Mount Charles School
Multiplication and Division
Objective. K-Knowledge.   S-Skills

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
New Vocabulary	*Odd, even* *Double, halve* *Share, share* *equally* *Group in pairs* *Divide*	equal groups row array column double once, twice, three times, five times share count in tens (forwards from/backwards from) How many times? Lots of, groups f Multiple of, times, multiply by Repeated addition Group in twos, threes etc Divided by, left, left over.	Multiplication Times divide (÷) even odd	multiple approx. approximately multiplication sentence repeated addition division statement times-table remainder division fact product multiples of four, eight, fifty and one hundred scale up	Commutative Multiplication facts (up to 12x12) Division facts Inverse derive	Factor, factor pairs prime number composite number square number cube number inverse operation formal written method	Long division Recurring decimal Order of operations Common factors, common multiples
Multiplication and division facts		*count in multiples of twos, fives and tens* (copied from Number and Place Value) K – multiples of 2,5 and 10 K – vocab – multiple, lots of S – add 2,5 and 10 to a number		*count from 0 in multiples of 4, 8, 50 and 100* (copied from Number and Place Value) K - order of multiples of 4,8,50 and 100 K – counting in 4 is double counting in 2	*count in multiples of 6, 7, 9, 25 and 1 000* (copied from Number and Place Value) K – multiples of 6, 7, 9, 25, 1000 K – order of multiples of 6, 7, 9, 25 and 1000	*count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000* (copied from Number and Place Value) K – multiply by 10,100, 1000, 10 000, 100 000	

	S – count in multiples of 2,5,10		K – counting in 8 is double counting in 4 S – count in multiples of 4,8,50 and 100 S – double multiples of 4 and 8 **recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables** K – multiplication facts for the 3,4, and 8 multiplication tables K - division facts for the 3,4, and 8 multiplication tables S – recalling the multiplication and division facts for the 3,4 and 8 times tables. S – use appropriate facts to problem solve	K – counting in 6s in double counting in 3s K – pattern of 25,50,75,100 S – counting in multiples of 6,7, 9, 25, 1000 S – double multiples of 3 **recall multiplication and division facts for multiplication tables up to 12 × 12** K – multiplication facts up to 12 x 12 K - division facts up to 12 x 12 S – recalling the multiplication and division facts up to 12 x 12. S – use appropriate facts to problem solve	K - order of numbers to 1 000 000 S – counting forwards and backwards to 1 000 000 S – multiplying any number by 10, 100, 1000, 10 000, 100 000	
Mental calculatio	**Begins to conceptually subitise larger numbers by subitising smaller**		**show that multiplication of two numbers can be done in any order**	**write and calculate mathematical statements for multiplication and division using the**	**use place value, known and derived facts to multiply and divide mentally,**	**multiply and divide numbers mentally drawing upon known facts**

perform mental calculations, including with mixed operations and large numbers

groups within the number, e.g. sees six raisins on a plate as three and three		**(commutative) and division of one number by another cannot** K – why multiplication is commutative and division is not K – explain why multiplication is commutative using concrete, pictorial and abstract representation. S – to show multiplication is commutative using concrete, pictorial and abstract representation	**multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods** (appears also in Written Methods) K – multiplication and division facts for the 2,3,4,5,8 and 10 times table K – mental methods for multiplying and dividing 2 digit numbers by 1 digit numbers K – written method for multiplying and dividing S – apply mental and written methods for multiplication and division.	**including:** **multiplying by 0 and 1; dividing by 1; multiplying together three numbers** K - multiplication and division facts up to 12 x 12 K – how to multiply by 0 and 1 K – divide by 1 S – to derive from know facts to multiply and divide mentally S – multiply 3 numbers S – multiplication of 3 numbers can be done in any order **recognise and use factor pairs and commutativity in mental calculations** (appears also in Properties of Numbers) K – what factor pairs are	K – multiplication and division facts up to 12 x 12 K – place value S – apply place value knowledge and known facts to multiply and divide numbers mentally **multiply and divide whole numbers and those involving decimals by 10, 100 and 1000** K – place value of whole numbers and decimal numbers K – how to multiply and divide by 10, 100 and 1000 S – multiplying and dividing by 10, 100 and 1000	K – reading large numbers K – value of digits in large numbers K – range of mental methods for calculations S – apply place value knowledge of large numbers to perform mental calculations *associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)* (copied from Fractions)

| | | | | | K – multiplication and division facts up to 12 x 12 S – recognise and use factor pairs and commutatively in mental calculations. | | |

| **Written Methods** | | | **calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs**

K – x equals multiplication, ÷ equals and = is the same is equals
K – multiplication and division facts for 2,5 and 10 times tables
S – calculate mathematical statements for multiplication and | **write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods**
(appears also in Mental Methods)
K – multiplication and division facts for the 2,3,4,5,8 and 10 times table
K – mental methods for multiplying and dividing 2 digit numbers by 1 digit numbers
K – written method for multiplying and dividing | **multiply two-digit and three-digit numbers by a one-digit number using formal written layout**

K – multiplication facts up to 12 x 12
K – formal written layout for multiplying
K- place value knowledge numbers to 100
S – apply knowledge of formal written method accurately
S – apply knowledge of multiplication facts up to 12 x 12 accurately | **multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers**

K -formal written methods for long multiplication
K – place value knowledge of numbers to 1000
S – apply knowledge of long multiplication accurately

divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders | **divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context**
K – formal written method of short division up to 4 digits by a two-digit whole number.
K – formal written method of long division
K - how to interpret remainders as whole numbers, fractions or by rounding |

			division within the multiplication tables S – write statements using X, = and ÷ signs	S – apply mental and written methods for multiplication and division.		**appropriately for the context** K – formal written method of short division up to 4 digits by a one-digit number K – concept of remainders K – contexts where remainders would be appropriate K – division facts S – apply knowledge of short division accurately S – interpret remainders based on the context	K – which method for interpreting remainders is appropriate S -apply knowledge of short and long division accurately. S – interpreting remainders as whole numbers, fractions or by rounding as appropriate based on the context. S – choose appropriate method for the problem *use written division methods in cases where the answer has up to two decimal places* (copied from Fractions (including decimals))
Properties of numbers: multiples, factors, primes,	**Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three**				**recognise and use factor pairs and commutativity in mental calculations (repeated)** K- how to use the law of commutativity K – a factor pair is two numbers that multiply to get a product	**identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** K- what a common factor is K – how to identify multiples and factors K – how to work logically	**identify common factors, common multiples and prime numbers** K – definition of common multiples S – identify common factors, common multiples and prime numbers. ***use common factors to simplify fractions; use common multiples to express fractions in the same denomination*** (copied from Fractions)

| | | | | | S– recognize factor pairs
S – use factor pairs and commutativity in mental calculations | S – identify multiples and factors
S- work logically to find all factor pairs
S- find common factors of two numbers

vocabulary of prime numbers, prime factors and composite (non-prime) numbers
K- definition of a prime number, prime factor and composite
S- know the vocabulary of prime, prime factor and composite.
S- use the vocabulary of prime, prime factor and composite number accurately.

establish whether a number up to 100 is prime and recall prime numbers up to 19
K - See above objective. | |
| | | | | | | | **calculate, estimate and compare volume of cubes** |

							S – use knowledge to decide whether a number is prime S – recall prime numbers up to 19 **recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})** K – what square and cube numbers are K - ^{2} represents squared K - ^{3} represent cubed S – recognise square and cube numbers S – use the correct	**and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3** (copied from Measures)
Order of operations								**use their knowledge of the order of operations to carry out calculations involving the four operations** K – order of operations (BIDMAS) S – apply knowledge of order of operations to carry out calculations
In ve				*estimate the answer to a calculation and use*	*estimate and use inverse operations to*			**use estimation to check answers to calculations**

				inverse operations to check answers (copied from Addition and Subtraction)	*check answers to a calculation* (copied from Addition and Subtraction)		**and determine, in the context of a problem, levels of accuracy**
				K – mental calculation methods for addition, subtraction, multiplication and division K – inverse relationship between multiplication and division K – value of numbers S – use appropriate inverse operation for the calculation S – estimate the answer to a calculation	Same as Year 3		K – multiplication and division facts up to 12 x 12 K – how to multiply and divide by 10,100, 1000 and 10,000 S – to use known facts to use estimation to check answers to calculations.
Problem solving		**solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations**	**solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication**	**solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence**	**solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer**	**solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes**	**solve problems involving addition, subtraction, multiplication and division** See Year 5

		and arrays with the support of the teacher	**and division facts, including problems in contexts**	**problems in which n objects are connected to m objects**	**scaling problems and harder correspondence problems such as n objects are connected to m objects**	K – factors, multiples, square and cubes (See above)	
		K- to count concrete objects and pictorial representations accurately.	K – how to read arrays	K – how to use a bar model to show positive integer scaling and correspondence problems	K – how to multiply two-digit numbers by one-digit numbers using the distributive law.	K – variety of mental methods for multiplicand and division	*solve problems involving similar shapes where the scale factor is known or can be found*
		K – an array is used to help understanding when counting in groups	K – count in multiples of 2, 5 and 10.	K - multiplication and division facts of the 2,3,4,5,8 and 10 times tables.	K – multiplication and division facts to 12x12	K – formal written methods for multiplication and division	(copied from Ratio and Proportion)
		S – one to one correspondence	K- multiplication facts for 2, 5 and 10.	S – apply knowledge of multiplication and division to solve problems	S – solve problems that involve multiplying and adding	S- apply knowledge of factors, multiples, squares and cubes to solve multiplication and division problems.	
		S- to subitise accurately	K – vocabulary for multiplication and division	S- use mental and written methods accurately.	S – apply the distributive law to multiply two-digit numbers by one-digit numbers.	S – use formal written methods accurately.	
		S - solve one-step problems involving multiplication and division	K – range of appropriate contexts for multiplication and division.	S- use bar model accurately to represent integer scaling problems and correspondence problems		**solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign**	
		S – calculate an answer using concrete objects, pictorial representations and arrays with the support of the teacher.	K – how to use a bar model to represent multiplication and division			K – equals sign means the same as	
			S – use materials, arrays, repeated addition, mental methods and multiplication and division facts to solve problems.				

			S – solve problems in context.			K – variety of written and mental methods for the four operations S – apply knowledge of equals sign to solve problems. S – calculation using the four operations accurately. **solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates** K – how scale by simple fractions K – how to solve problems involving simple rates K – variety of mental and written methods for multiplication and division. K – simple fractions S - solve problems by scaling by simple fractions and involving simple rates.	