OUR LADY AND ST HUBERT'S PRIMARY Maths Calculation Guidance





At Our Lady and St. Hubert's, home, school and parish work together, knowing that God is with us in all we do.



Strategy: Adding a two digit number and ones ADDITION - TO + O using base 10 no exchange Concrete Pictorial Abstract Use manipulatives including Place value counters or Draw representations of the manipulatives used. Solve the addition number calculation using mental Base 10. and written strategies. 41 + 8 =41 + 8 =41 + 8 =Here we drew pictorial representations of the Base We have made each of the numbers using Base 10 and 10 on a place value chart. We added the ones Here we have then used formal column method to put these onto a place value chart. We added the ones together and then the tens. We noticed that the tens solve the calculation. Recording the numerals in the column would not change as there were no tens to together and then the tens. We noticed that the tens correct columns with an equals sign underneath. column would not change as there were no tens to add add together. Starting by adding the ones together mentally and recording this. We noticed that the tens column together. would not change as there were no tens to add 100 x 10c 15 104 together. 15 1111 4 1111 4 Bar model: 41 8 Part whole model:

Addition

?	
41 8	





	Stratomy Lloing place value counters				
	Addition - HTO + HTO using base 10 with exchange				
Concrete	Pictorial		Abs	stract	
Use practical manipulatives including place value	Draw representations of the manipulatives and the	Write t	he addition	number ca	alculations.
counters, Base 10	process used.				
			243 +	+ 368 =	
243 + 368 =	243 + 368 =		Then we l		-
Here we have used a place value chart and place value	We have then drawn a place value chart and		Then we r	have writte	en 🔤
counters:	represented place value counters by drawing them –				
100 10 1	circling when making an exchange:		3	6	8
100s 10s 1s					
	100s 10s 1s				
000 000		+	2	4	3
	00 0000000				
6 1 1	000 0000 0000		6	1	1
10 tens in the 10s column are exchanged for 1 hundred	2 2 2				
	6 1 1		1	1	
10 ones in the 1s column are exchanged for 1 ten	Bar model:		-	-	



	Strategy: Using place value counters	
	Addition - HTO + HTO using base 10 with exchange	
Concrete	Pictorial	Abstract
Use practical manipulatives including place value	Draw representations of the manipulatives and the	Write the addition number calculations.
counters, Base 10	process used.	
		243 + 368 =
243 + 368 =	243 + 368 =	
		Then we have written
Here we have used a place value chart and place value	We have then drawn a place value chart and	
counters:	represented place value counters by drawing them –	
100 10 1	circling when making an exchange:	
100s 10s 1s		
	100s 1 10s 1 1s	
	1003 100 10	
	00 6000 000	
6 1 1	000 0000 0000	
I tons in the IOs column are exchanged for I hundred	2 2 2	
	6 1 1	
10 ones in the 1s column are exchanged for 1 ten	0 1 1	
To ones in the 15 column are exchanged for 1 ten	Bar model:	



Subtraction

	Strategy: Column method without exchange	ging			
	Subtraction - TO - O without exchanging using	Base 10	A 1		
Use practical manipulatives including place value counters, Base 10	Pictorial Draw representations of the manipulatives and the process used.	Write and solv	Abstract e the subtraction nu column metho	umber calcu od.	lation using
48 – 7 =	48 – 7 =		48 – 7 =		
Here we have used a place value chart and Base 10	We have then drawn a place value chart and represented the Base 10 – we have crossed out	Then we have w	ritten the calculatio	n using colu	ımn method.
10s 1s 10s 1s	the representations if we have subtracted them:		4	8	
Looking at the Is column first, we have subtracted	d (() iiii		-	7	
column. There are no tens to subtract so the tens column remains the same.	4 I		4	1	
	Part whole model:				
	7 ?				



41	
26 ?	

Sub	Strategy: Column method with exchanging otraction - HTO - TO with exchanging using place value coun	ters
Concrete	Pictorial	Abstract
Use practical manipulatives including place value counters or Base 10	Draw representations of the manipulatives and the process used.	Write and solve the subtraction number calculation using column method.
234 - 88 =	234 - 88 = We have then drawn a place value chart and represented	234 - 88 =
Here we have used a place value chart and place	the place value counters by drawing them – clearly showing the exchange	Then we have written and solved the calculation using column method
value counters: I. We can't do 4 – 8 without reaching negative numbers. We need to exchange I ten for 10 ones.	M'S T'S O'S OØ ØØØ ØØØ	2 ¹² 3 ¹⁴
H T O	000 000 000 000 000 000	_ 8 8
	1 4 6	1 4 6
	This time two exchanges have taken place: one hundred for ten tens, then one ten for ten ones.	
	Bar Model:	



Multiplication

Strategy: Use arrays to illustrate commutativity Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of the multiplication does not			
Concroto	Bistorial	Abstract	
Concrete	Fictorial		
Use objects to make arrays and then find the	Draw representations of the arrays to show	Write multiplication and repeated addition number	
answer. Here we have made arrays using multilink cubes:	different calculations and explore commutativity.	calculations to describe the arrays.	
	We have then represented the multilink cubes by drawing the arrays.	Then we have written the multiplication and repeated addition number calculations for the arrays showing	
		2 lots of 5 and 5 lots of 2.	
		$10 = 2 \times 5$	
		$5 \times 2 = 10$	
		2 + 2 + 2 + 2 + 2 = 10	
		10 = 5 + 5	

2 1015 01 5 5 1015 01 2	2 lots of 5 5 lots of 2	

Strategy: Use formal column method (without exchanging)			
Concrete	Pictorial	Abstract	
Use base 10 or place value counters as	Draw representations of the manipulatives.	Record what it is they are doing to show understanding	
manipulatives. Here we have used place value		using the written formal method.	
counters to show the calculation:	Here we have drawn the counters and counted the		
	total in each column recording the numeral.	Here the 2- digit number is partitioned so we can write:	
3 × 23 =	T'S 10'S	3 × 23 3 × 20 = 60	
		✓ 3 × 3 = 9	
ТО		20^{2} 3 $60 \pm 9 = 69$	
	00 000	20 3 00 + 9 = 09	
	00 000	2 3	
		x 3	
	6 9	6 9	
	Bar Model:		

20	3
20	3
20	3
 20	J

Strategy: Use formal column method (with exchanging)			
Concrete	Pictorial	Abstract	
Children to use base 10 or place value counters as manipulatives.	Draw representations of the counters or base 10 pictorially.	Record what it is they are doing to show understanding using the written formal method.	
6 × 23 =	We have then drawn representations of the place value counters.	Then we have written the multiplication formal written method.	
Here we have used place value counters:			
100s 10s 1s	100s 10s 1s 000 000 000 000	2 3	
	0 000000	× 6	
100s 10s 1s	Bar Model: 20 3 20 3	1 3 8	
	20 3 20 3 20 3 20 3 20 3 120 +	1	
	Children need to see the 10 from the 18 is regrouped with the 120 to give 130.		



	nber		
Concrete	Pictorial	Abstract	
Due to the size of numbers of numbers involved, concrete representations are no longer practical. A grid may be drawn to partition numbers so children can see they are multiplying by tens and ones. $\boxed{\frac{2044}{2040}} + \frac{400}{80} + \frac{400}{24} + \frac{400}{80} + \frac{120}{24} + \frac{120}{$		Calculations will look like this: $ \begin{array}{r} 24 \\ \times 26 \\ \hline 144 \\ 480 \\ \hline 624 \\ \hline \\ \end{array} $ Remembering the 0 (zero) place holder before multiplying by 20	
When children start to multiply 3-digit x 3-digit and 4-digit x 2-digit, then they should be confident with the abstract. Children need to recognise that to get 744 they have solved 124 x 6 Children need to recognise that to get 2480 they have solved 124 x 20 If they recognise this they will understand why they need a 0 (zero) place holder when multiplying by the tens column and similarly two 0(zero) place holders if multiplying by the hundreds' column – in a 3-digit x 3-digit calculation		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	

Division

Strategy: Sharing with no remainders									
	Со	ncrete	Pict	orial	Abstract				
Use B	ase 10, place value o	counters or Cuisenaire rods	Draw representations	of the manipulatives and	Write the division calculation and solve the problem.				
	to	share.	the proc	cess used.					
Proble Here count shared	em: 68 ÷ 2 = we have counted ou ers (6 ten counters I them evenly using	it 68 using place value and 8 one counters) and a place value chart between	Here we have drawn th shared the quantity of drawing their represen rows on the p	ne place value charts and place value counters by tations between the two lace value chart.	Then we have partiti 68 ÷ 2 = ↓ \ 60 8	oned the 68 so we can write: 60 ÷ 2 = 30 8 ÷ 2 = 4 30 + 4 = 34			
the tw	o rows.		10s	15		50 + 4 = 54			
	,	0	000	0000					
	000	0000	000	0000					
			Bar I	Model:					
			6	8					
			34	34					

Strategy: Sharing using place value counters										
Concrete	Pictorial	Abstract								
Use manipulatives and divide the quantity equally.	Draw representations of the manipulatives and the	Write the process, division calculation or answer to								
	process used.	the problem. It may also be useful to solve the bar								
Here we have counted out 42 using place value counters		model.								
(4 tens counters and 2 ones counters).	Then we represented the place counters by drawing									
	them.									



Strategy: 2d ÷ 1d with remainders											
Concrete	Pictorial	Abstract									
Use manipulatives and divide the quantity into	Draw representations of the manipulatives and the	Write the division calculation or answer to the problem.									
equal groups.	process used.										
3 ÷ 4 =		It may also be useful to solve the bar model. Encouraged to									
	Then we represented the counters by drawing them.	use multiplication facts.									
		Then we have written the division calculation using the division sign and the answer to the problem in words. $13 \div 4 = 3 \text{ r. } 1$									
	Number line: Or on a number line it would be like this, counting down in jumps of 4 with one left over.	Which is the same as saying 3 groups of 4 with 1 left over									
1 Here we have used counters and made 4 groups and divided I 3 by 4. We can see there is I remainder.	-4 -4 -4 -4 -1 -1 -1 -1 -1 -1 -1 -1										
	Bar Model:										
	3 3 3 1										

Strategy: Short division using grouping										
Concrete	Pictorial	Abstract								
Use manipulatives and divide the quantity into	Draw representations of the manipulatives and the	Write the division calculation using the short division								
equal groups.	process used.	scaffold and solve.								
 615 ÷ 5 = Here we have used place value counters and a place value chart. These were the steps needed: Make 615 with place value counters. How many groups of 5 hundred can you make with 6 hundred counters? Exchange 1 hundred for 10 tens. How many groups of 5 tens can you make with 11 ten counters] Exchange 1 ten for 10 ones. How many groups of 5 ones can you make with 15 ones? 	<text></text>	Here we have used the short division scaffold to solve the problem. 123 $5 \ 6^{1}1^{1}5$								
100 100 100 100 100 100 100 100	Bar Model: 615 123 123 123 123									



Strategy: Long division													
Concrete	Pictorial								Abstract				
Use manipulatives and divide the quantity into		Draw representations of the manipulatives and the process used								Write the division calculation using the			
equal groups.										long division scaffold and solve.			
	Bar Model												
Here we have used a place value chart and place								Here we have used the long division					
value counters.						25	44			1			scaffold to solve the problem.
	212	212	212	212	212	212	212	212	212	212	212	212	
1000s 100s 10s 1s													0.2
groups of 12 so will exchange them.													12 2544
													24
1000s 100s 10s 1s													1
We can group 24 hundreds													
with 1 hundred.													
2888													021
													12 2544
1000s 100s 10s 1s After exchanging the hundred, we													24
have 14 tens. We can group 12 tens													14 12
into a group of 12, which leaves 2 tens.													2
1000s 100s 10s 1s													0212
After exchanging the 2 tens, we have 24 ones. We can group 24 ones													12 2544
into 2 group of 12, which leaves no remainder.													<u></u> 14
													0
													-