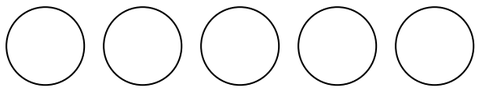
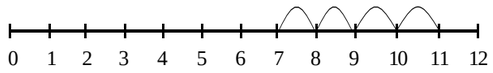
Addition	Subtraction	Multiplication	Division
• Practical activities involving addition. • Songs and rhymes – how many do you know involving addition rather than counting back. • Practical activities as above but beginning to use number lines as models to support understanding.	• Number rhymes and songs / with actions. Use of practical resources to illustrate the song E.g. 5 currant buns in the bakers shop …. And took it right away  Mark the place of the subtracted object, eg leave a plate for each bun. Also take the opportunity to link to the inverse operation; *4 buns on the plates and one in the bag* Use washing lines / number carpet tiles ~ precursors to number lines	Through role play/general play situations find pairs of. e.g. How many socks will we need for the three bears? How many buckets and spades will we need for every one to have one each in the sand?. Sorting objects into groups e.g. We have got 4 biscuits how can we share them out equally (fairly) between the two of us? Playing pairs game i.e snap, pelmanism. Recognising the doubles in dominoes and dice games (using the language you have a pair/you have a double)	Through role play/general play situations find pairs of. e.g. How many socks will we need for the three bears How many buckets and spades will w need for every one to have one each the sand?. Sorting objects into groups e.g. We have got 4 biscuits how can we share them out equally (fairly) between the two of us? Playing pairs game i.e snap, pelmanism. Recognising the doubles in dominoes and dice games (using the language you have a pair/you have a double)

F1 &2

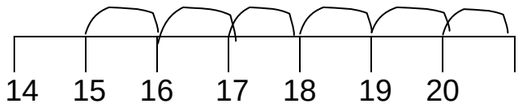
Addition

- Practical activities
- Supported with use of number line
- Introduction of number sentence and symbols

7 + 4



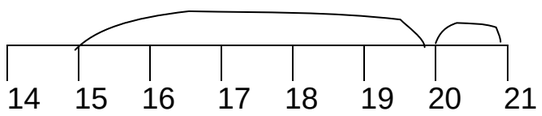
Recording by - drawing jumps on prepared lines



Y1

15 + 6 = 21

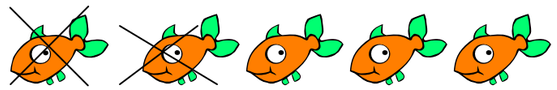
Moving towards more efficient method



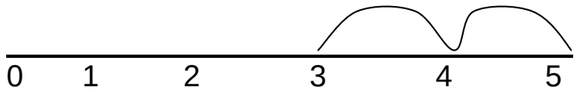
15 + 6 = 21

Subtraction

- Pictorial representation
- Linked to number line underneath



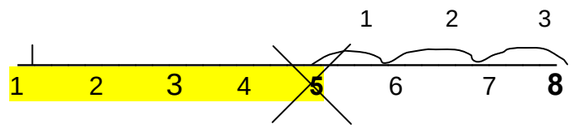
5 – 2 = 3



- Finding the difference or How many more!

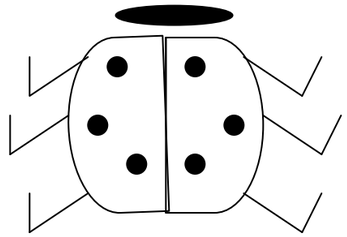
Pictorially:

8 – 5 = 3



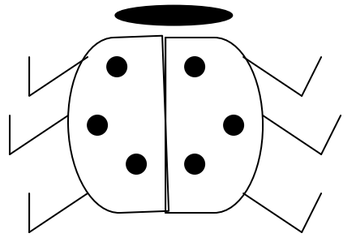
Multiplication

- Counting in 2's and 10's.
- Identifying doubles via dice games and using dominoes.
- Practical illustrations of **finding half of numbers** not just fractions of shapes.



Division

- Counting in 2's and 10's.
- Identifying doubles via dice games and using dominoes.
- Practical illustrations of **finding half of numbers** not just fractions of shapes.



Addition	Subtraction	Multiplication	Division

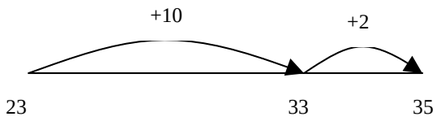
Y2

Partition into tens and ones and recombine

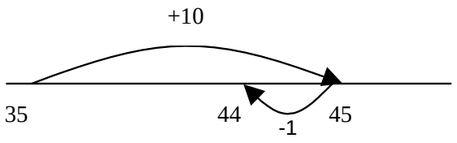
12 + 23 = 10 + 2 + 20 + 3
= 30 + 5
= 35

refine to partitioning the second number only:

23 + 12 = 23 + 10 + 2
= 33 + 2
= 35

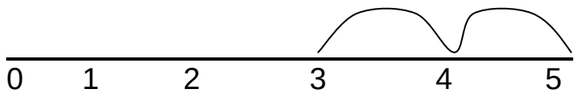


Add 9 or 11 by adding 10 and adjusting by 1
35 + 9 = 44



- Pictorial representation
- Linked to number line underneath

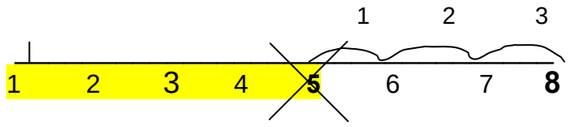
5 – 2 = 3



- Finding the difference or How many more!

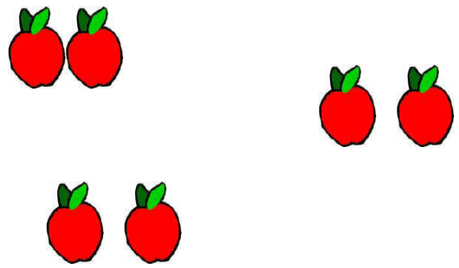
Pictorially:

8 – 5 = 3



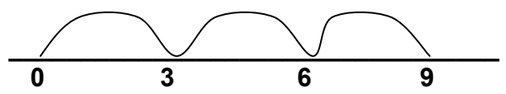
- Counting in 2's, 5's and 10's on and back starting at zero then counting from other numbers.
- Know halves and doubles of numbers to 10
- Repeated addition with small numbers, illustrated by practical examples.

2+2+2=



Repeated addition on number lines

3+3+3=

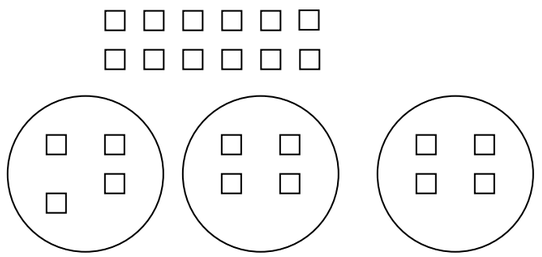


3x3=9

Repeated addition **showing links** to multiplication statements
Learn multiplication facts for the 2's and 10 tables and **be able to use** the 5's.

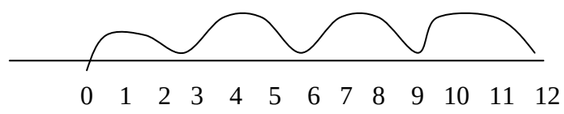
They should have experience of sharing

12 ÷ 3 =



- and of grouping (repeated subtraction)

12÷3= how many 3's make 12?

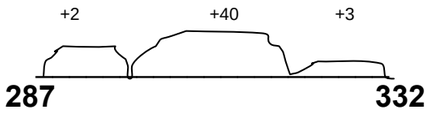


Addition

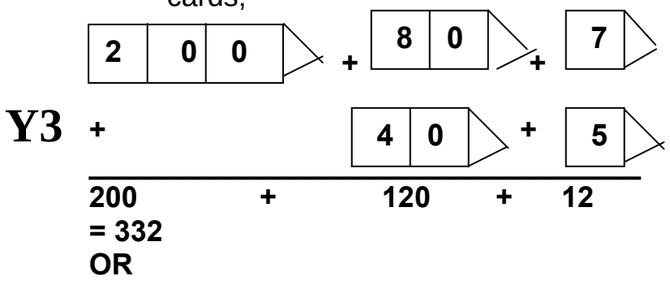
Addition through partitioning in a variety of contexts using different methods.

- Number lines;

Bridge to next multiple of 10
287+ 45



- partitioning using place value arrow cards;



- vertical recording of partitioning;

- partitioning HTU;

200 + 80 + 7 + 40 + 5 =

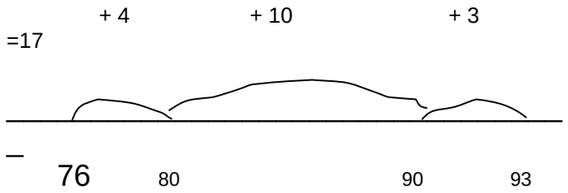
12 + 120 + 200= 332

Subtraction

Choose appropriate operations / methods to solve calculation problems

There are 93 girls in Y4 and 76 boys.
How many more girls than boys?

- use counting on to find the difference



- partitioning

(93 – 70) – 6 = 23 – 6=17

Use understanding of inverse operations / commutative law to solve problems

90 - □ = 37

90 - 37 = □

or

37 + □ = 90

Using counting on

Multiplication

To **learn** multiplication facts for the 3,4, and 6 x ta
Be able to calculate single digit x multiple of 10 e.g
Once the children understand these concepts and are confident in their knowledge of the multiplication facts they are ready to progress towards standard methods of recording.
Before the children progress through the next they should:

- Be reasonably comfortable multiplying single digit numbers by single digit numbers (they might not have instant recall of all multiplication facts but should be able to derive most facts reasonably quickly).

Be able to use single digit multiplication facts e.g. 3x4 to calculate single digit x multiple of 10 e.g. 30x4 and partition numbers into tens and units.

Partitioning - using distributive law

Model A

eg. 12 x 4 → (10 x 4) + (2 x 4)
= 40 + 8
= 48

eg. 43 x 5 → 200 + 15
= 215

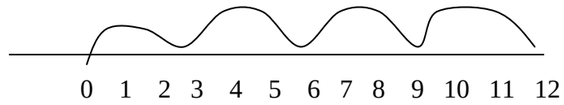
- Grid method**:** It uses the same concept of partitioning but provides children with a scaffold for their learning and management of numbers in a different layout.

Model B Eg. **17 x 3 = 51**

x	10	7
3	30	21

Division

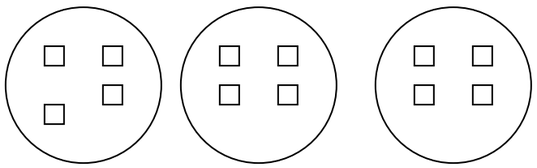
12÷3= how many 3's make 12?



They should have experience of sharing

12 ÷ 3 =

□ □ □ □ □ □
□ □ □ □ □ □



- and of grouping (repeated subtraction)

Addition

234 + 328

200 + 30 + 4
300 + 20 + 8

500 + 50 + 12 = 562

287 + 56

287
56

13
130
200

343

56.7 + 72.3

56.7
72.3

1.0
8.0
120.0

129.0

Y4

Subtraction

Use understanding of inverse operations / commutative law to solve problems

90 - □ = 37

90 - 37 = □

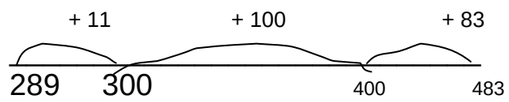
or

38 + □ = 90

Using counting on

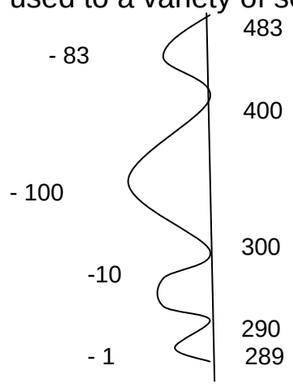
3 digit calculations: 483 – 289

- number line model



The partitioned chunks are then either added mentally or using the column method.

The number line should be used both vertically and horizontally to get children used to a variety of scales and models.



Multiplication

- Partitioning - using distributive law

Model A

eg. 12 x 4 → (10 x 4) + (2 x 4)
= 40 + 8
= 48

eg. 43 x 5 → 200 + 15
= 215

- Grid method: It uses the same concept of partitioning but provides children with a scaffold for their learning and management of numbers in a different layout.

Model B Eg. **17 x 3 = 51**

x	10	7
3	30	21

- Extend to numbers where answer bridges 100

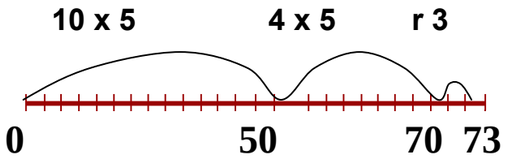
38 x 6 = 228

x	30	8
6	180	48

Division

The model used previously is continued in Y4 and Y5 but grouping 'chunks' together. E.g.

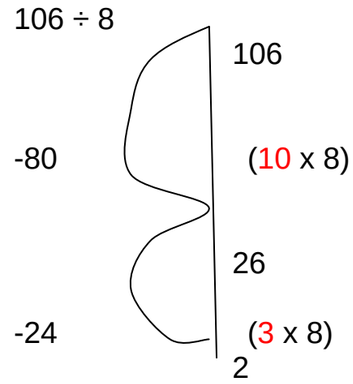
73 ÷ 5



73 ÷ 5 = 14 groups altogether with 3 remaining.

This method can be continued in a vertical format.

106 ÷ 8



106 ÷ 8 = 13 r 2.

Addition

Move towards formal compact method.

287
45

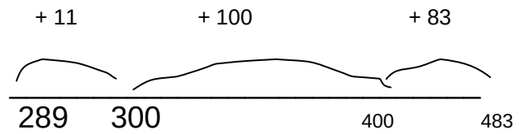
332

11

Subtraction

3 digit calculations: 483 – 289

- number line model



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Multiplication

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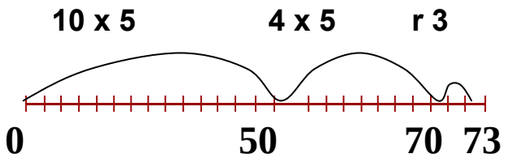


73 ÷ 5 = 14 groups altogether with 3 remaining.

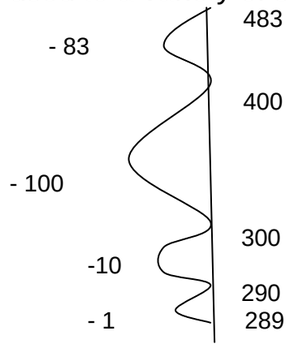
This method can be continued in a vertical format.
106 ÷ 8

106 ÷ 8 = 13 r 2.
When children are secure in the method of using a number line to subtract chunks of numbers they can then move onto using formal chunking method.

5 √ 73
- 50 (10x5)
23
20 (4x5)
3
73 ÷ 5 = 14 r 3

Y5

The number line should be used both vertically and horizontally to get children used to a variety of scales and models.



Extend to two digit by a multiple of 10
42x30= 1260

x	40	2
30	1200	60

Addition

Formal compact method.

287
45
332
11

Extend to numbers with any number of digits and decimals with 1 and 2 decimal places.
124.9 + 117.25 = 242.15

Y6

124.9
+ 117.25
242.15
11

Subtraction

This method is only to be used if children are completely secure in the previous methods.

	(use 100)		(use 10)
	300	170	10 +
	~~400~~ +	~~80~~ +	3
-	200 +	80 +	9
	100 +	90 +	4

Multiplication

Extend to 2 digit by 2 digit

34x27

x	30	4
20	600	80
7	210	28

600 + 210 + 80 + 28 = 918

Children to use column method for addition if necessary. This can be extended to incorporate three digit numbers when necessary.

Division

When children are secure in the method of using a number line to subtract chunks of numbers they can then move onto using formal chunking method.

5 √ 73
- 50 (10x5)
23
20 (4x5)
10 + 4
3
73 ÷ 5 = 14 r 3

Extend to 3 digit numbers first subtracting 10x divisor

7 √ 256
- 70 (10x7)
186
140 (20x7)
46
42 (6x7)
10 + 20 + 6
4
256 ÷ 7 = 36 r4

- Extend to 3 digit divided by 2 digit

36 √ 972
- 720 (20x36)
252
180 (5x36)
72
72 (2x36)
20 + 5 + 2
972 ÷ 36 = 27