Maths Parent Workshop - What we Teach, How we Teach it -November 2022

Multiplication and Division







Year 2, Year 3 and Year 4

Concrete, Pictorial, Abstract

The children's understanding of the calculation strategies that they are taught through school will be underpinned by a secure understanding of place value. At Lindow Community we teach through a **CPA (concrete, pictorial, abstract) approach.**

Understanding in all areas of maths will be developed by children using concrete resources and interpreting and using pictorial representations before moving onto solve abstract calculations.

There are a range of place value and counting resources available for the children to use in each classroom. The CPA process/approach will be clearly exemplified on maths working walls for the current maths focus



Lindow

Community

Primary School

1

Useful Resources Concrete resources are VITAL in the children's early understanding of number and calculation.













MULTIPLICATION

	National Curriculum Objectives: Multiplication objectives from Multiplication and Division Strand	Ke (ey S Obj
•	Recall and use multiplication facts for	•	Re
	the 2, 5 and 10 times tables.		nu
•	Calculate mathematical statements	•	Co
	for multiplication within the		an
	multiplication tables and write them		10
	using the multiplication signs and		
	equals signs.		
•	Show that the multiplication of two		
	numbers can be done in any order.		
	Solve problems involving multiplication		
	and division, using materials, arrays,		
	repeated addition, mental methods		
	and multiplication facts, including		
	problems in context.		
_	problems in context.		

Lindow Community Primary School

Year 2

/ Skills/ other linked NC bjectives (Place Value)	Key Vocabulary
Recognise odd and even numbers.	Year 1 vocab plus
Count in steps of 2,3 and 5 from zero and in 10s from any number.	Array, multiplied by, repeated addition,
	Two times, three times, five times, ten times

In year 2, the children will:

- and pictorial representations.
- Multiply using arrays and repeated addition.



Community Primary School

Develop their understanding of multiplication through the use of practical resources

Written Methods **Step 1: Practical Apparatus**

practical equipment.







Children continue to explore multiplication through use of real -life problems using a range of



Written Methods **Step 2: Arrays**

examples such as 3 X... = 15





Community Primary School

Use arrays to help teach the children that multiplication can be done in any order and explore





Written Methods **Step 3: Repeated Addition on a number line**

Children start from 0 and make equal jumps on a number line in order to work our multiplication facts and write multiplication statements using x and = symbols.







Mental Methods

Counting in twos, fives and tens Repeated addition

Use of arrays

Children should recall multiplication facts for the 2, 5 and 10 times tables through practising counting and understanding of the operation and number patterns. Using doubling and understanding that this is the same as multiplying by 2. Reordering a calculation, knowing that multiplication can be done in any order.



How can this stage be supported at home?

•

MULTIPLICATION

Lindow

National Curriculum Objectives: Multiplication objectives from Multipli and Division Strand

- Recall and use multiplication and div facts for the 3,4 and 8 times table.
- Write and calculate multiplication us the multiplication tables they know including for two-digit numbers tim one-digit numbers, suing mental mer and progressing to formal written methods.
- Solve problems, including missing nu problems, involving multiplication, including positive integer scaling problems and corresponding problem which n objects are connected to m objects.

Community Primary School

Year 3

ication	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
vision es. using	 Count from 0 in multiples of 4 and 8. 	All previous vocabulary, plus:
r, nes ethods		Product, multiple
umber		
ms in n		

In year 3, the children will:

Continue to develop their understanding of multiplication through use of practical those children who do not have a secure understanding. start of Year 3, before any new multiplication objectives are introduced. Start to be introduced to the grid method for multiplication. However, in order to do this, children need secure underst

anding of the maths which will underpin this.



Primary School

resources and pictorial representations. Year 2 multiplication must be consolidated for

- Be given the opportunity to practise their recall of the 2,5 and 10 times tables from the

Written Methods for multiplying a two - digit number by a one - digit number. **Step 1: Arrays**

understanding and can apply these to calculate facts for the 3, 4 and 8 times tables.





4 + 4 + 4 = 12

 $4 \times 3 = 12$

Firstly, the children will reinforce Year 2 work on arrays, ensuring children have a secure





3 + 3 + 3 + 3 = 12

3 x 4 = 12

Written Methods for multiplying a two - digit number by a one - digit number. **Step 2: Introducing the Grid Method**

Introduce the grid method to the children by making the arrays to represent the multiplication statement. E.g. "We need 4 rows of 10 and 4 rows of 3".

Then move onto using dienes, as a progression towards a more compact method.

Children can then represent the work they have done with the practical resources, in a way in which they understand, after modelling by the teacher.



×	10	3
4	0000000000	00
	0000000000	00
	0000000000	00
	0000000000	00







Written Methods for multiplying a two - digit number by a one - digit number. **Step 3: The Grid Method**

Once the children have a secure understanding of the above steps, the grid method can be introduced, alongside a pictorial representation to start with, then the children practise and use this in a variety of different contexts.







Written Methods for multiplying a two - digit number by a one - digit number. Step 4: The Grid Method

For those children who show a secure understanding of the previous steps and can use these in a variety of contexts, they may be shown how to record this as a short multiplication method. This should be done alongside the grid method so that children are clear on the link between the two.





2



Mental Methods

Counting in 2s, 5s, 10s, 3s, 4s and 8s.

Repeated addition

Recall multiplication facts for 2, 5 and 10 times tables (from Year 2) Recall multiplication facts for 3, 4 and 8 times tables Use known facts and place value to multiply by 2,3,4,5,8 and 10. Use doubles to link to x2, x4 and x8.

Reorder a calculation, understanding that multiplication can be done in any order.



How can this stage be supported at home?

MOLTIPLICATION Year 4

National Curriculum Objectives: Multiplication objectives from Multiplication and Division Strand

- Recall multiplication facts for multiplication tables up to 12 X 12.
- Use place value, known and derived number facts to multiply mentally including multiplying by 0 and 1. Multiply 3 numbers together
- Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
- Solve problems involving multiplicatio

Community Primary School

Lindow

	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
	 Count in multiples of 6, 7, and 9 	All previous vocabulary, plus: inverse
n		

In year 4, the children will:

Be taught specifically, through exploration of place value, to multiply by 10, 100 and 1,000. Children should be confident in discussing the place value of each digit and how these change.

Have the opportunity to apply their known number facts to solve ot her calculations. E.g. if

7 + 4 = 11, then 70 + 40 =, 700 + 400 = etc.

Be given the opportunity to consolidate and practise their previous learning on multiplication before new content is introduced. Be practising their recall of their previously learnt times tables (2,5,10,3,4 and 8) from

the start of year 4, before any new times tables are introduced.

the accuracy of their calculations



Be given regular opportunity to approximate before they calculate and use this to check

Written Methods Step 1: Grid method for multiplying three - digit numbers by a one -digit number.

Recap previous multiplication using the grid method and extend this to multiplying two - digit and three - digit numbers by a one - digit number. Track back for any children who are not confident.





Written Methods

Step 2: Short multiplication for multiplying by a one - digit number.

Pupils can be asked to work out a calculation using the grid method, and then compare to 'your' column method. What are the similarities and differences? Unpick the steps together and show how it reduces the steps.









Mental Methods

Counting in 6s, 7s, 9s, 25s and 100s Recall previously learnt multiplication facts with increasing confidence (2, 5, 10, 3, 4 and 8 times tables).

Recall multiplication facts for the 6,7,9, 11 and 12 times tables. Partitioning: multiplying hundreds, tens and ones separately and then recombining. Using understanding of when a number is multiplied by 10, 100 or 1,000. Using knowledge of number facts and place value e.g. 7 X 8 = 56 to find 70 X 8, 7 X 80



How can this stage be supported at home?

>

National Curriculum Objectives: Division objectives from Multiplication and Division Strand

- Recall and use division facts for the 2, 5 and 10 times tables.
- Calculate mathematical statements • for division within the multiplication tables and write them using the multiplication signs and equals signs. Show that the division of two numbers cannot be done in any order. Solve problems involving division, using materials, arrays, repeated addition, mental methods and multiplication facts, including problems in context.



OIVISION

Year 2

Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
 Counting in 2s, 5s, 10s and 3s. 	Year 1 vocabulary plus: Division, divided by, shared by, Grouping, sharing, left, left over

In year 2, the children have plenty of opportunities to use objects, arrays and pictorial represent and share.

Develop their understanding of the divide and equals signs through recording their practical activities and exploration.



Community Primary School



Written Methods:

Step 1: Understanding Arrays and the link between multiplication and division Children should be taught to interpret arrays and use these to understand the link between multiplication and division. For example, by being able to generate the 4 linked multiplication and division sentences.

Eg 10 ÷ 2 = 5 2 x 5 = 10

 $10 \div 5 = 2$ $5 \times 2 = 10$



x 5 = 10 x 2 = 10

Written Methods: Step 2: Practical problem solving with a focus on recognising grouning and Sam has 20 sweets, which she shares equally Children should be given the sharing.



Children can use pictures or shapes to divide quantities and start to record the division number sentence alongside these.



Children to experience grouping in various different contexts, to ensure they are confident with the concept before looking at grouping using a number line.

between 5 friends. How many will each friend get?









Written Methods: **Step 2: Subtracting groups of a number, using a Number line**

can I buy with £20?





Children use a number line, by jumping back equal amount to find out for example, how many g



Mental Methods

- Counting in 2s, 5s, 10s and 3s
- Links to arrays
- Recalling the division facts for the 2,5 and 10 times tables
- Using knowledge that halving is in the inverse of doubling and the same as dividing by 2.
- Use known facts and place value to divide.



How can this stage be supported at home?

National Curriculum Objectives: Divisio objectives from Multiplication and Division Strand

- Recall the division facts for the 3, 4 and 8 times tables.
- Write and calculate division statements using the multiplication tables they know.
- Solve problems, including missing number problems, involving division.



DIVISION

Yedr 3

n	K	ey Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
	•	Count in multiples of 4, 8, 50 and 100.	Previous vocabulary, plus:
			Inverse, short division, carry, remainder, multiple

In year 3, the children are given the opportunity to explore division in a range of real - life context







Written Methods: Step 1: Developing understanding of grouping, using a number line and introducing remainders

Children explore, through the continued use of practical equipment, pictures and number lines, the







Written Methods: **Step 2: Introducing short division (no remainders and no numbers carried)**

Once children are secure with division as grouping and sharing, using number lines, arrays etc. she

3

3







Written Methods: **Step 2: Introducing short division (no remainders and no numbers carried)**





Once children have shown a secure understanding of the above 2 steps, they should be taught ho

Mental Methods

- Counting in 2s, 5s, 10s, 3s, 4s and 8s
- Recalling the division facts for the 2, 5 and 10 times tables from Year 2
- Recalling the division facts for the 3, 4 and 8 times tables.
- Use known facts and place value to divide be 2, 3, 4, 5, 8 or 10
- Using knowledge that halving is in the inverse of doubling
- and the same as dividing by 2.
- Use this to link to $\div 2$, $\div 4 \& \div 8$.
- Using known facts/partition in different ways to become more efficient in mental
- calculations: e.g. 39÷3 by taking 3 lots of 10 away mentally, then 3 lots of 3 to get 13 as the answer.
- Use the relationship between multiplication and division.
- Scaling down using known facts.



ables - from Year 2 oles. 5, 8 or 10 oling

me more efficient in mental ntally, then 3 lots of 3 to get 13 as the answer.

How can this stage be supported at home?

•

OIVISION

National Curriculum Objectives: Division objectives from Multiplication and Division Strand

- Recall division facts for multiplication tables up to 12X12
 - Use place value, known and derived facts to divide mentally- including dividing by 1.
 - Recognise and use factor pairs and commutativity in mental calculations.



Lindow

Community Primary School

Year 4

U.	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
1	 Counting in 6s, 7s, 9s, 25s and 1000s 	Previous vocabulary, plus: Divisible by, factor

In year 4, the children continue to develop their understanding of division and extend their previo







Written Methods: **Dividing numbers with up to 3 - digits by a one - digit number.**

Children move into dividing numbers with up to 3 digits by a one - digit number in a wide range of acknowledge this, then carry to number over to the next digit as a remainder.









Year 2 Practising Number and Calculation Skills at Home - Building Fluency -Autumn Term Find the totals of each row and column using Dienes. 3 2 0 4 =



Summer Term

Year 3 Practising Number and Calculation Skills at Home - Building Fluency -

Autumn Term

Partition in 5 different ways. Ten less Count on in 3's Count on in 4's			
Ten more Hundred more	(Number range 3 - digit numbers) 999 and	How many hundreds, tens and ones are in	Double
Place on the number lines.	900 \$\$\frac{1}{2} + 200	Can you now think of more ways to express this?	Double again
		Add 5 ones Subt 1 t	(Ni Round
Lindow			
Community Primary Schoo			

Summer Term



Year 4 Practising Number and Calculation Skills at Home - Building Fluency -

Autumn Term



Summer Term