Year 8 – Unit Intent All students to improve mathematical knowledge by developing their understanding of mathematical concepts, key words, command verbs, mathematical notation, interpreting mathematical information and use effective methods to solve mathematical problems.

Please note each cluster of lessons according to ability, feed forward to the next lesson intent. If students complete set clusters, extension activities follow.

Autumn 1 Topic	Group A	Group B	Group C
Number 1	1-20	1-16	1-15
Number 2	1-21	1-17	1-13 (not 8,9 and 11)
Handling Data 1	1-11	1-9	1-6

Number 1: Group A feeds forward to Autumn 2- decimals, fractions and percentages and all of the topics by developing and securing basic number and calculation skills required to be embedded and strengthened in order to be fluent in calculation skills in all areas of maths.

Autumn 2 Topic	Group A	Group B	Group C
Algebra 1	1-9	1-9	1-5
Shape, Space and Measures 1	1-12	1-8	1-6
Algebra 2	1-6	1-6	1-4

Term	Lesson Intent and Knowledge	Vocabulary / Daily Retrieval	Activities/Assessment	Hwk/Literacy Map
<u>Autumn 1 - Number</u> 10 lessons	1. To know how to add using column method – integers. 2. To know how to subtract using column method – integers. 3. To know how to multiply integers (and by 10, 100, 1000). 4. To know how to divide by 10, 100, 1000. 5. To know how to use all 4 non calc and calc operations with integers in worded applications. 6. To know how to use BIDMAS (order of operations). 7. To know how to understand = and identity. 8. To know how to order positive and negative integers 9. To know how to round to units, 10s, 100s, 1000s. 10. To know how to recognise square and cube numbers. 11. To know how to recognise factors and multiples of integers. 12. To know how to round to decimal places and significant figures AND understand truncation. 13. To know how to estimate numbers. 14. To know how to square root and cube root numbers. 15. To know how to understand Index notation (particularly for square roots and cube roots) NOT ALGEBRAIC. **Feeds forward to Autumn topic 2 Standard Form as students will know how to add, multiply, subtract and divide powers to support their learning.** 16. To know how to calculate with numbers in standard form with applications. 17. To know how to recognise integers which satisfy inequalities. 18. To know how to use index notation including fractional indices. 19. To know how to estimate powers and roots of any given number. 20. To know how to recognise surds. 21. To understand and recognise negative indices.	Do it now activities based on prior learning, checking for knowledge. **<u>Keywords</u>** **Integer** **Square** **Cube** **Factor** **Truncate** **Estimate** **Multiple** **Square root** **Cube root** **Index** **Standard Form** **Sum** **Product**	Activelearn, worksheet based activities, Numeracy Ninja booklets. Assessment completed at the end of the term.	Hegarty Maths tasks or TT Rockstars Learning of key words /times tables and formulae

	22. To know how to understand negative fractional indices. 23. To know how to calculate upper and lower bounds including error intervals. 24. To know how to recognise, understand and calculate with surds. 25. To know how to rationalise the denominator. **Feeds on from Autumn 1 (Year 7) - Topic 1, Number.** **Feeds forward to Autumn topic 2, Number 2 and Autumn Term 1 in Year 8, Year 9 and GCSE Unit 1 covered in Years 10 and 11.**			
<u>A1 Number 2</u> <u>10 lessons</u>	1. To know how to compare fractions and percentages (using 100 square grid). 2. To know how to write equivalent fractions and decimals of 1%, 10%, 25%, and 50%. 3. To know how to express one quantity as a percentage of another (including less than 1 and greater than 1. 4. To know how to compare 2 quantities using percentages. 5. To know how to find percentage increase and decrease. 6. To know how to work with percentages greater than 100. 7. To know how to read and interpret mixed and improper fractions. 8. To know how to multiply fractions (including mixed numbers). 9. To know how to divide fractions (including mixed numbers) (including cancelling). 10. To know how to add and subtract fractions (same denominator or simply equivalence. 11. To know how to add and subtract fractions with different denominators.	Do it now activities based on prior learning, checking for knowledge. **<u>Keywords</u>** **Fraction** **Percentage** **Decimal** **Numerator** **Denominator** **Equivalent** **Terminating** **Compound** **Simple**	Activelearn, worksheet based activities, Numeracy Ninja booklets. Assessment completed at the end of the term.	Hegarty Maths tasks or TT Rockstars Learning of key words /times tables and formulae

	12. To know how to add with decimals. 13. To know how to subtract with decimals. 14. To know how to multiply decimals. 15. To know how to divide decimals. 16. To know how to write equivalent fractions and decimals (terminating decimals and corresponding fractions e.g. 3.5 and 7/2, 0.375 and 3/8). 17. To know how to reverse percentage problems. 18. To know to how to use simple interest in financial maths (problem solving. 19. To know how to set up growth and decay problems (including compound interest) - relate to indices. 20. To know how to solve growth and decay problems (including compound interest) - relate to indices. 21. To know how to interpret growth and decay problems (including compound interest) - relate to indices. 22. To know how to convert recurring decimals to fractions where only one number is recurring. 23. To know how to change recurring decimals into their corresponding fractions and vice versa. **Feeds on from Autumn 1 (Year 7), Topic Number 2.** **Feeds on from Autumn 1 (Year 8), Topic Number 1.** **This unit feeds forward to topic 3 in Autumn 1 as students are able to access knowledge learnt on adding, subtracting and multiplying fractions, when answering questions on probability.** **Feeds forward to Autumn Term 1 in Year 8, Year 9 and GCSE Unit 1 covered in Years 10 and 11.**	**Recurring**		
A1 handling Data 1 8 lessons	1. To know how to use a probability scale using words. 2. To know how to use a probability scale using basic fractions/decimals (0,0.25, 0.5, 0.75,1).	Do it now activities based on prior learning, checking for knowledge.	Activelearn, worksheet based activities, Numeracy Ninja booklets.	Hegarty Maths tasks or TT Rockstars

	3. To know how to describe and understand outcomes of simple experiments e.g. rolling a dice and flipping a coin. 4. To know how to conduct, record and analyse experiments. 5. To know how to read and interpret expected frequency and calculate outcomes of multiple future experiments. 6. To know how to list all possible outcomes using a variety of strategies (list, sample space, Venn diagrams, two-way tables). 7. To know how to apply knowledge that all probabilities of an exhaustive/mutually exclusive set of outcomes sum to one. 8. To know how to calculate theoretical probabilities using tables, grids, Venn diagrams and sample spaces. 9. To know that the more frequently an experiment is done the closer the results will tend towards the theoretical probabilities. 10. To know how to draw tree diagrams. 11. To know how to use the tree diagrams to calculate the probability of independent and dependent combined events. 12. To know how to use the product rule for counting strategies. 13. To know how to use conditional probability with two-way tables, tree diagrams and Venn diagrams. **This feeds on from Term 1, Number 2, Fractions, decimals and percentages, students knowing equivalent fractions, decimals and percentages and also how to add, subtract and multiply fractions.** **Feeds forward to Autumn Term 1 topic 3, Handling Data 1 in Year 8, Year 9 and GCSE Unit 1 covered in Years 10 and 11.**	**<u>Keywords</u>** **Probability** **Scale** **Experiment** **Sample space** **Venn diagram** **Exhaustive** **Mutually exclusive** **Tree diagram**	Assessment completed at the end of the term.	Learning of key words /times tables and formulae

A2 10 lessons	1. To know how to read and interpret the use of letters. 2. To know how to use algebraic notation including: ab in place of a × b, 3y in place of y + y + y and 3 × y, a^2 in place of a × a, a^3 in place of a × a × a, a^2b in place of a × a × b, a/b in place of a ÷ b. 3. To know how to use and understand vocabulary within expressions, equations, formulae, identities inequalities, terms and factors. 4. To know how to collect like terms. 5. To know how to multiply a single term over a bracket. 6. To know how to take out common factors. **This feeds on from Autumn 1, Number 1, factors of numbers.** 7. To know how to multiply two brackets and 3 binomials. 8. To know the laws of indices. 9. To know how to factorise quadratic expressions. 10. To know how to factorise quadratic expressions with a not equal 1. 11. To know how to solve the difference of squares. 12. To know the laws of indices - fractional and negative indices. 13. To know how to simplify algebraic fractions. 14. To know the difference between an equation and identity. 15. To know how to argue mathematically to show algebraic expressions are equivalent. 16. To know how to use algebra to support and construct arguments. 17. To know how to use algebra to construct and support proofs.	Do it now activities based on prior learning, checking for knowledge. **<u>Keywords</u>** **Variable** **Term** **Expression** **Equation** **Identity** **Formulae** **Identity** **Factor**	Activelearn, worksheet based activities, Numeracy Ninja booklets. Assessment completed at the end of the term.	Hegarty Maths tasks or TT Rockstars Learning of key words /times tables and formulae

	This unit feeds on from Autumn Term 1 Number 1 – indices and its application to algebra. **This unit feeds forward to Autumn 2 (Year 8), Topic 3.** **This also feeds forward to Spring, Term 1 (Year 8), Topic 2 – Solving Equations.** **This feeds forward to the whole of the GCSE course.**			
A2 10 lessons	1. To know how to identify and interpret rotational symmetry. 2. To know how to identify and describe lines of symmetry. 3. To know how to complete reflection given a mirror line. 4. To know how to translate a shape given a worded description. 5. To know how to enlarge a shape without a point of origin. 6. To know how to rotate a shape given a point of origin. 7. To know how to translate a shape with vectors. 8. To know how to reflect on a graph with linear lines. 9. To know how to enlarge from a point including fractional enlargement. 10. To know how to describe transformations. 11. To know how to identify and describe congruence and invariant points. 12. To know how to complete negative enlargement. 13. To know how to identify similar shapes with triangles. 14. To know how to identify Similar shapes involving area and volume. 15. To know how to describe combinations of transformations This unit feeds on from Autumn Term 2 (Year 7). This unit feeds forward to Autumn 2 (Year 9) and GCSE 'Transformations'.	Do it now activities based on prior learning, checking for knowledge. **<u>Keywords</u>** **Symmetry** **Origin** **Enlargement** **Reflection** **Rotation** **Translation** **Congruence** **Congruent** **Similar**	Activelearn, worksheet based activities, Numeracy Ninja booklets. Assessment completed at the end of the term.	Hegarty Maths tasks or TT Rockstars Learning of key words /times tables and formulae

A2 6 lessons	1. To understand notation of expressions with relation to BIDMAS e.g. 3a + b. 2. To know how to substitute positive numbers into simple expressions. 3. To know how to understand and use vocabulary related to expressions, equations, formulae. 4. To know how to substitute numbers (including negative) in formulae. 5. To know how to substitute into standard mathematical expressions. (3) 6. To know how to identify and describe the difference between an equation and identity. This unit feeds on from Autumn 2 (Year 7), Topic 3, Algebra 2. This unit feeds forward to Spring 1 (Year 8), Topic 1, Shape, Space and Measures. (applying skills learnt in this topic to enable students to use formulae associated with shapes, space and measures). This unit feeds forward to GCSE Topics, including Shapes, Space and Measures.	Do it now activities based on prior learning, checking for knowledge. **Keywords** **Equation** **Identity** **Substitute** **Formulae** **Formula**	Activelearn, worksheet based activities, Numeracy Ninja booklets. Assessment completed at the end of the term.	Hegarty Maths tasks or TT Rockstars Learning of key words /times tables and formulae