Year 8 Mathematics

Level	Number1- Knowledge, Skills, Understanding
Higher	**Fractions** Add and subtract fractions (proper and mixed) -positive and negative Multiply and divide simple fractions (proper and mixed) - positive and negative Convert recurring decimals to fractions Find the reciprocal of simple numbers/fractions mentally, e.g. 10 and 1/10, 1/3 and 3 etc. Know that a number multiplied by its reciprocal is 1 Know that the reciprocal of a reciprocal is the original number Use conventional notation for priority of operations, including roots and reciprocals
	Multiples, Factors, Primes, HCF and LCM Find the prime factor decomposition of a number less than 100. They must give their answers as powers Find the HCF or LCM of two numbers Recognise two digit prime numbers Find HCF and LCM using Prime Factors Use prime factorisation to represent a number as a product of its primes using index notation Recognise that prime factor decomposition of a positive integer is unique
	Types of Numbers and Indices Recall the cubes of 2, 3, 4, 5 and 10 Use the square, cube and power keys on a calculator Combine laws of arithmetic for brackets with mental calculations of square roots and cube roots, e.g. $\sqrt{(45 + 36)}$ Use the index laws to include negative power answers and understand that these answers are smaller than 1 Use the laws of indices to multiply and divide numbers written in index notation Extend the patterns by using the index law for division established for positive power answers, to show that any number to the power of zero is 1 Use an extended range of calculator functions, including +, -, x, , x^2, $\sqrt{x}$, memory, xy, x1/y, brackets

Year 8 Mathematics

Level	Number1- Knowledge, Skills, Understanding
Intermediate	**Fractions** Add and subtract fractions (proper and improper) -positive and negative Multiply and divide simple fractions (proper and improper) - positive and negative Use halving and doubling strategies on fractions to find decimal equivalents of other fractions, e.g. 1/4 = 0.25 so 1/8 is half of 0.25 etc. Original fact is given Use division to convert a fraction to a decimal Convert a terminating decimal to a fraction and simplify the fraction Work interchangeably with terminating decimals and their corresponding fractions (such as 3.5 and 7/2 or 0.375 or 3/8) Learn fractional equivalents to key recurring decimals e.g. 0.333333..., 0.66666666..., 0.11111... and by extension 0.222222... Know the denominators of simple fractions that produce recurring decimals, and those that do not Calculate fractions of quantities and measurements (fraction answers) Convert a fraction to a decimal to make a calculation easier
	Multiples, Factors, Primes, HCF and LCM Find lowest common multiple by listing Recognise rules relating to odd and even numbers Understand the vocabulary of highest common factor, lowest common multiple Find the prime factor decomposition of a number less than 100. They must give their answers as powers Find the HCF or LCM of two numbers Recognise two digit prime numbers
	Types of Numbers and Indices Give the positive and negative square root of a square number Know all the squares of numbers less than 16 and be able to know the square root given the square number Use index notation for small integer powers, e.g. $24 = 3 \times 2^3$ Find and interpret roots of non-square numbers using square root key Extend mental calculations to squares and square roots, cubes and cube roots Be able to estimate square roots of non-square numbers less than 100 Use positive integer powers and associated real roots (square, cube and higher) Recall the square numbers up to 225 and cubes of 2, 3, 4, 5 and 10 Be able to use mental strategies to solve word problems set in context using square roots and cube roots mentally Establish index laws for positive powers where the answer is a positive power

Year 8 Mathematics

Level	Number1- Knowledge, Skills, Understanding
Foundation	**Fractions** Convert terminating decimals to fractions, e.g. 0.23 = 23/100 Recall known facts including fraction to decimal conversions Calculate simple fractions of quantities and measurements (whole-number answers) Extend the percentage calculation strategies with jottings to find any percentage, e.g. 17.5% by finding 10%, 5% and 2.5%, and adding
	Multiples, Factors, Primes, HCF and LCM Apply simple tests of divisibility (2, 3, 4, 5, 6, 9, 10, 25) Recognise multiples up to 10 × 10 Recognise and use multiples and factors (divisors) and use simple tests of divisibility Identify numbers with exactly 2 factors (primes) Understand the difference between factor, multiple and prime numbers Find all the factor pairs for any whole number without any support Able to determine factors and multiples of numbers by listing Understand the vocabulary of prime numbers, factors (divisors), multiples, common factors, common multiples. Recognise that every number can be written as a product of two factors Find common factors and primes Recognise and use common factor, highest common factor and lowest common multiple Find the prime factor decomposition of a number less than 100 Find the HCF or LCM of two numbers Know the prime factorisation of numbers up to 30. They must give their answers as powers Recognise two digit prime numbers
	Types of Numbers and Indices Know square numbers, 1 × 1 to 15 × 15 Recognise the first few triangular numbers Find roots of square numbers up to 100 (i.e. roots up to 10) Use index notation for squares and cubes and for positive integer powers of 10 (e.g. write 27 as 3^3 and 1000 as 10^3)