

Yr 3 Addition

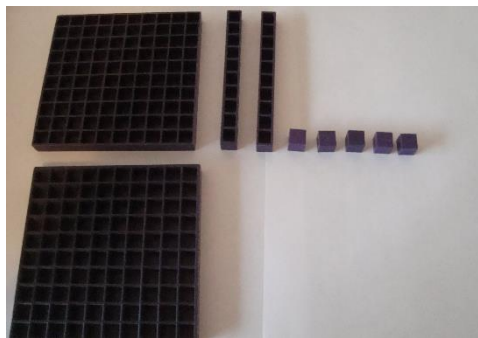
Mental addition:

- Find 10 more than a number (demo using Numicon or Dienes) or 100 more than a number (demo using Dienes)

What is 10 more than 33?

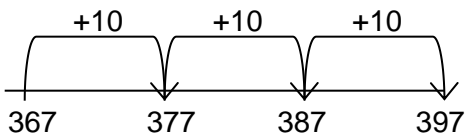


What is 100 more than 125?



- Add a 2 digit number to a 2 digit number e.g. 63 and 38
(Encourage the children to start with the biggest number, partition the second number and count on. Use an empty number line or fingers to mentally solve the problem)

Show how to use the number line as a form of jottings:



- Add 3 digit numbers plus ones eg $367 + 3$
- Add 3 digit numbers plus tens eg $367 + 30$
- Add 3 digit numbers plus hundreds eg $367 + 300$

Column addition up to 3 digits

(Use Dienes to represent each number and demonstrate carrying)

Emphasise as a school, we will 'carry' over digits at the top for all column addition.

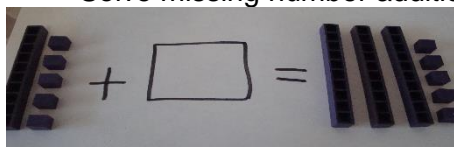
Ensure that HTO is written above each calculation to emphasise the place value of each digit.

- To add successfully, children need to be able to:

1. No 'carrying'	2. Extra digit in answer	3. Carrying O to T
TO HTO	TO HTO	TO HTO
23	94	27
+ 42	+ 73	+ 25
<u>65</u>	<u>167</u>	<u>52</u>
315	561	237
+ 624	+ 718	+ 516
<u>939</u>	<u>1279</u>	<u>753</u>
Ext	Ext	Ext
4. Carrying T to H.	5. Carrying O to T and T to H	
HTO	HTO	
1	1 1	
371	376	
+ 485	+ 485	
<u>856</u>	<u>861</u>	

NB. Emphasise value of digit e.g. 2 tens and 3 ones
Continue to use number lines and partitioning method.
Write calculations horizontally also.

- Solve missing number addition problems: $15 + \square = 35$

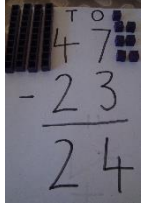


Yr 3 Subtraction

Continue with the formal method of column subtraction by demonstrating with Dienes first.

- Recap on no adjustment examples (started in year 2)

$$\begin{array}{r} \text{TO} \\ 47 \\ - 23 \\ \hline 24 \end{array}$$



$$\begin{array}{r} \text{HTO} \\ 864 \\ - 621 \\ \hline 243 \text{ Ext} \end{array}$$

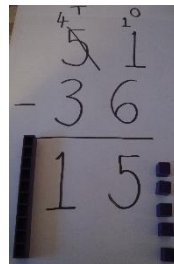
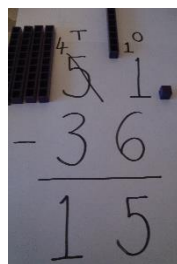
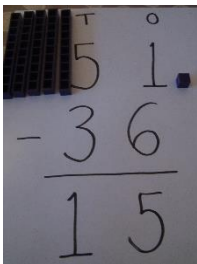
- Adjustment / Exchange T and O (Show using Dienes)

N.B. Emphasise value of digit, e.g. 4 tens subtract 3 tens = 1 ten

(Partition numbers using Dienes first)
(before exchange)

(after exchange)

51-36



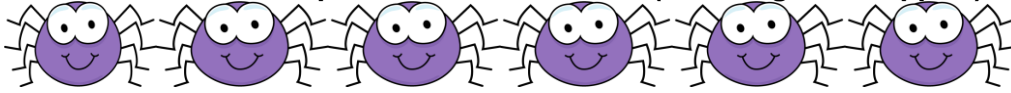
TO	40	1	4T10
51	50 + 1	1	1
-36	30 + 6	-36	-36
15	10 + 5	15	15

Consolidation of using number lines, counting forwards and backwards within 100. Greater emphasis on counting forwards.

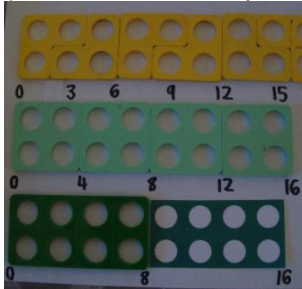
$$74 - 27 = 47$$

Yr3 Multiplication

- Be able to count in steps of 3, 4, 8, 50 and 100 (use images to support)



- Use Cuisenaire rods and Numicon for the 3, 4 and 8 times tables (Discuss which multiples appear in more than one times tables)



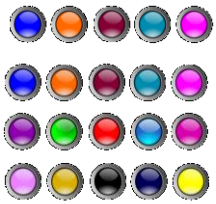
- Use Dienes to count in steps of 50 and 100

Solve problems using arrays

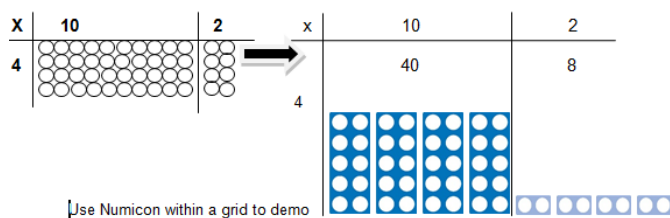
e.g. 12 people are going to a party. How can the cups and saucers be arranged on the table in rows? Find all of the different ways to do this.



- Show arrays using the 2, 3, 4, 5, 8 and 10 times tables

X 5

 $4 \times ? = 20$ $? \times 5 = 20$

- Introduce grid method of TO x (show the link from arrays to grid method)



- Introduce short multiplication by showing the expanded method of long multiplication first to show how the numbers are multiplied

No carrying
 Long multiplication

$$\begin{array}{r} \text{TO} \\ 12 \\ \times 4 \\ \hline (10 \times 4) \quad 8 \\ 40 \\ \hline 48 \end{array} \quad (2 \times 4)$$

1. Short multiplication

$$\begin{array}{r} \text{TO} \\ 12 \\ \times 4 \\ \hline 48 \end{array}$$

- Solve multiplication word problems using the bar model:

Peter has 4 books
 Harry has five times as many books as Peter.

How many books has Harry?



$$4 \times 5 = 20$$

Harry has 20 books.

Yr3 Division

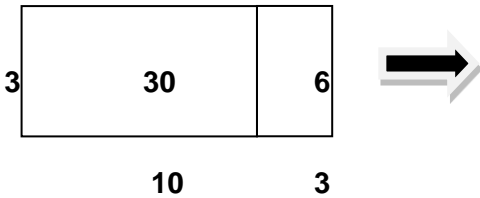
- Know division facts for the 3, 4 and 8 times tables

• Solve missing number problems where the missing numbers are in different positions
 e.g. $20 \div 4 = \square$ and $15 \div \square = 3$

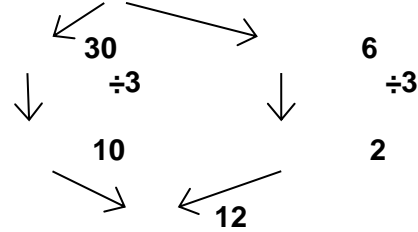
- Use multiplication facts to derive division facts

Eg $20 \times 3 = 60$ Therefore $60 \div \square = 20$ and $3 = 60 \div \square$

e.g. $36 \div 3$ Array



Partitioning 36 using known times table facts

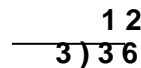
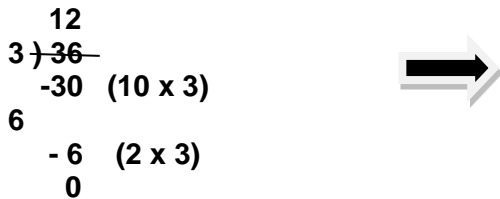


Then move onto taking groups out of the dividend (65)

Short division
 (No remainder, no carrying)

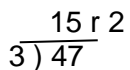
Make a chart of the key $\times 3$ facts first to help:

1	2	5	10	20
3	6	15	30	60



Short division

2. Remainder, no carrying



Continued use of Cuisenaire and number lines to model.

- Solve division worded problems e.g. using equipment and pictures to demonstrate 12 sweets shared equally between 4 children



3 cakes shared equally between 6 children



