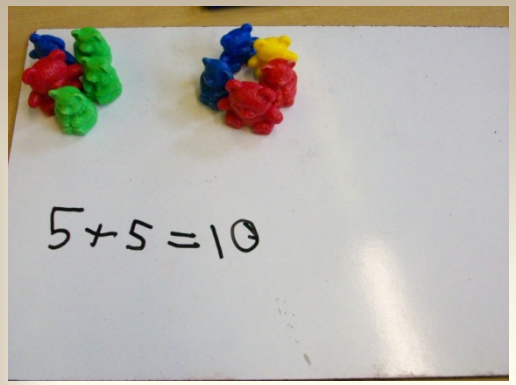
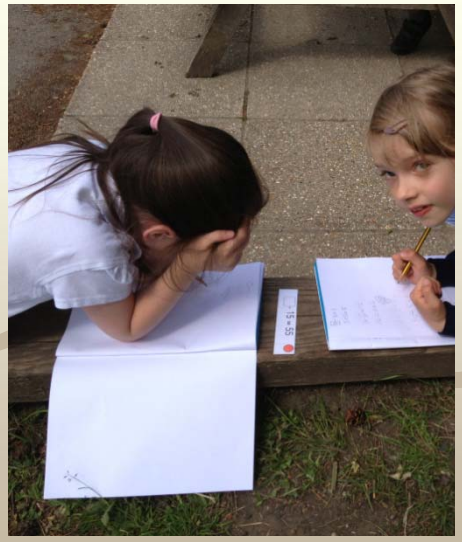


Addition, subtraction, multiplication and division

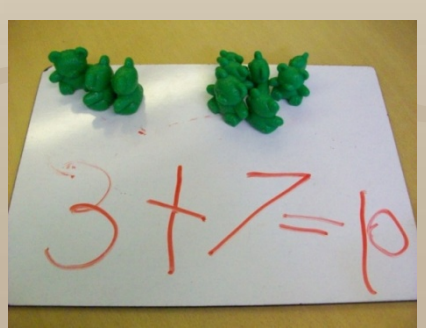


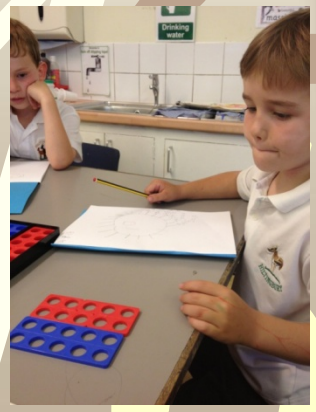
+ - x ÷

Number Bonds

Number bonds are a hugely important part of your child begin able to quickly and accurately solve addition and subtraction problems. During Year 1, children must become fluent in number bonds to 10 and 20.

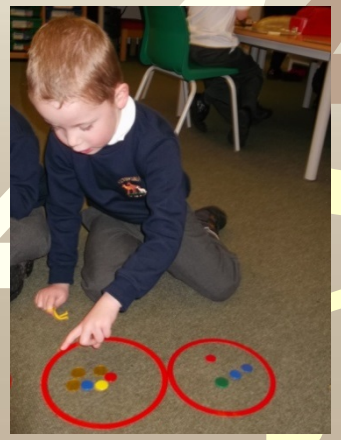
In Year 2, children must know number bonds to 10 and 20 and begin using these to solve problems. They must also begin to know related number facts to 100 e.g. 30 + 70 = 100





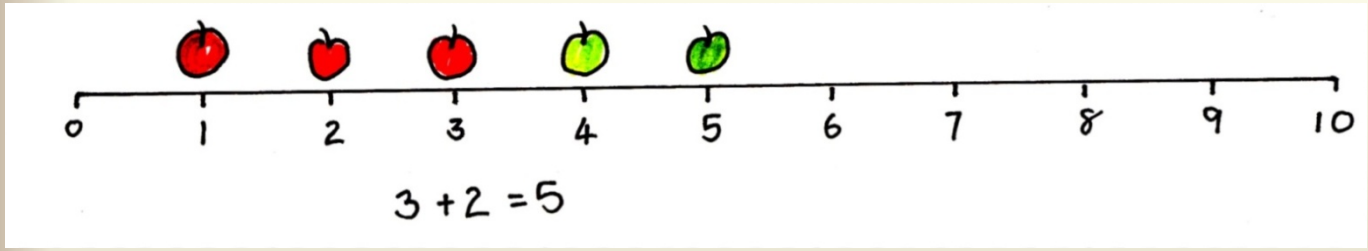
Addition and Subtraction

Children begin by adding and taking away units (U+U) using practical and visual equipment such as bead strings, multilink, numicon, dice and other counting resources. This can be done through mathematical stories and songs. Children are not expected to write mathematical sentences at this stage.



They will then go onto using more structured apparatus such as numberlines.

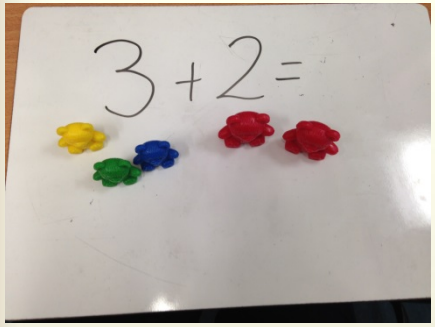
They may begin by using this alongside practical resources to reinforce their understanding.

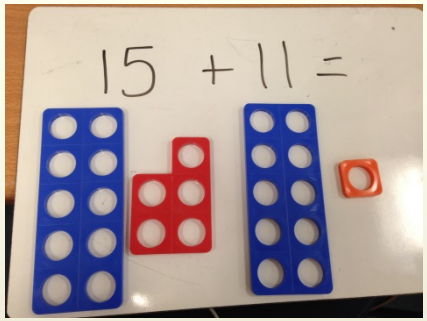


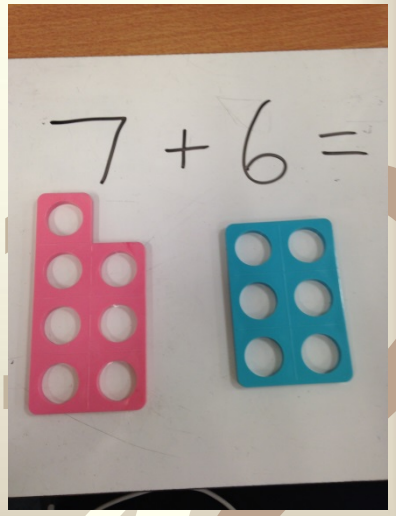
They may also begin to write their mathematical sentences if the teacher feels it is appropriate for the child.

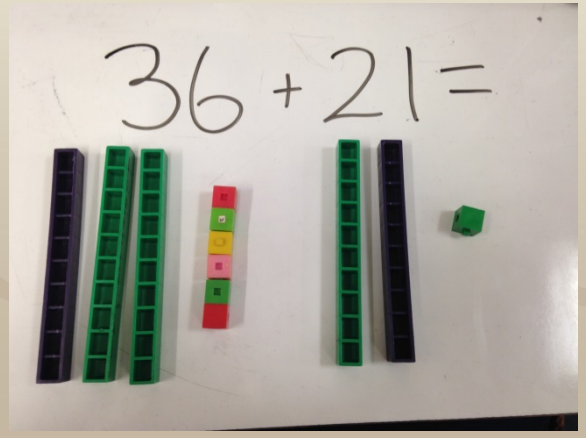
9 - 3 = 6

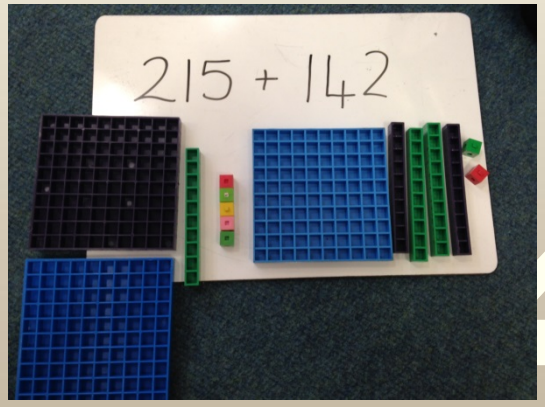
- This use of practical resources to reinforce number place value knowledge will continue.



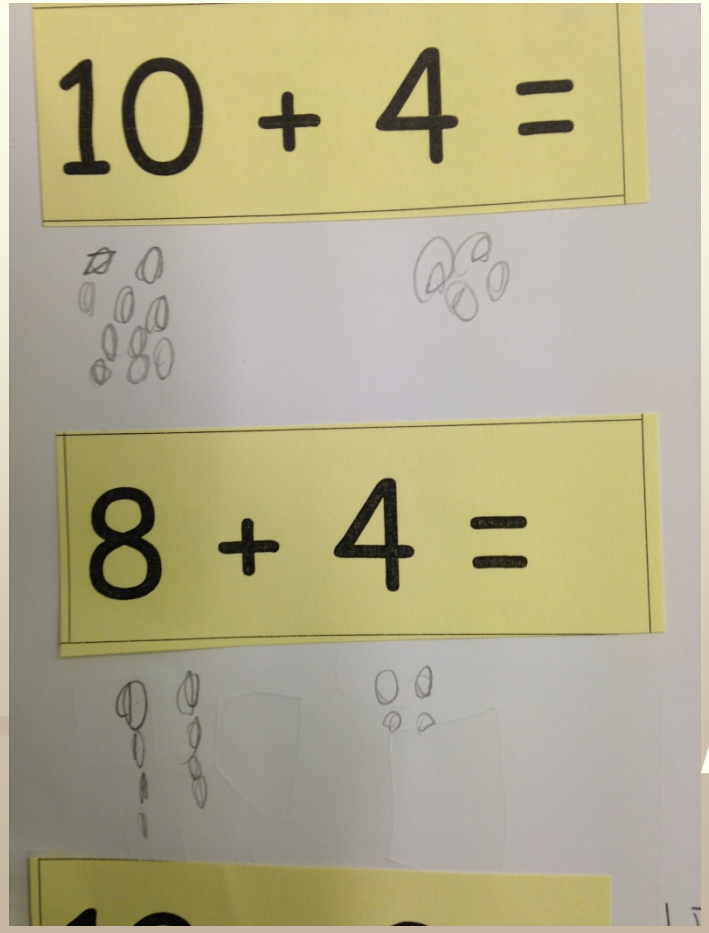








- They are also taught to use their own personal jottings to support their thinking whilst solving addition and subtraction problems.



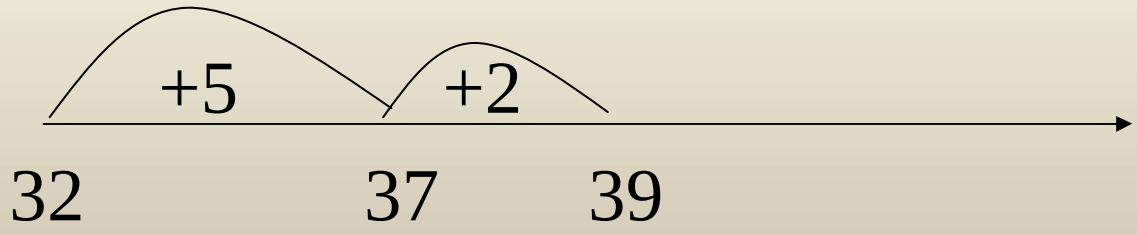
Children will also begin to use a 100 square to add and subtract larger numbers e.g. TU+/-U and TU+/-TU.

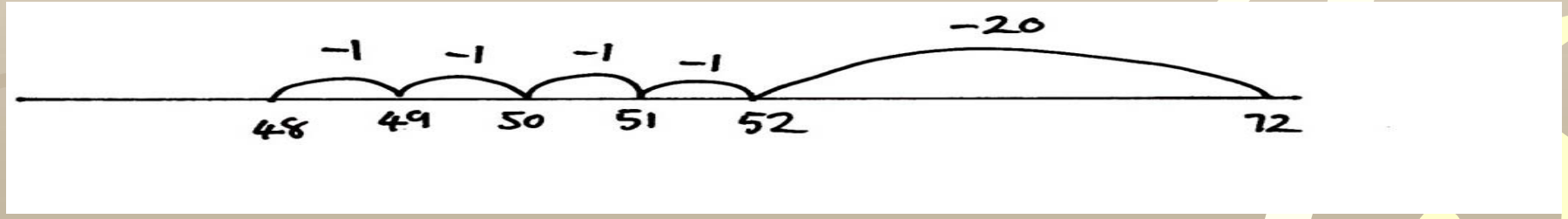
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

It is important to note children must first understand numbers in a linear way before they can use a 100 square accurately.

Once children can accurately add and subtract TU +/- U using mathematical resources, we then introduce the unstructured number line. This asks children to use their place value knowledge to add larger numbers.

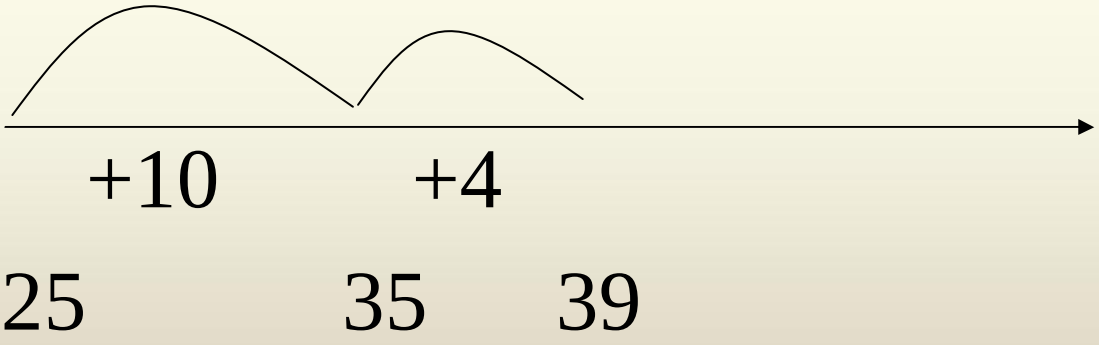
32 + 7 = 39

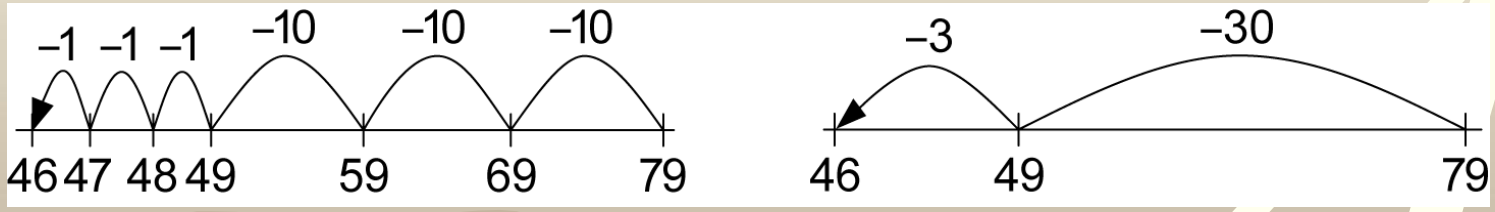




Children then use this method to add and subtract TU+TU

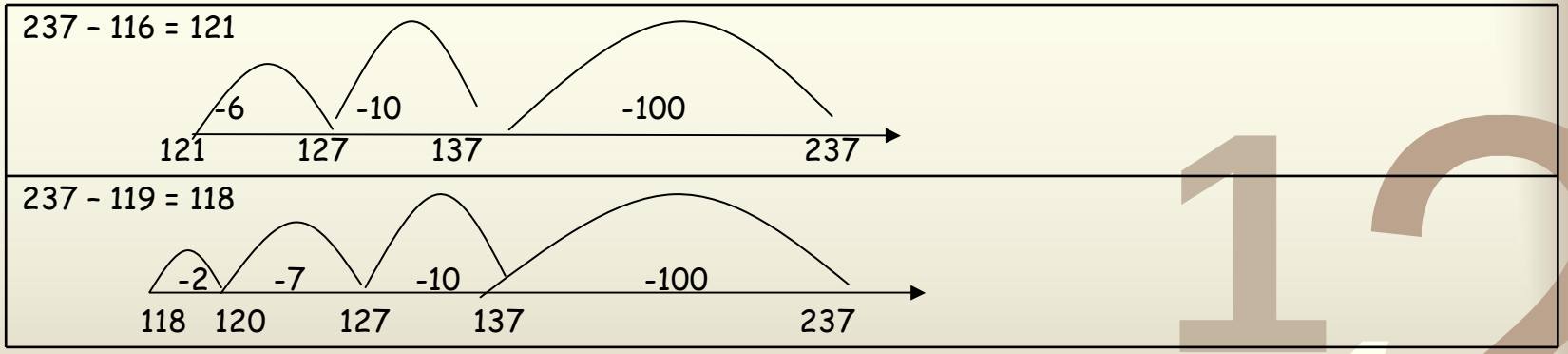
25+14 = 39



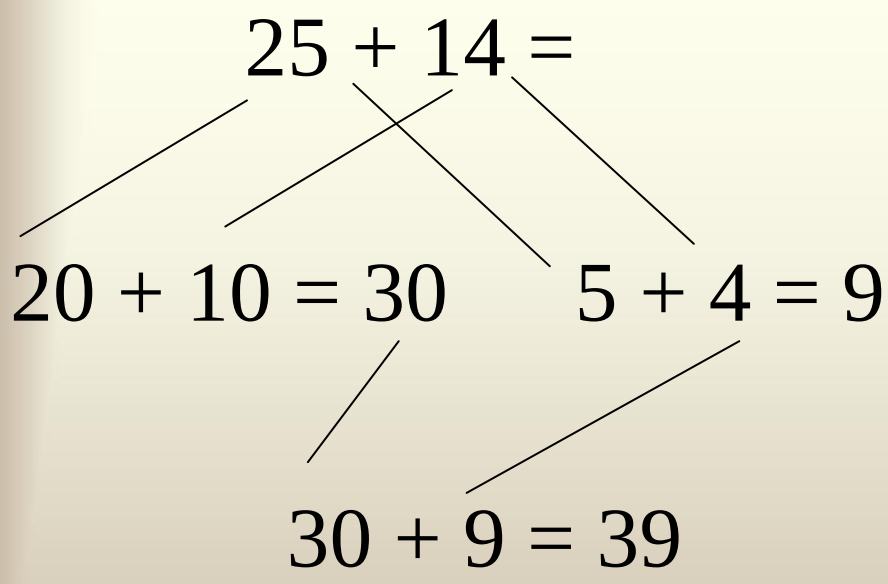


At first children do not cross the tens boundary.

They work up to higher numbers



As well as using an unstructured number line children learn other written methods.



67 – 34 = 33

67 – 30 = 37

37 – 4 = 33

Column addition is a new requirement for Year 2 children in the new curriculum.

However, children are not expected to cross tens or hundreds boundaries and therefore ‘carry over’

$$64 + 23 = 60 + 20 = 80,\quad 4 + 3 = 7,\quad 80 + 7 = 87$$

$$97 - 53 = 90 - 50 = 40,\quad 7 - 3 = 4,\quad 40 + 4 = 44$$

Moving too quickly

With the new curriculum there is a higher emphasis on children being confident and developing mental fluency.

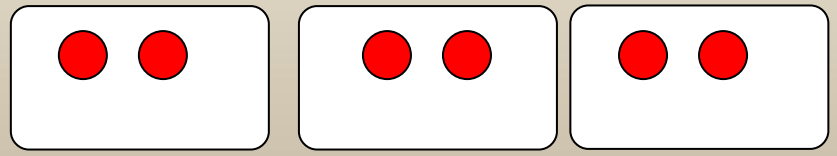
Therefore teachers will be ensuring this by not giving the children higher numbers to add and subtract too quickly. Instead can the children add 3 numbers? Can they apply their skills in different contexts such as measures and statistics?

Multiplication

Helping children develop an understanding of multiplication begins with simply counting in 2, 5 and 10 (forwards and backwards).

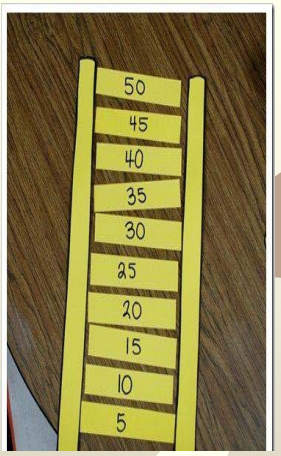
We then begin practically grouping objects.

There are 3 bags with two balls in each bag.



We will encourage children to verbally use language e.g. 3 lots of 2 is 6, however we would not expect the children to record anything at this time.

We use children's addition knowledge to solve repeated addition problems and this is done practically.



1	2	3	4	5	6	7	8	9	10
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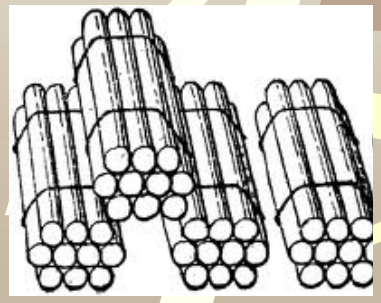
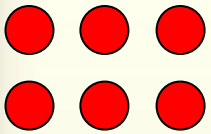
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



We then go on to arrays which involves putting objects in rows and columns.

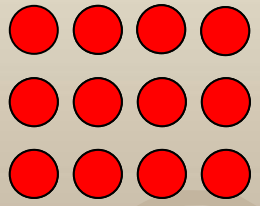


2 rows of 3

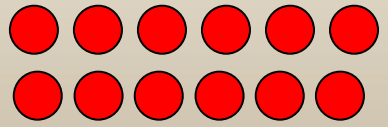
3 columns of 2

There are 3 rows and 4 columns.
4 + 4 + 4 = 12
3 x 4 = 12
3 + 3 + 3 + 3 = 12
4 x 3 = 12

They will relate the pictures to repeated addition to begin with and then to multiplication problems.

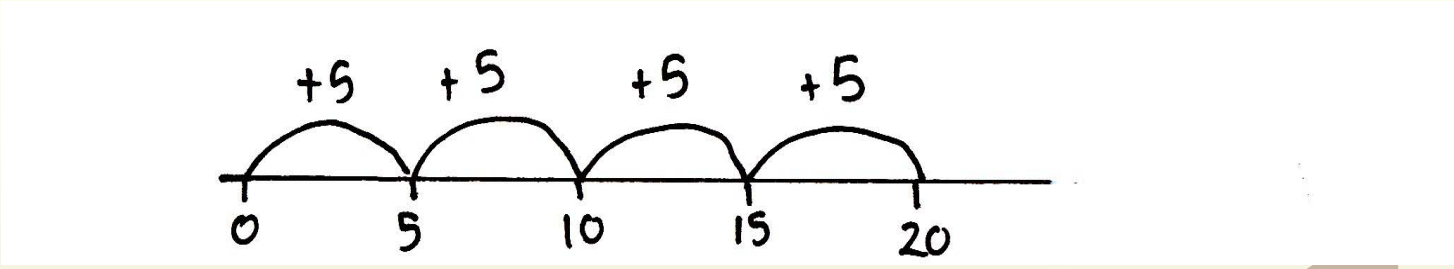


3 x 4 = 12
4 x 3 = 12



6 x 2 = 12
2 x 6 = 12

We then go on to use an unstructured number Line to solve simple U X U



Throughout learning how to solve multiplication problems, children are asked to solve worded problems

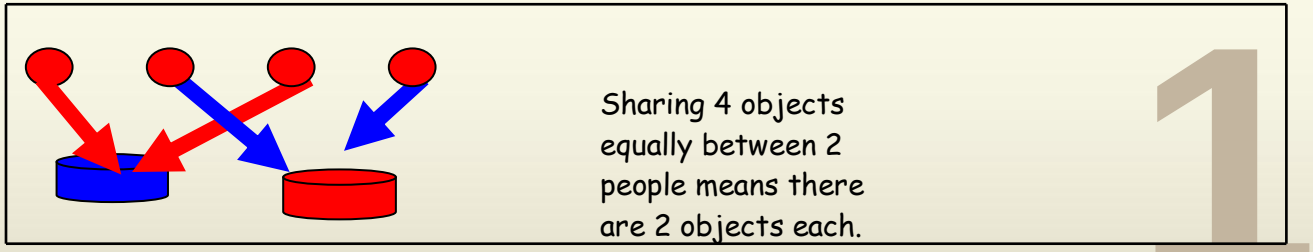
e.g. There are 4 wheels on a car. How many wheels on 5 cars?

Mental recall of times tables

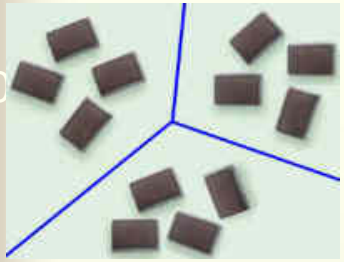
- In Year 2, there will be a higher emphasis on children knowing their 2, 5 and 10 times tables fluently and being aware of the times tables.

Division

They begin very practically by **sharing** objects



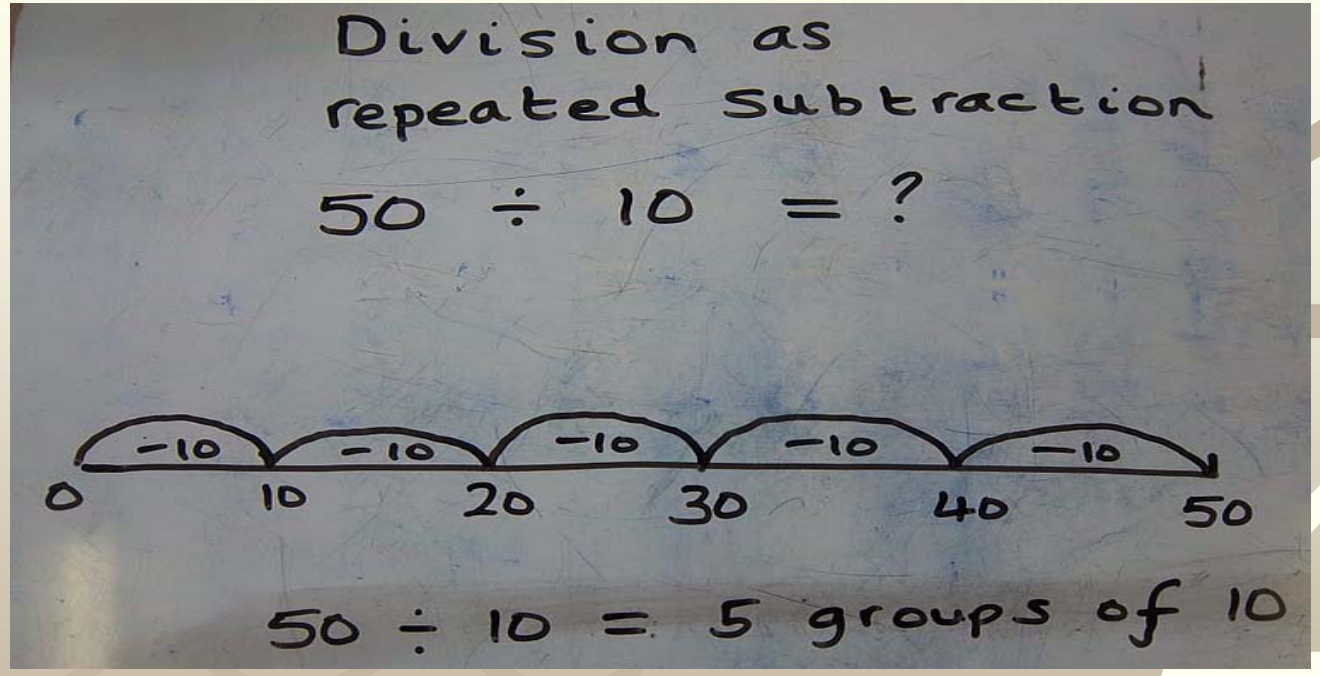
They then go on to grouping



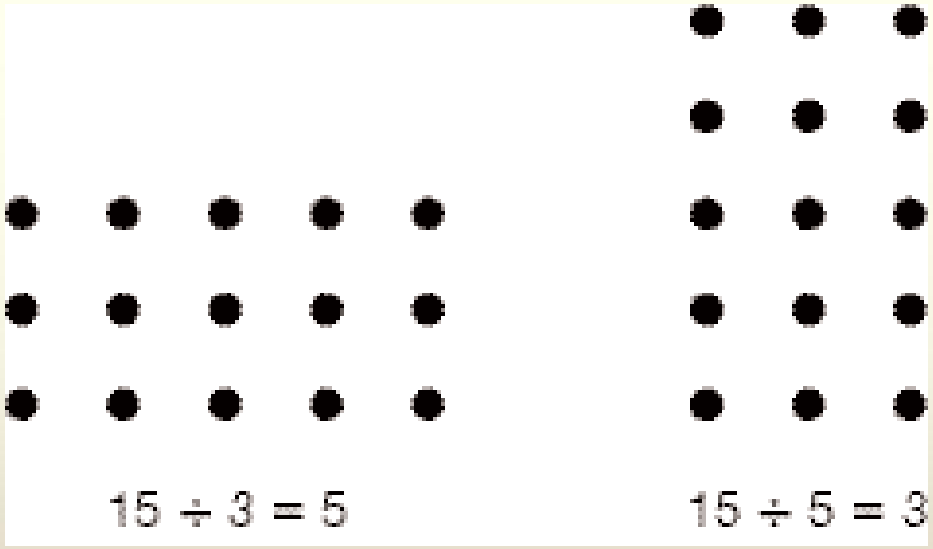
Group the dominoes into 4. How many groups?

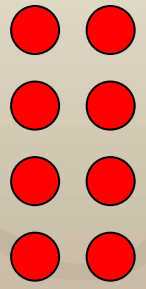
How many pairs will there be if there are 10 sweets altogether?

Like with reapeated addition and multiplication, they will also use repeated subtraction to help solve division problems.



They also use arrays to help understand division.



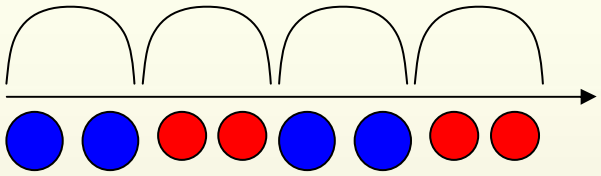


8 shared into 2 columns leaves

4 in each column

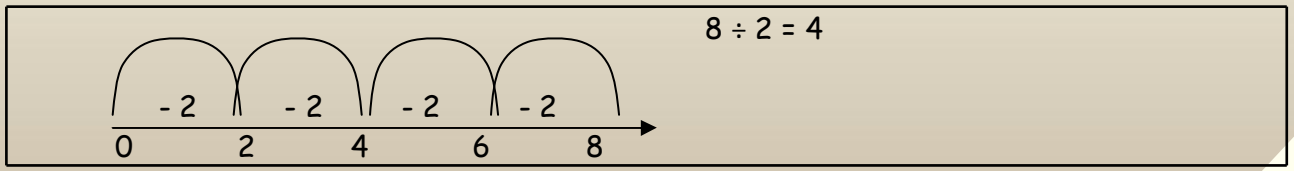
8 ÷ 2 = 4

They also use a numberline.



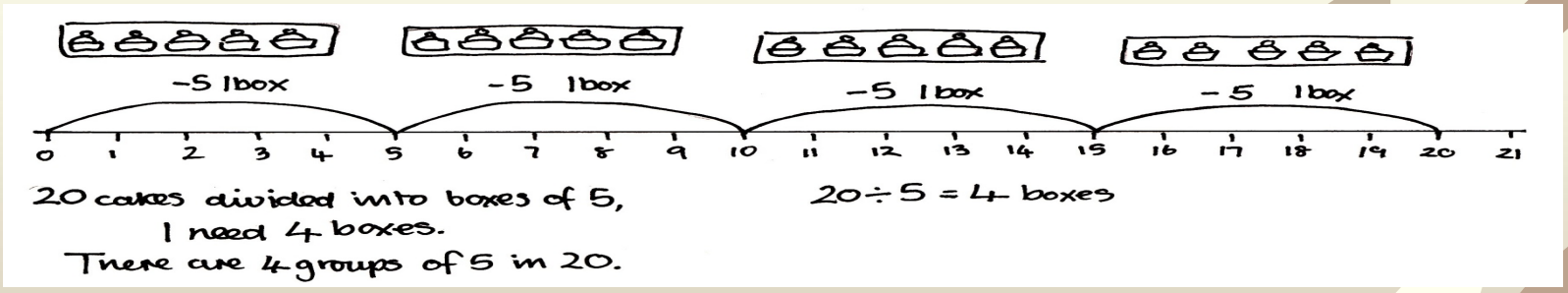
They begin by grouping objects along a number line

$8 \div 4 = 2$



They then use jumps on an unstructured number line.

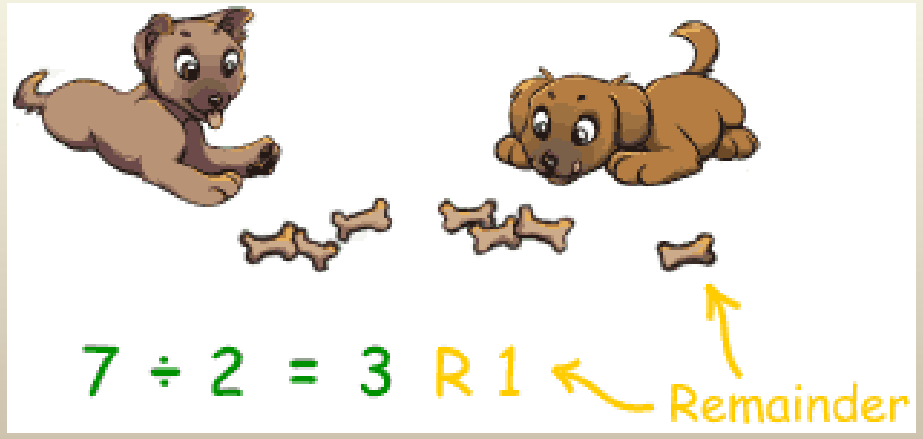
As with every mathematical concept the children learn, they will solve worded problems.



They also begin to relate the concept of half to dividing by 2.

They will also begin to understand the concept of remainders.

We will do this using the methods already discussed such as sharing, grouping, arrays and number lines.



There are 7 bones to share with 2 pups. But 7 cannot be divided equally into 2 groups, so each pup gets 3 bones, but there will be 1 left over

It is also important children begin to see the relationships between the 4 operations.

They learn the term **inverse**.

They learn that subtraction is the inverse of addition and division is the inverse of multiplication.

$10 + 7 = 17 \quad 17 - 10 = 7$

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

Commutative Law

They must also understand commutative law.

This means that addition and multiplication can be done in any order.

$5 + 4 = 9$

$4 + 5 = 9$

$3 \times 2 = 6$

$2 \times 3 = 6$

How to support at home

- Number bonds - supporting your child to become **fluent**
- Counting in 2, 5, 10 and for year 2's in 3.
- In everyday activities e.g. You have 5 sweets and I have 4. How many sweets do we have altogether? I have three 2p coins. How much money do I have? I have 10 biscuits. If I share them between you and me, how many do we get each?
- Making arrays using any objects e.g. sweets, moshi monsters, buttons, Frozen pictures.