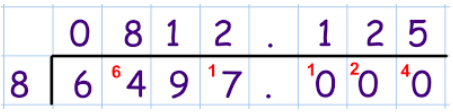
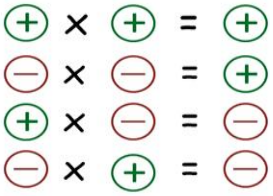
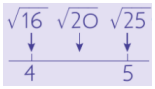
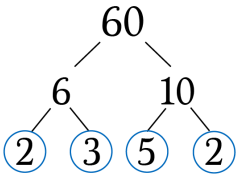
KS3 2: Unit 1 Number **Knowledge Organiser**

Core Knowledge		
Doubling and halving	35 x 6 = 70 x 3 =210	A mental multiplication method, double one number to make a calculation easier, half the other.
Rounding and adjusting	4 x 998 = 4 x 1000 - 4 x 2	A mental multiplication method, round one number to the nearest 10, 100, 1000 then add or subtract the difference.
Estimating answers to calculations	**Estimate** 278 + 64 - 109 ≈ 300 + 60 - 100 =260 **Actual** 278 + 62 - 109 = 233	Round numbers to the nearest 10, 100 or 1000 and work out as an estimate to check your calculation.
Integer	e.g. 7 or 235, 0 or -16	A whole number, positive, negative or zero
Divisible	18 ÷ 6 = 3 so 18 is divisible by 6	An integer is divisible by a second integer if there is no remainder when dividing by the second integer.
Divisibility rules	14**6** ÷ 2 = 73	A number is divisible by 2 if its last digit is even
	165 ÷ 3 = 55 (1 + 6 + 5 = 12 and 12 ÷ 3 = 4)	A number is divisible by 3 if the sum of its digits is divisible by 3
	6**16** ÷ 4 = 154 (16 ÷ 4 = 4)	A number is divisible by 4 if the last 2 digits are divisible by 4
	27**5** ÷ 5 = 55	A number is divisible by 5 if the last digit is zero or 5
	78 ÷ 6 = 13 (78 is even and 7+ 8 = 15)	A number is divisible by 6 if the number is divisible by 2 and 3
	57**192** ÷ 8 = 7159 (192 ÷ 8 = 24)	A number is divisible by 8 if the last 3 digits are divisible by 8
	576 ÷ 9 = 64 (5 + 7 + 6 = 18 and 18 ÷ 9 = 2)	A number is divisible by 9 if the sum of its digits is divisible by 9
	451**0** ÷ 10 = 451	A number is divisible by 10 if its last digit is zero
Dividing decimals by integers		Use the standard written method for short or long division. Line up the decimal point for the answer and add decimal places as needed or until there is no remainder.
Deposit[1]	e.g. Sam just paid a deposit of $2,000 on a new car, and needs to borrow $18,000 to finish the deal.	A deposit is an initial payment that is part of a full price. It is usually paid to show that you agree to buy something.
Instalment	e.g. Sam could pay 18 instalments of $1000 dollars each month to complete the payment	An instalment is one of several sums of money, paid over an agreed amount of time, until the full payment has been made.
Adding and subtracting negative numbers		Use a number line to help when adding or subtracting negative numbers.
Multiplying and dividing negative numbers		When multiplying or dividing 2 numbers, if the signs are the same the answer is positive, if the signs are different then the answer is negative.
Bank balance		The amount of money in a bank account.
Overdraft		A negative amount of money, money owed to the bank.
Deposit[2]		An amount of money paid into a bank account.

[1] We have 2 different definitions for deposit to be aware of.

[2] “

Withdrawal		When you take money out of a bank account, you withdraw it, or make a withdrawal.
Estimating square roots	 $\sqrt{20}$ lies between 4 and 5	Use a number line and your knowledge of square numbers to find two integers that lie either side of a square root.
Cube numbers	2^3 = 2 x 2 x 2 = 8 "2 cubed" or "2 to the power of 3"	An index of 3 means the number should be cubed.
Cube root	$\sqrt[3]{8} = 2$	A cube root is the inverse of finding the cube.
Negative square root		There are 2 square roots of a number, a positive and a negative because 3 x 3 = 9 and -3 x -3 = 9. The symbol $\sqrt{}$ is always used for the positive square root.
Counter example		An example which proves a statement is wrong.
Square root $\sqrt{calculation}$	$\sqrt{9 + 16} = \sqrt{25} = 5$	An extended square root symbol groups a calculation like a bracket. Calculate the group before finding the square root.
Index or power	$5^4 = 5 \times 5 \times 5 \times 5 = 625$ (5 to the power of 4 or 5 to the 4)	The index tells you how many of the base number to multiply together.
Prime factors	6 has prime factors 2 and 3	Factors that are prime
Factor tree		Create a factor tree by using factor pairs to make branches. End a branch when a factor is prime.
Product	60 = 2 x 2 x 3 x 5	A product is the result of a multiplication. To write a number as a product, split it into factors.
Prime factor decomposition	6 = 2 x 3 24 = 2 x 2 x 2 x 3	Every positive integer greater than 1 is either a prime number or can be written as a product of their prime factors.
Index form	2 x 2 x 2 x 3 = 2^3 x 3	A product of prime factors is often written in the shorter, index form.
Highest common factor (HCF)	8 = 2 x 2 x 2 and 12 = 2 x 2 x 3 The HCF of 8 and 12 is 2 x 2 = 4	Use prime factor decomposition to find the HCF of 2 or more numbers.
Lowest common multiple (LCM)	8 = 2 x 2 x 2 and 12 = 2 x 2 x 3 The LCM of 8 and 12 is 2 x 2 x 2 x 3 = 24	Use prime factor decomposition to find the LCM of 2 or more numbers.