Lode Heath School

Mathematics Department

Year 8 Foundation
Autumn Term

Assignment Title	Unit 1: Number	Date set	Autumn 1

Summary of Unit 1	Key Words
Apply the four operations to integers, decimals and simple fractions. Recognise and use BIDMAS. Use prime numbers, factors, multiples. Recognise powers of 2, 3, 4, 5. Estimate powers and roots of any given positive number.	Product, quotient, sum, difference, consecutive, divisible, factor, common factor, highest common factor (HCF), lowest common multiple (LCM), integer, multiple, prime, prime factor, square, cube, significant figures, approximate, positive, negative, number line, directed numbers, more than, less than, not equal.

Prior Knowledge

1. Give 3 examples of each type of number:
   Odd: Even:

   Prime: Square

   Cube:

2. What does BODMAS/BIDMAS stand for?

3. Calculate:

   a) 645 + 798

   b) 3409 – 461

LEARNING JOURNEY

	Task Description
	1.1 Calculations Use written methods to add and subtract with decimals. Calculate mentally. Calculate with money. Estimate answers to calculations.
	1.2 Calculating with negative integers Add, subtract, multiply and divide positive and negative numbers.
	1.3 Powers and roots Calculate using squares, square roots, cubes and cube roots. Use index notation for powers of numbers. Estimate the square root of a number.
	1.4 Powers, roots and brackets Use mental methods to calculate combinations of powers roots and brackets. Use a calculator to check answers. Substitute numbers into formulas involving power, roots and brackets.
	1.5 Multiples and factors Use index notation. Write a number as a product of its prime factors. Use prime factor decomposition to find the HCF and LCM.

Assignment Title	Unit 2: Expressions and equations	Date set	Autumn 2
Summary of Unit 2		**Key Words**	
Substitute numerical values into formulae and expressions. Simplify and manipulate algebraic expressions. Understand and use standard mathematical formulae. Use reverse functions to solve equations.		Algebra, simplify, unknown, substitute, symbol, solve, variable, equation, brackets, expression, evaluate, formula, simultaneous, quadratic, linear.	

Prior Knowledge

1) If x = 5, what does:
   a) x – 3 equal _____ b) 4x + 5 equal? _____

2) Simplify: a) 5x + 7y + 4x _____ b) 6 + 7a – 3 – 4a _____

3) Solve: a) x + 9 = 15 _____ b) 4x – 3 = 29 _____

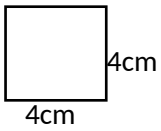
LEARNING JOURNEY

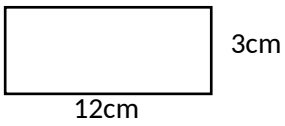
	Task Description
	2.1 Algebraic powers Understand and simplify algebraic powers. Substitute values into formulas involving powers.
	2.2 Expressions and brackets Expand brackets. Make and simplify algebraic expressions.
	2.3 Substitution Substitute into algebraic expressions involving powers. Write expressions and formulae. Change the subject of a basic formula.
	2.4 Factorising expressions Factorise expressions.
	2.5 One-step equations Find the inverse of a function. Solve simple equations using function machines. Solve real life problems using equations.
	2.6 Two-step equations Solve two-step equations using function machines. Solve real life problems using equations.
	2.7 The balancing method Solve equations using the balancing method. Solve equations with the unknown number on both sides.
	2.8 Writing expressions and formulae Substitute into algebraic expressions involving powers. Write expressions and formulae. Change the subject of a formula. Simplify expressions involving brackets, use rules for indices and factorise expressions. Multiply out double brackets and collect like terms.

Assignment Title	Unit 3: Area and volume	Date set	Autumn 2

Summary of Unit 3	Key Words
Calculate the area of shapes including compound shapes. Calculate the volume and surface area of cubes and cuboids.	Area, net, volume, surface area, formula, parallelogram, trapezium, height, base, width, length, substitution, perpendicular.

Prior Knowledge

1. Calculate:
   a) 16 x 3 =
   b) 14 x 2 =
   c) 6 x 6 x 6 =
   d) 8 x 4 x 5 =
2. Find the area: a) 

b) 

3. Draw any net that would make a cube

LEARNING JOURNEY

	Task Description
	3.1 Area of a triangle Derive and use the formula for the area of a triangle. Find areas of compound shapes.
	3.2 Area of a parallelogram and trapezium Calculate areas of parallelograms and trapezia.
	3.3 Volume of cubes and cuboids Calculate the volume of cubes and cuboids.
	3.4 3D shapes Sketch nets of 3D solids.
	3.5 Surface area of cubes and cuboids Calculate the surface area of cubes and cuboids.
	3.6 Problems and measures Calculate the volume of cubes and cuboids. Calculate the surface area of cubes and cuboids.

Assignment Title	Unit 4: Real-life graphs	Date set	Autumn 2

Summary of Unit 4	Key Words
Plot graphs of equations. Identify and interpret gradients and intercepts of linear functions. Plot and interpret graphs.	Co-ordinate, Equation, Intercept, Steepness, Grid, Slope, Origin Gradient, Axes, Variable, Graph.

Prior Knowledge

1. What is 1cm in mm?
2. A car travels at 50 miles in one hour. How far does it travel in 2 hours?
3. A man walks at 2Km\h, how far does he travel in 15 mins?

LEARNING JOURNEY

	Task Description
	4.1 Conversion graphs *(GCSE Statistics)* Reading values from conversion graphs. Plotting conversion graphs from a table of data.
	4.2 Distance-time graphs *(GCSE Statistics)* Interpreting distance-time graphs. Plotting distance-time graphs from descriptive text. Using distance-time graphs to solve problems.
	4.3 Line graphs *(GCSE Statistics)* Plotting line graphs from tables of data. Interpreting line graphs.
	4.4 Complex line graphs *(GCSE Statistics)* Reading values from real-life graphs. Describing trends and making predictions based on information presented graphically. Working out percentages.
	4.5 STEM: Graphs of functions *(GCSE Statistics)* Draw, use and interpret conversion graphs. Draw, use and interpret distance-time graphs. Draw and interpret line graphs. Draw, use and interpret real-life graphs. Discuss and interpret linear and non-linear graphs.
	4.6 More real-life graphs *(GCSE Statistics)* Interpreting graphs. Drawing and using real-life graphs. Using graphs to solve problems and make predictions.