Title: **Review of Number Topics**

Key Knowledge/Prior Learning KS2/3 and **Retrieval and Suggested Starters**
- Calculations – all four operations including working with decimals and directed number. Additionally combined calculations requiring the use of the order of operations   - Rounding – Rounding to powers of 10, a number of decimal places and a number of significant figures.   - Bounds – Being able to find the upper and lower bounds of a number after rounding to a specific degree of accuracy including decimal places and significant figures. Additionally working out upper and lower bounds of a calculations after numbers have been rounded.   - Estimation – Estimating calculations by rounding to one significant figure.   - Number Groups – Understanding different number groups including factors, multiples, primes, composites squares, cubes and triangle number.   - Product of Prime Factors – To be able to write a number as a product of prime factors and in index form.   - HCF and LCM – Being able to find the LCM and HCF of pairs of numbers and being able to reason possible pairs of numbers given the HCF or LCM.   - Fractions – Finding equivalent fractions, simplifying fractions, comparing and ordering fractions and converting between mixed numbers and improper fractions.   - Fractional Arithmetic – Being able to work with fractions using the four operations. To include working with mixed and improper fractions and fractions with different denominators.   - Using indices and roots   - Laws of Indices – multiplication, division, power to a power, power of 0, fractional powers, negative powers   - Converting large and small numbers into and out of standard form   - Ordering numbers in standard form   - Multiplying and Dividing Numbers in standard form   - Adding and subtracting numbers in standard form with the same and different powers of 10   - Finding the percentage of a number (calculator and non-calculator)   - Increasing and decreasing by a percentage (calculator and non-calculator)   - Finding the percentage change   - Reverse Percentages

KS4 National Curriculum – what students will be practicing

Specific Ambitious Knowledge

Key Vocabulary/Literacy Opportunities
- Sum/ Product   - Positive/ Negative   - Decimal Place   - Significant Figure   - Upper/Lower Bound   - Maximum / Minimum   - Estimate & approximate   - Evaluate   - Factors/ Multiples/ Primes/ Composites/ Squares/ Cubes/ Triangle Numbers   - Highest Common Factor   - Lowest Common Multiple   - Product of Prime Factors   - Index Form   - Equivalent   - Simplify   - Ascending/ Descending   - Numerator/ Denominator   - Mixed Number/ Improper Fraction   - Common Denominator   - Indices, order, power   - Squared, cubed, square root, cube root   - Base   - Standard Form   - Ordinary Number   - Ascending/ Descending   - Percentage   - Proportion   - Increase/ Decrease   - Decimal Multiplier   - Inverse   - Percentage Change

Key Formulae/Knowledge
Methods for Multiplication – Long/ Grid/ Chinese Lattice Methods for Division – Bus Stop/ Long Prime Factors Trees LCM - Listing Method, Venn Diagram Method HCF – Listing Method, Venn Diagram Method Dividing Fractions – KFC, Common Denominator

The first rule:	$a^n \times a^m = a^{m+n}$
The second rule:	$(a^n)^m = a^{mn}$
The third rule:	$a^m \div a^n = a^{m-n}$
The fourth rule:	$a^0 = 1$
The fifth rule:	$a^{-1} = \dfrac{1}{a}$ and $a^{-m} = \dfrac{1}{a^m}$
The sixth rule:	$a^{1/2} = \sqrt{a}$ and $a^{\frac{1}{m}} = \sqrt[m]{a}$
	$a^{\frac{n}{m}} = (a^{\frac{1}{m}})^n = (\sqrt[m]{a})^n$

Proportion boxes for percentages

Maths in Context (Historical, Real Life and Student Thinking Points)

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Student' Thinking

Projects/Enrichment/Investigations

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