

Athersley North Primary School

Maths Medium Term Planning Progression: Multiplication Strand

Y6

Unit: Multiplication		Key Vocabulary - Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times ... ten times, repeated addition	
Key Knowledge		Multiplication table, multiplication fact, division fact, doubling, halving, Array, row, column, number patterns, Inverse, square, squared cube, cubed	
Key Knowledge		<p>To multiply up to a 4 digit number by 1 digit To find common factors and common multiples of numbers To understand and find prime, square and cube numbers To understand the order of operations (Bidmas) To develop mental calculations and estimation To understand the reason for known facts</p>	
Link to last concept	<p>Y6 – Link to Place Value</p> <ul style="list-style-type: none"> Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. Solve number problems and practical problems that involve counting forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. 	Link to last year	<p>Y5 - Pupils should be taught to:</p> <ul style="list-style-type: none"> identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 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 multiply numbers mentally drawing upon known facts multiply whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers, and the notations, $(^2)$ $(^3)$ solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes solve problems multiplication and a combination of other operations, including understanding the meaning of the equals sign solve problems involving multiplication, including scaling by simple fractions and problems
Link to next concept	<p>Y6 – Link to Number all four operations (Division)</p> <ul style="list-style-type: none"> Divide numbers mentally drawing upon known facts. Divide whole numbers by 10, 100 and 1000. Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context. Recognise and use square numbers and cube numbers and the notation for squared $(^2)$ and cubed $(^3)$. Solve problems involving division including using their knowledge of factors and multiples, squares and cubes. Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign. <p>Y6 – Link to Converting Units</p> <ul style="list-style-type: none"> Convert between different units of metric measure (for example, km and m; cm and m; cm and mm; g and kg; l and ml). <p>Y6 – Link to Perimeter, area and volume</p> <ul style="list-style-type: none"> Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles (including squares), and including using standard units, cm^2 ,m^2 estimate the area of irregular shapes. 	Link to next year	<p>Y7 - Pupil should be taught to</p> <ul style="list-style-type: none"> Use formal written methods, applied to positive integers and decimals Select and use appropriate calculation strategies to solve increasingly complex problems Recognise and use relationships between operations including inverse operations Use the concepts and vocabulary factors, multiples, common factors, common multiples, highest common factor, lowest common factor Derive and apply formulae to calculate and solve problems involving perimeter and area of triangles, parallelograms, and trapezia

Y5

Unit: Multiplication		Key Vocabulary - Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times ... ten times, repeated addition	
		Multiplication table, multiplication fact, division fact, Doubling, halving, array, row, column, Number patterns	
		Inverse, square, squared cube, cubed	
Key Knowledge	<p>To find multiples of numbers</p> <p>To find factors and common factors of numbers</p> <p>To know, understand and find prime number, square numbers and cube numbers</p> <p>To multiply by 10, 100, 1000 and find multiples of 10, 100, 1000</p> <p>To multiply 4 digits by 1 digit and multiply 4 digits by 2 digits</p> <p>To multiply 2 digits (area model)</p> <p>To multiply 2 digits by 2 digits</p> <p>To multiply 3 digits by 2 digits</p>		
Link to last concept	<p>Y5 – Link to Place Value</p> <ul style="list-style-type: none"> Count in multiples of 6, 7, 9. 25 and 1000. 	Link to last year	<p>Y4 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall multiplication for multiplication tables up to 12 x 12 use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three number recognise and use factor pairs and commutatively in mental calculation multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as which n objects are connected to m objects
Link to next concept	<p>Y5 – Link to Division</p> <ul style="list-style-type: none"> Recall and use division facts for multiplication tables up to 12 x 12. Use place value, known and derived facts to divide mentally, including: dividing by 1; Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. <p>Y5 – Link to Measurement – Length and Perimeter</p> <ul style="list-style-type: none"> Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m. <p>Y5 – Link to Converting Units</p> <ul style="list-style-type: none"> Convert between different units of measure eg kilometre to metre. 	Link to next year	<p>Y6 - Pupils should be taught to:</p> <ul style="list-style-type: none"> multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication perform mental calculations, including with mixed operations and large numbers identify common factors, common multiples and prime numbers using their knowledge of the order of operations to carry out calculations involving the four operations solve problems involving multiplication use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

Y4

Unit: Multiplication		Key Vocabulary - Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times ... ten times, repeated addition	
		Multiplication table, multiplication fact, Doubling, halving Array, row, column, Number patterns Inverse, square, squared cube, cubed	
Key Knowledge	<p>To multiply by 10 and 100 To multiply by 1 and 0 To multiply by 6 and know the 6 times table To multiply by 9 and know the 9 times table To multiply by 7 and know the 7 times table To know the 11 and 12 times table To multiply 3 numbers To develop understanding with factor pairs To use written methods with increasing efficiency to solve multiplication problems To multiply 2 digits by 1 digit and multiply 3 digits by 1 digit</p>		
Link to last concept	<p>Y4 – Link to Place Value Count in multiples of 6, 7, 9, 25 and 1000.</p> <p>Y4 – Link to Length and Perimeter</p> <ul style="list-style-type: none"> Convert between different units of measure eg kilometre to metre. Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m 	Link to last year	<p>Y3 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall and use multiplication for the 3, 4 and 8 multiplication tables write and calculate mathematical statements for multiplication using the multiplication tables that they know, including two-digit numbers times one-digit numbers, using mental and progressing to formal written methods solve problems, including missing number problems, involving multiplication, including integer scaling problems and correspondence problems in which n objects are connected to m objects
Link to next concept	<p>Y4 – Link to Division</p> <ul style="list-style-type: none"> Recall and use division facts for multiplication tables up to 12 x 12. Count in multiples of 6, 7, 9, 25 and 1000. Use place value, known and derived facts to divide mentally, including: multiplying by 0 and 1; dividing by 1; Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. <p>Y4 – Link to Measure – Area</p> <ul style="list-style-type: none"> Find the area of rectilinear shapes by counting squares. 	Link to next year	<p>Y5 - Pupils should be taught to:</p> <ul style="list-style-type: none"> identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 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 multiply numbers mentally drawing upon known facts multiply whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers, and the notations, (?) (?) solve problems involving multiplication including using their knowledge of factors and multiples, squares and cubes solve problems multiplication and a combination of other operations, including understanding the meaning of the equals sign solve problems involving multiplication, including scaling by simple fractions and problems

Y3

Unit: Multiplication		Key Vocabulary - Multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, once, twice, three times ... ten times, repeated addition	
		Multiplication table, multiplication fact, doubling, halving, array, row, column, Number patterns	
Key Knowledge	<p>To develop understanding of multiplication through using equal groups and related calculations</p> <p>To multiply by 3 and know the 3 times table</p> <p>To multiply by 4 and know the 4 times table</p> <p>To multiply by 8 and know the 8 times table</p> <p>To compare statements of multiplication</p> <p>To multiply 2 digits by 1 digit</p> <p>To understand scaling</p>		
Link to last concept	<p>Y3 – Link to Place Value</p> <ul style="list-style-type: none"> Count from 0 in multiples of 4, 8, 50 and 100. <p>Y3 – Link to Addition and Subtraction</p> <ul style="list-style-type: none"> Add and subtract numbers mentally, including: <ul style="list-style-type: none"> a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 	Link to last year	<p>Y2 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall and use multiplication for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (x) and equals (=) signs show that multiplications of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication, using materials arrays, repeated addition, mental methods, and multiplication and including problems in contexts
Link to next concept	<p>Y3 – Link to Division</p> <ul style="list-style-type: none"> Recall and use division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for division using the multiplication tables they know, including for two-digit numbers multiplied by one-digit numbers, using mental and progressing to formal written methods. Solve problems including missing number problems involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. Recall and use division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for division using the multiplication tables they know, including for two-digit numbers multiplied by one-digit numbers, using mental and progressing to formal written methods. Solve problems including missing number problems involving division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects. 	Link to next year	<p>Y4 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall multiplication for multiplication tables up to 12 x 12 use place value, known and derived facts to multiply mentally, including multiplying by 0 and 1; multiplying together three number recognise and use factor pairs and commutatively in mental calculation multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as which n objects are connected to m objects

Y2

Unit: Multiplication		Key Vocabulary- Multiplication, multiply, multiplied by, multiple, groups of, times, once, twice, three times ... ten times, repeated addition	
		Multiplication table, multiplication fact, Doubling, halving, Array, row, column, Number patterns	
Key Knowledge	<p>To Recognise, make and add equal groups</p> <p>To write multiplication sentences using the x symbol</p> <p>To write and solve multiplication sentences from pictures</p> <p>To use arrays to solve multiplication problems</p> <p>To multiply by 2 and know the 2 times tables</p> <p>To multiply by 5 and know 5 times tables</p> <p>To multiply by 10 and know the 10 times tables</p>		
Link to last concept	<p>Y2 – Link to Place Value</p> <ul style="list-style-type: none"> Count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward. <p>Y2 – Link to Addition and Subtraction</p> <ul style="list-style-type: none"> Add and subtract numbers using concrete objects, pictorial representations, and mentally, including two two digit numbers. Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods. 	Link to last year	<p>Y1 - Pupils should be taught to:</p> <ul style="list-style-type: none"> solve one step problems involving multiplication, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher
Link to next concept	<p>Y2 – Link to Division</p> <ul style="list-style-type: none"> Calculate mathematical statements for division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) sign. Solve problems involving division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. <p>Y2 – Link to measuring (scales of 2, 5, 10 and 3)</p> <ul style="list-style-type: none"> Choose and use appropriate standard units to estimate and measure mass (g/kg), capacity (l/ml) and temperature (oC) to the nearest appropriate unit, using thermometers, scales and measuring vessels. 	Link to next year	<p>Y3 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall and use multiplication for the 3, 4 and 8 multiplication tables write and calculate mathematical statements for multiplication using the multiplication tables that they know, including two-digit numbers times one-digit numbers, using mental and progressing to formal written methods solve problems, including missing number problems, involving multiplication, including integer scaling problems and correspondence problems in which n objects are connected to m objects

Y1

Unit: Multiplication		Key Vocabulary- Doubling, halving, array, number patterns, multiplication, multiply, multiplied by Multiple	
Key Knowledge	<p>To count in 10s</p> <p>To make equal groups and can group objects/numbers together</p> <p>To add equal groups (link repeated addition to multiplication)</p> <p>To make arrays to solve multiplication problems</p> <p>To make doubles (relate to multiply by 2)</p>		
Link to last concept	<p>Y1 – Link to Number: Place Value Within 50 – multiples of 2, 5 and 10 to be included</p> <ul style="list-style-type: none"> Count in multiples of 2, 5 and 10. <p>Y1 – Link to Number: Multiplication and Division</p> <ul style="list-style-type: none"> Count in multiples of twos, fives and tens. <p>Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p>	Link to last year	<p>40-60 months</p> <p>Beginning to create their own mathematical problems.</p> <p>ELG – Solve problems by doubling.</p>
Link to next concept	<p>Y1 – Link to Division</p> <ul style="list-style-type: none"> Solve one step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. 	Link to next year	<p>Y2 - Pupils should be taught to:</p> <ul style="list-style-type: none"> recall and use multiplication for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (x) and equals (=) signs show that multiplications of two numbers can be done in any order (commutative) and division of one number by another cannot solve problems involving multiplication, using materials arrays, repeated addition, mental methods, and multiplication and including problems in contexts