Plot graphs of equations that correspond to straight-line graphs in the coordinate plane. Calculate the gradient of a given straight line. Calculate the gradient of a straight line given 2 coordinates.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Plot coordinates in all four quadrants. Substitute into formulas with 2 variables. Plot and recognise lines in the form x = a and y = b. Solve problems involving y=mx+c.	Give definitions for the key words gradient, intercept.. Looking at where graphs are used and how they can display relationships between variables that can be used in real life applications such as costings.	Ks3 Assessment on units 8-9.	Geoboards can also be used to represent graphs. Students have access to Geogebra to show graph transformations at a higher level.
	Unit 20: Percentages, decimals and fractions.	Change between fractions and percentages. Calculate percentages. Write one number as a percentage of another number. Working out percentage increase and decrease. Use a multiplier to calculate percentage increase and decrease Use strategies for calculating fractions and decimals of a given number. Use mental strategies of conversion and equivalence of fractions, decimals and percentages to solve word problems mentally.	Knowledge acquisition will be developed through the building of prior knowledge, revisiting skills covered, and through regular quick fire assessments throughout the term.	Use chunking to calculate percentages. Write percentages as a decimal and use multipliers to calculate percentages. Understand that when you increase or decrease by a percentage what the new amount is worth. Use formal methods for calculating fractions	Key words: Multiplier, Compound interest, Per annum, tax. Links to real life savings and the dangers of credit cards.	*End of Year assessment*	Students have access to different manipulatives including fraction circles, number rods and tiles to represent fractions, decimals, and percentages. Students able to visually see how these can be equivalent and how they can be adding together to make other values.