## 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.



|  |
| :---: |
| Concrete |
| Use manipulatives including Place value counters or |
| Base 10. |
| $36+25=$ |

## Strategy: Adding two 2-digit numbers <br> Addition - TO + TO using base 10 with exchange

Draw representations of the manipulatives used.
Here we drew pictorial representations of the Base
10 on a place value chart. We then added the ones where we had to bridge into the tens. Then added the


10 ones in the Is column are exchanged for I ten Bar model:

## Abstract

Solve the addition number calculation using mental and written strategies.

$$
36+25=
$$

Here we have then used formal column method to solve the calculation. Recording the numerals in the correct columns with a equals sign underneath.
Starting by adding the ones together mentally and recording this, remembering to record the exchange. Then adding the tens together mentally and recording


10 ones in the Is column are exchanged for I ten




| Strategy: Using place value counters <br> Addition - HTO + HTO using base 10 with exchange |  |  |
| :---: | :---: | :---: |
| Concrete | Pictorial | Abstract |
| Use practical manipulatives including place value counters, Base IO $243+368=$ <br> Here we have used a place value chart and place value counters: <br> IO tens in the 10 s column are exchanged for 1 hundred <br> 10 ones in the Is column are exchanged for I ten | Draw representations of the manipulatives and the process used. $243+368=$ <br> We have then drawn a place value chart and represented place value counters by drawing them circling when making an exchange: | Write the addition number calculations. $243+368=$ <br> Then we have written |



## Subtraction






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2. $14-8=6$. We now look at 2 tens -8 tens which we can't do without reaching negative numbers.
We exchange I hundred for 10 tens. We then do 12 tens -8 tens $=4$ tens

3. I hundred -0 hundreds $=1$ hundred


## 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 affect the answer

| Concrete | affect the answer. |  |
| :---: | :---: | :---: |
| Use objects to make arrays and then find the <br> answer. Here we have made arrays using multilink <br> cubes: | Draw representations of the arrays to show <br> different calculations and explore commutativity. | Write multiplication and repeated addition number <br> 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 |
|  |




| 20 3 <br> 20 3 <br> 20 3 |  |  |
| :---: | :---: | :---: |



| Strategy: Partition to multiply |  |  |
| :---: | :---: | :---: |
| Concrete | Pictorial | Abstract |
| Children to use numicon or base 10 as manipulatives. Here we have used numicon: $4 \times 15$ | Draw representations of the manipulatives pictorially. <br> We have then drawn representations of the place value counters. <br> A number line can also be used to show understanding of the steps taken: | Children to record what it is they are doing to show understanding using the written formal method. <br> Then we have written the multiplication formal written method. $\begin{gathered} 10 \times 4=40 \\ 5 \times 4=20 \\ 40+20=60 \end{gathered}$ |


| Strategy: Multiplying 2 digit $\times 2$ digit number |  |
| :---: | :---: |
| Concrete Pictorial | Abstract |
| Due to the size of numbers of numbers involved, concrete representations are no longer practical. <br> A grid may be drawn to partition numbers so children can see they are multiplying by tens and ones. | Calculations will look like this: <br> 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. <br> Children need to recognise that to get 744 they have solved $124 \times 6$ <br> Children need to recognise that to get 2480 they have solved $124 \times 20$ <br> 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 $\times 3$-digit calculation |  <br> Answer: 3224 |

## Division



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

Then shared these between 3 parts of the place value chart.
$42 \div 3=14$
000000
000


| 10 s | Is |
| :---: | :---: |
| 0 | 0000 |
| 0 | 0000 |
| 0 | 0000 |$\quad$| 14 |
| :---: | :---: |$\quad$| 10 | 1s |
| :---: | :---: |
| 0 |  |
| 0 |  |
| 0 |  |

Here we have shared the 4 tens counters by 3 , giving I ten each and having I ten left over. We then exchanged that ten for 10 Is which means we have 12 Is altogether. When twelve Is counters are shared between 3 each ends up with 4 . So our answer is I ten and 4 ls which is 14.


Then we have made sense of the place value counters and written the calculations to show the process, finally solving the problem.

$$
\begin{aligned}
& 42 \div 3 \\
& 42=30+12 \\
& 30 \div 3=10 \\
& 12 \div 3=4 \\
& 10+4=14
\end{aligned}
$$

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





