Mayfield

Calculation Guidance

This booklet contains information and guidance to inform parents and carers about the teaching and learning of mathematical calculations at Mayfield.

This is intended as a general guide to cover maths from Reception through to year 6. Some children may be ready to progress through the stages a little quicker than others. It is essential however, that children are not moved on to more formal 'written methods' too quickly; before becoming secure in their understanding and manipulation of numbers and calculations in many forms.

We encourage children to experience maths in a wide variety of practical and real life contexts.

If you have any questions or concerns about your child in maths please let us know; we are always willing to help.

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Aim

By the end of year 6, children will have a range of calculation methods mentally and a preferred written method.

Selection of the method used will depend upon the numbers involved.

Children should **not** be made to go onto the next stage if:

1) they are not ready.
2) they are not confident.

Children should be encouraged to approximate their answers before calculating.
Children should be encouraged to check their answers after calculation using an appropriate strategy e.g. performing the inverse calculation.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.

Some common terms used;

Factor – every number has factors they are the numbers that it can be divided by exactly. E.g. 12 has the factors of 1,12,2,6,3 and 4. Numbers with only two factors e.g. 2,3,5,7,11,etc are called **Prime Numbers**.

Inverse – the opposite or reverse calculation (+ and -) (x and ÷)

Multiples – Every whole number that is exactly divisible by another whole number is a multiple of that number. E.g. 30 is a multiple of 3. (We would also say it is in the 3 times table) 6, 12 and 300 are all multiples of 3.

Partitioning – breaking a number into its place value sections, hundreds, tens, units or HTU, calculating these separately and then **recombining** to produce an answer. E.g. 25 + 46 = (20 + 40) + (5 + 6) = 60 + 11 = 71

Place Value – the value of digit depends where it is placed in a number. The digit 3 in the number 342 is in the hundreds column and therefore represents 300, in the number 24.3 it represents 0.3 or 3/10ths

Product – the answer to a multiplication calculation.

Sum – an addition calculation. Its answer is the **Total.**

PROGRESSION THROUGH CALCULATIONS FOR ADDITION

MENTAL CALCULATIONS

(ongoing)

These are a **selection** of mental calculation strategies :

Mental recall of number bonds **(bonding to 10,20,100,1000 etc.)**

6 + 4 = 10 □ + 3 = 10

25 + 75 = 100 19 + □ = 20

Use near doubles

6 + 7 = double 6 + 1 = 13

Addition using partitioning and recombining

34 + 45 = (30 + 40) + (4 + 5) = 79

Counting on or back in repeated steps of 1, 10, 100, 1000

86 + 57 = 143 (by counting on in tens and then in ones)

460 - 300 = 160 (by counting back in hundreds)

Add the nearest multiple of 10, 100 and 1000 and adjust

24 + 19 = 24 + 20 – 1 = 43

458 + 71 = 458 + 70 + 1 = 529

Use the relationship between addition and subtraction

36 + 19 = 55 19 + 36 = 55

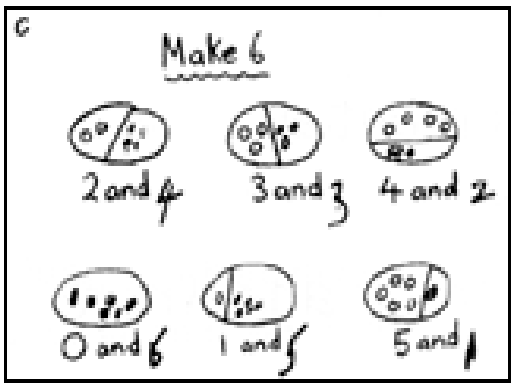
55 – 19 = 36 55 – 36 = 19

MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED.

THEY ARE NOT REPLACED BY WRITTEN METHODS.

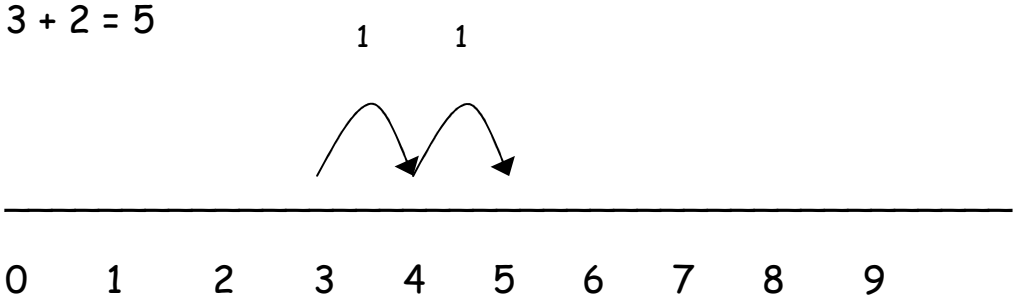
Stage 1 (Rec – yr 1)

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures, etc.



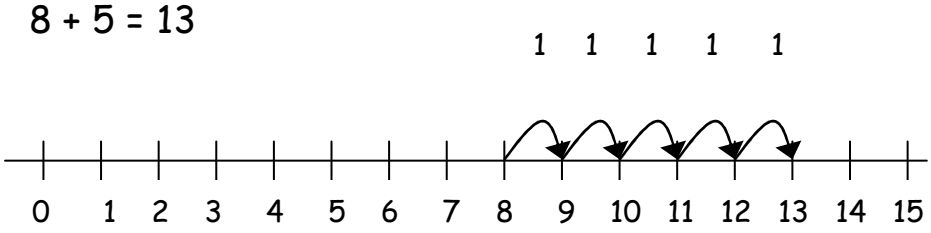
They use number tracks, numberlines and practical resources to support calculation and teachers *demonstrate* the use of the numberline.

3 + 2 = 5

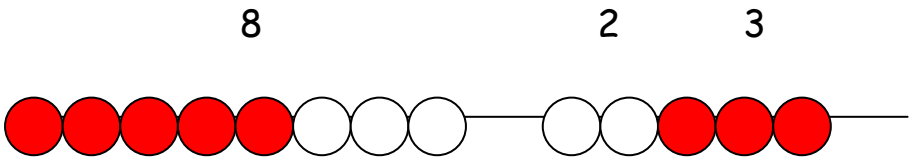


Children then begin to use numbered lines to support their own calculations using a numbered line to count on in ones.

8 + 5 = 13



Bead strings or bead bars can be used to illustrate addition including bridging through ten by counting on 2 then counting on 3.

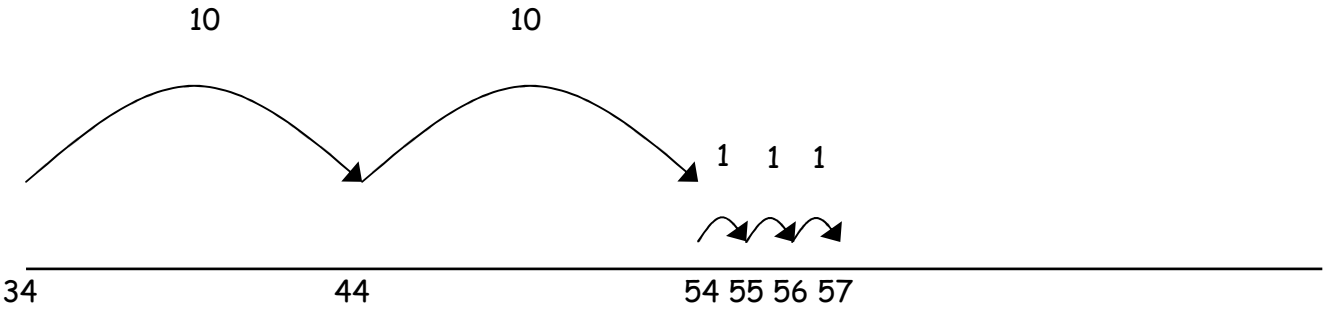


Stage 2 (Yr 1 to 2)

Children will begin to use 'empty number lines' themselves starting with the larger number and counting on.

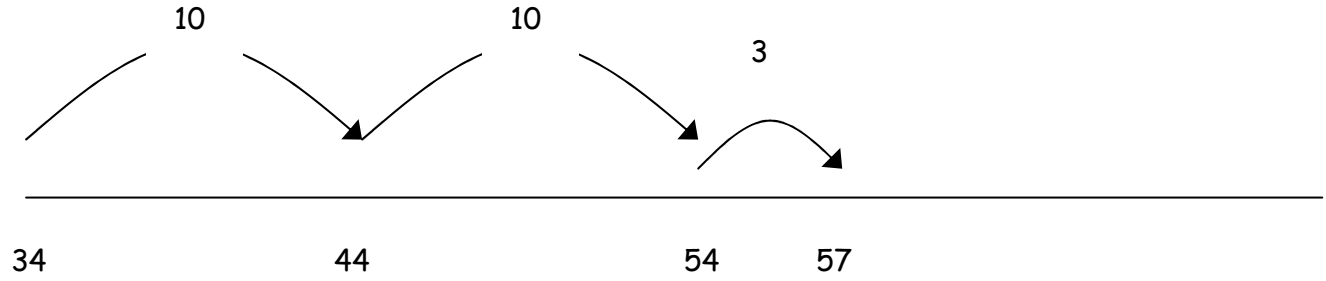
First counting on in tens and ones.

34 + 23 = 57

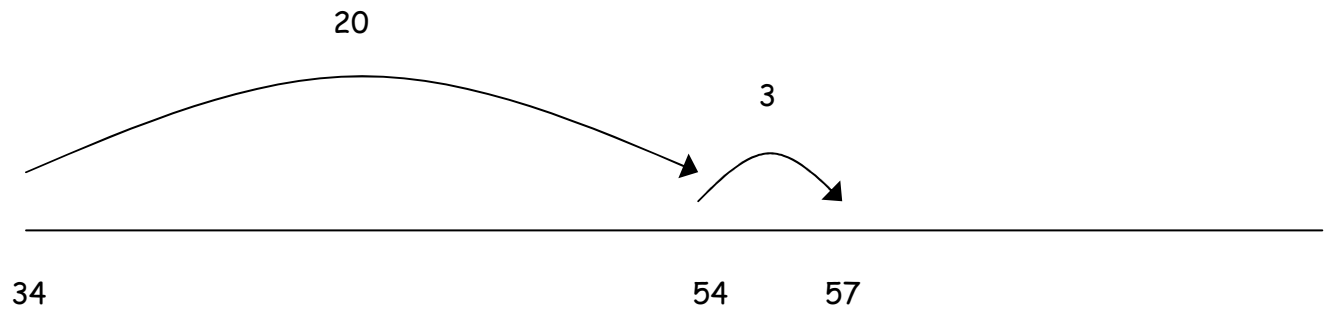


Then helping children to become more efficient by adding the units in one jump (by using the known fact 4 + 3 = 7).

34 + 23 = 57

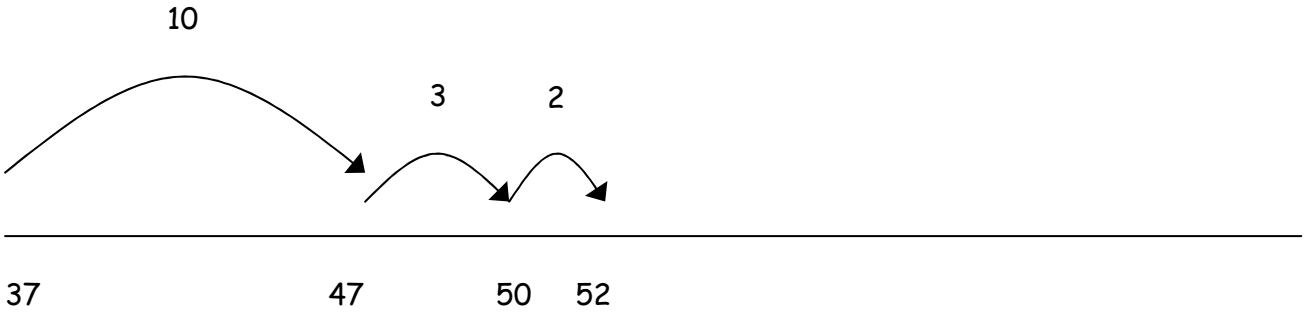


Followed by adding the tens in one jump and the units in one jump.
34 + 23 = 57



Bridging through ten can help children become more efficient.

37 + 15 = 52

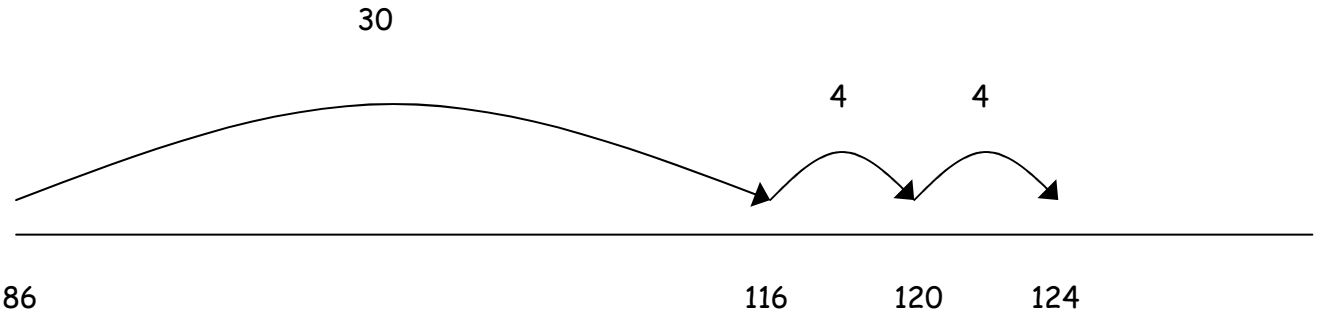


Stage 3 (Yr 2 to 3)

Children will continue to use empty number lines with increasingly large numbers.

They should count on from the largest number irrespective of the order of the calculation.

38 + 86 = 124

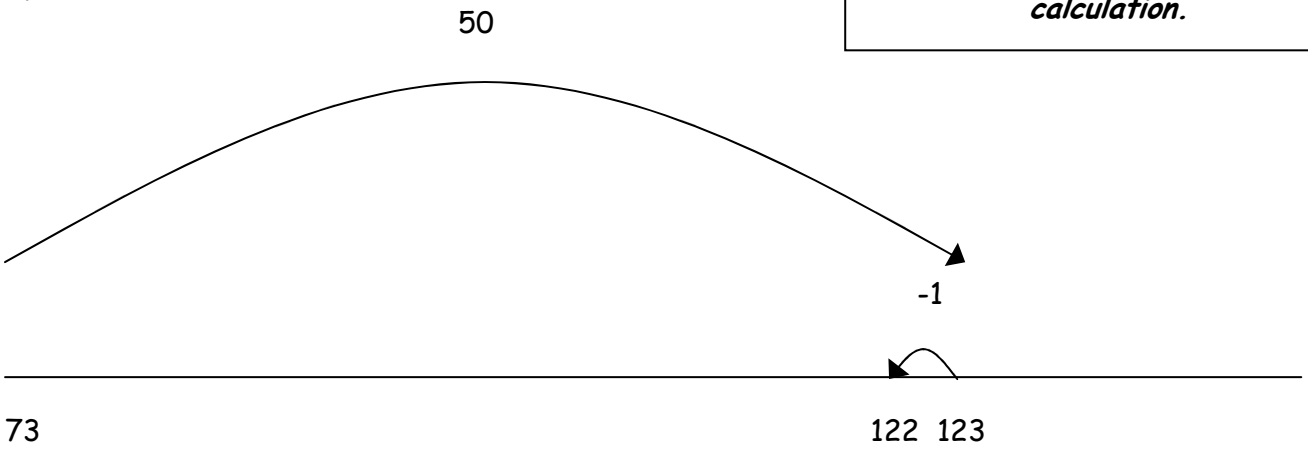


Compensation – children can also round up and down

Round 49 to 50 and then adjust

49 + 73 = 122

Note: The number line is a tool for addition, it is not a method and its use will depend on the calculation.



Children will begin to use informal pencil and paper methods (jottings) to support, record and explain partial mental methods building on existing mental strategies.

Stage 4 (Yr 3 to 4)

Children will then progress to partitioning without the use of a number line, however this progress may be slow and numberlines should be continued for children who need them or wish to use them. Encourage children to select which method is appropriate.

67 + 24 = (60 + 20) + (7+ 4) = 80 + 11 = 91

Stage 5 (Yr 4 to 5)

Adding most significant digits first, then moving to adding least significant digits.

67

\+ 24

80 (60 + 20)

11 (7 + 4)

91

Adding tens first and then units.

Digits need to be carefully lined up here paying careful attention to place value;

H T U

\+ T U

Moving to adding the least significant digits first in preparation for 'carrying'.

67	267
+ 24	+ 85
11 (7 + 4)	12 (7 + 5)
80 (60 + 20)	140 (60 + 80)
91	200
	352

Stage 6 (Yr 5 to 6)

From this, children will begin to carry below the line.

625	783	367
+ 48	+ 42	+ 85
673	825	452
1	1	11

Using similar methods, children will:

- ✓ *add several numbers with different numbers of digits*
- ✓ *begin to add two or more three-digit sums of money, with or without adjustment from the pence to the pounds*
- ✓ *know that the decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. £3.59 + 78p.*

Stage 7 (Yr 5 to 6)

Children should extend the carrying method to numbers with at least four digits.

587	3587
+ 475	+ 675
1062	4262
11	111

Using similar methods, children will:

- ✓ *add several numbers with different numbers of digits*
- ✓ *begin to add two or more decimal fractions with up to three digits and the same number of decimal places*
- ✓ *know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. 3.2 m – 280 cm.*

Stage 8 (Mostly yr 6)

Children should extend the carrying method to number with any number of digits.

7648	6584
+ 1486	+ 5848
9134	12432
1 1 1	1 1 1

Using similar methods, children will

- ✓ *add several numbers with different numbers of digits*
- ✓ *begin to add two or more decimal fractions with up to four digits and either one or two decimal places*
- ✓ *know that decimal points should line up under each other, particularly when adding or subtracting mixed amounts, e.g. 401.2 + 26.85 + 0.71.*

PROGRESSION THROUGH CALCULATIONS FOR SUBTRACTION

MENTAL CALCULATIONS

(ongoing)

These are a **selection** of mental calculation strategies:

Mental recall of addition and subtraction facts

10 – 6 = 4 17 - □ = 11

20 - 17 = 3 □ - 8 = 2

Find a small difference by counting up

82 – 79 = 3 (start at 79 count to 82)

Counting on or back in repeated steps of 1, 10, 100, 1000

86 - 52 = 34 (by counting back in tens and then in ones)

460 - 300 = 160 (by counting back in hundreds)

Subtract the nearest multiple of 10, 100 and 1000 and adjust

24 - 19 = 24 - 20 + 1 = 5

458 - 71 = 458 - 70 - 1 = 387

Use the relationship between addition and subtraction

36 + 19 = 55 19 + 36 = 55

55 – 19 = 36 55 – 36 = 19

MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED.

THEY ARE NOT REPLACED BY WRITTEN METHODS.

THE FOLLOWING ARE STANDARDS THAT WE EXPECT THE MAJORITY OF CHILDREN TO ACHIEVE.

Stage 1 (Rec and Yr 1)

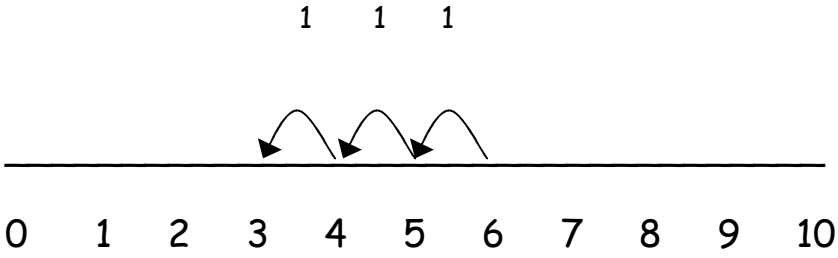
Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures etc.

They use number tracks, numberlines and practical resources to support calculation.

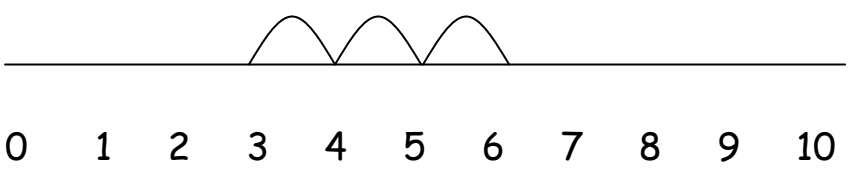
ICT use – Numicon and Beebots are used to reinforce patterns of numbers.

Teachers *demonstrate* the use of the numberline.

6 – 3 = 3

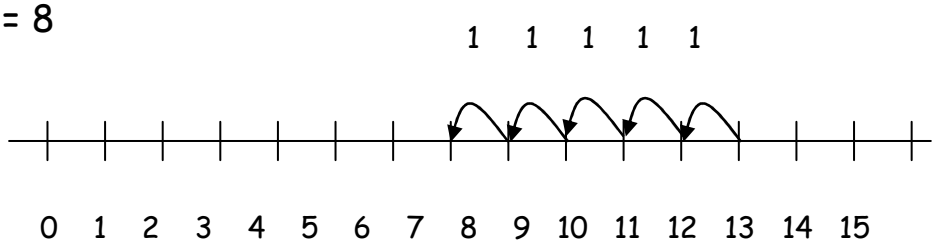


The numberline should also be used to show that 6 - 3 means the 'difference between 6 and 3' or 'the difference between 3 and 6' and how many jumps they are apart.



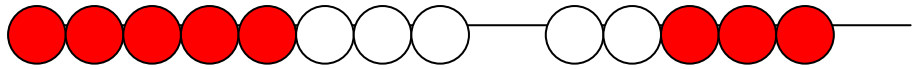
Children then begin to use numbered lines to support their own calculations - using a numbered line to count back in ones.

13 – 5 = 8



Bead strings or bead bars can be used to illustrate subtraction including bridging through ten by counting back 3 then counting back 2.

13 – 5 = 8



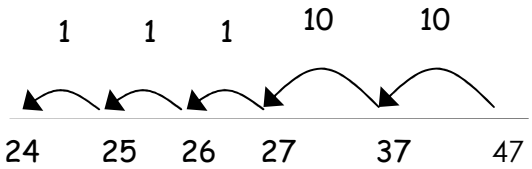
Stage 2 (Rec and Yrs 1 to 2)

Children will begin to use empty number lines to support calculations.

Counting back

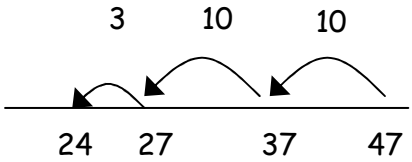
First counting back in tens and ones.

47 – 23 = 24



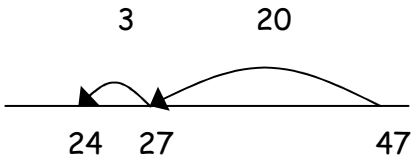
Then helping children to become more efficient by subtracting the units in one jump (by using the known fact 7 – 3 = 4).

47 – 23 = 24



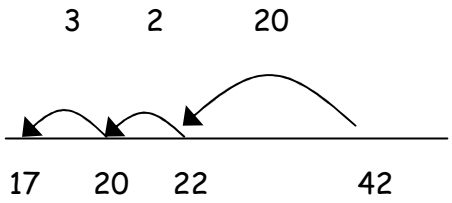
Subtracting the tens in one jump and the units in one jump.

47 – 23 = 2



Bridging through ten can help children become more efficient.

42 – 25 = 17



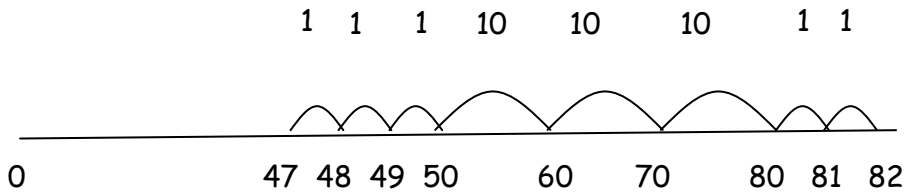
Counting on

If the numbers involved in the calculation are close together or near to multiples of 10, 100 etc, it can be more efficient to count on rather that to subtract.

Count up from 47 to 82 in jumps of 10 and jumps of 1.

The number line should still show 0 so children can cross out the section from 0 to the smallest number. They then associate this method with 'finding the difference'.

82 - 47



Here the children start at the lowest values and add the difference, this is particularly useful with small differences in number value e.g. 120 – 99 =

You can help children to become more efficient with subtracting and counting on by:

- ✓ Making more efficient jumps
- ✓ Bridging through ten.

Stage 3 (Yr 3 to year 4)

Children will continue to use empty number lines with increasingly large numbers.

Children will begin to use informal pencil and paper methods (jottings) to support, record and explain partial mental methods building on existing mental strategies.

Partitioning and decomposition

This process should be demonstrated using arrow cards to show the partitioning and base 10 (Dienes materials or similar) to show the decomposition of the number.

NOTE When solving the calculation 89 – 57, children should know that 57 **does NOT EXIST AS AN AMOUNT** it is what you are subtracting from the other number. Therefore, when using base 10 materials, children would need to count out only the 89.

89 = 80 + 9

- 57 50 + 7

30 + 2 = 32

Initially, the children will be taught using examples that do not need the children to exchange.

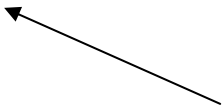
From this the children will begin to exchange.

71 70 and 1

- 46 40 and 6

Step 1 70 + 1

- 40 + 6



The calculation should be read as e.g. take 6 from 1.

Step 2 60 + 11

\- 40 + 6

20 + 5 = 25

This would be recorded by the children as

60

~~70~~ + $^{1}1$

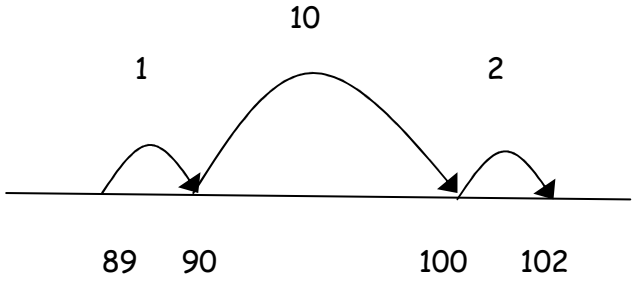
\- 40 + 6

20 + 5 = 25

Children should know that units line up under units, tens under tens, and so on.

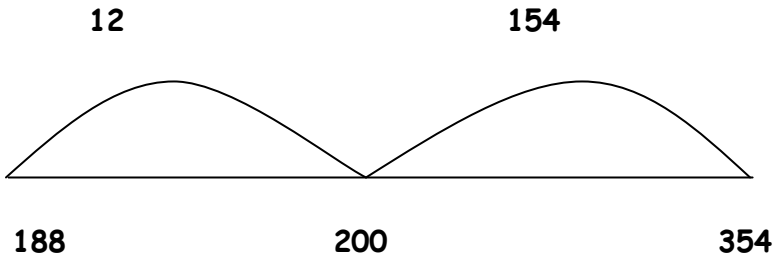
Where the numbers in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used.

102 – 89 = 13



The above method can be extended to larger numbers by using complements to 100.

354 – 188 =



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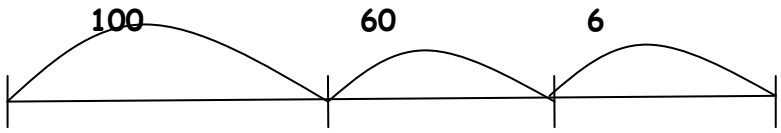
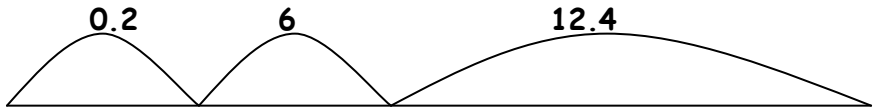


188 288 348 354

354 – 188 = 166

Subtraction of decimals is just as simple using the number line.

32.4 – 13.8



13.8 14 20 32.4

32.4 – 13.8 = 18.6

Stage 4 (Yr 5 to year 6)

The aim is for the children to be secure in a method for subtraction. There should be no pressure for children to have to progress through all the methods too quickly. Some children may leave Year 6 confidently working in subtraction on a number line.

Partitioning and decomposition

754 = 700 and 50 and 4

\- 86 = 80 and 6

Step 1 700 + 50 + 4

\- 80 + 6

Lots of decomposition would make this method error prone, the children need to be encouraged to know this and understand that a number line can still be used. It would not be a step backwards to

Step 2 700 + 40 + 14 *(adjust from T to U)*

\- 80 + 6

Step 3 600 + 140 + 14 *(adjust from H to T)*

\- 80 + 6

600 + 60 + 8 = 668

This would be recorded by the children as

600 140

~~700~~ + ~~50~~ + ^{1}4 (the children can write 10 or 1 as carried value)

\- 80 + 6

600 + 60 + 8 = 668

Final Decomposition method-

6 14 1

~~7~~ ~~7~~4

\- 86

668

Children should:

- ✓ *be able to subtract numbers with different numbers of digits*
- ✓ *using this method, children should also begin to find the difference between two three-digit sums of money, with or without 'adjustment' from the pence to the pounds.*

know that decimal points should line up under each other.

For example:

£8.95 = 8 + 0.9 + 0.05

\-£4.38 - 4 + 0.3 + 0.08

leading to = 8 + 0.8 + 0.15 *(adjust from T to U)* 8.85

- 4 + 0.3 + 0.08 - 4.38

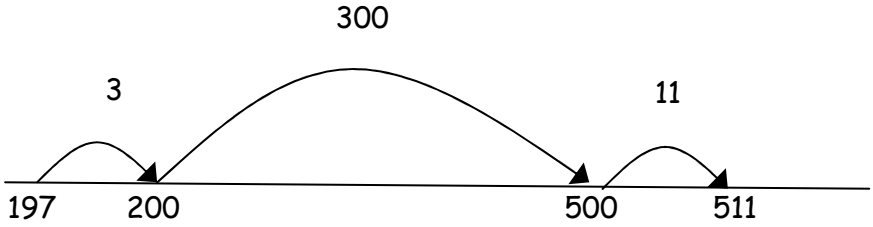
4 + 0.5 + 0.07

= £4.57

Alternatively, children can set the amounts to whole numbers, i.e. 895p – 438p and convert to pounds after the calculation.

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used.

511 – 197 = 314



Stage 5 (Yr 5 to year 6)

Partitioning and decomposition

Step 1 754 = 700 + 50 + 4

- 286 - 200 + 80 + 6

Step 2 700 + 40 + 14 *(adjust from T to U)*

- 200 + 80 + 6

Step 3 600 + 140 + 14 *(adjust from H to T)*

- 200 + 80 + 6

400 + 60 + 8 = 468

Please note, this calculation is shown just as an example for the method. A calculation like this, needing so much partitioning and decomposition may be more efficiently and accurately completed on a number line.

This decomposition would be recorded by the children as

600 140

700 + 50 + ^{1}4

- 200 + 80 + 6

400 + 60 + 8 = 468

Final Decomposition method -

614 1

~~7~~~~0~~4

- 286

468

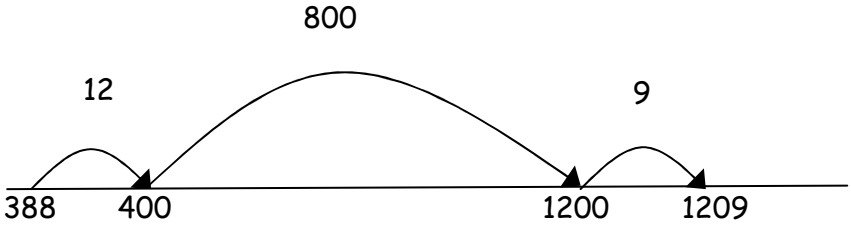
Children should:

- ✓ *be able to subtract numbers with different numbers of digits*
- ✓ *begin to find the difference between two decimal fractions with up to three digits and the same number of decimal places*
- ✓ *know that decimal points should line up under each other.*

NB If your children have reached the concise stage they will then continue this method through into year 6. They will not go back to using the expanded methods.

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line should be used.

1209 – 388 = 821



Stage 6 (Year 6 – a few year 5)

Decomposition method

5 13 1

~~6~~~~4~~67

- 2684

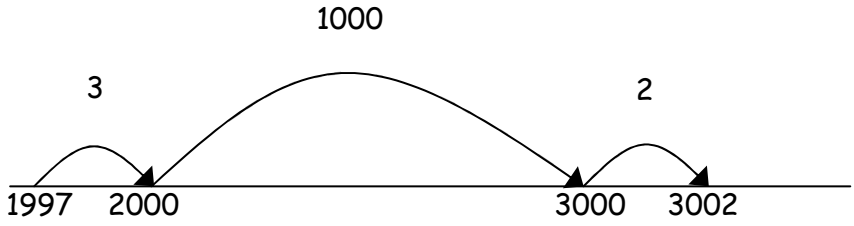
3783

Children should:

- ✓ *be able to subtract numbers with different numbers of digits;*
- ✓ *be able to subtract two or more decimal fractions with up to three digits and either one or two decimal places;*
- ✓ *know that decimal points should line up under each other.*

Where the numbers are involved in the calculation are close together or near to multiples of 10, 100 etc counting on using a number line or mental methods can be used.

3002 – 1997 = 1005



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PROGRESSION THROUGH CALCULATIONS FOR MULTIPLICATION

MENTAL CALCULATIONS (ongoing)

These are a **selection** of mental calculation strategies:

Doubling and halving

Applying the knowledge of doubles and halves to known facts.

e.g. 8 x 4 is double 4 x 4

Deriving and recalling division facts

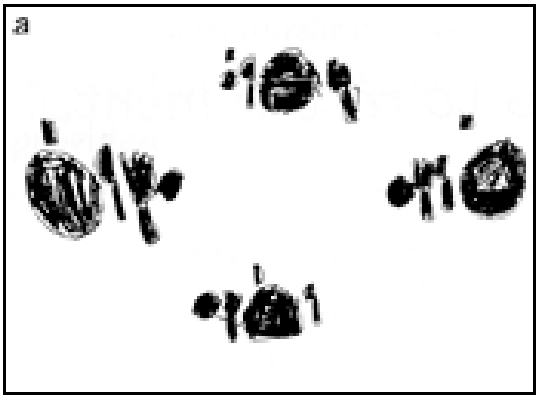
e.g. Deriving is using known facts to derive others – I know that 10 x 8 = 80 so 9 x 8 must be 8 less than this

Times Tables ***These are taught regularly from Y1 onwards, either as part of the mental oral starter or other times as appropriate within the day.***

MENTAL CALCULATION STRATEGIES WILL CONTINUE TO BE USED. THEY ARE NOT REPLACED BY WRITTEN METHODS.

Stage 1 (Rec to yr 1)

Children will experience equal groups of objects and will count in 2s and 10s and begin to count in 5s. They will work on practical problem solving activities involving equal sets or groups.



It is really important stage that children experience multiplication in context, i.e. pairs of socks, egg boxes, fingers and toes etc

Stage 2 (Yr 1 to yr 2)

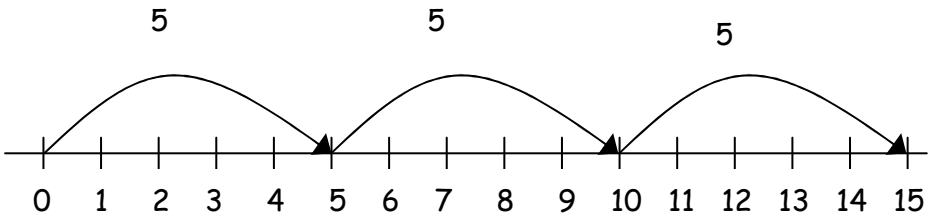
Children will develop their understanding of multiplication and use jottings to support calculation:

Repeated addition

3 times 5 is 5 + 5 + 5 = 15 or 3 lots of 5 or 5 x 3

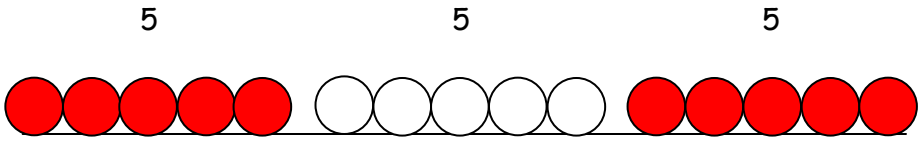
Repeated addition can be shown easily on a number line:

5 x 3 = 5 + 5 + 5



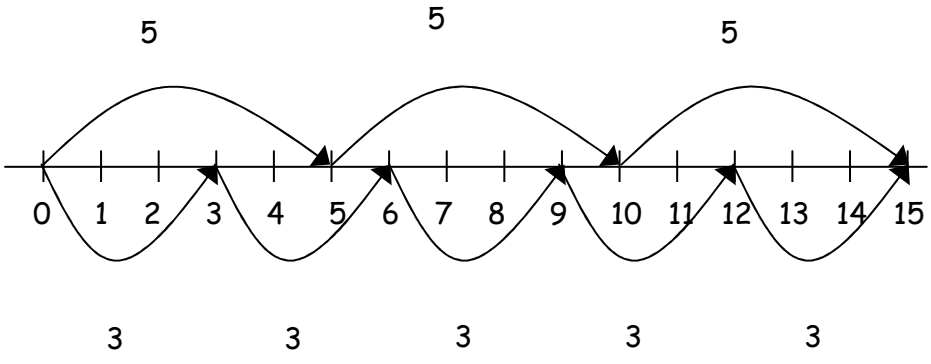
and on a bead bar:

5 x 3 = 5 + 5 + 5



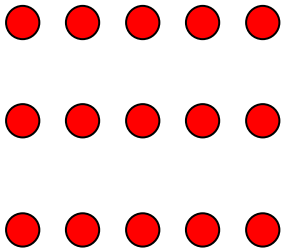
Commutability

Children should know that 3 x 5 has the same answer as 5 x 3. This can also be shown on the number line.



Arrays

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.



5 x 3 = 15

3 x 5 = 15

Using many different objects and contexts to reinforce this idea will support the child's mathematical understanding of the concept of multiplication.

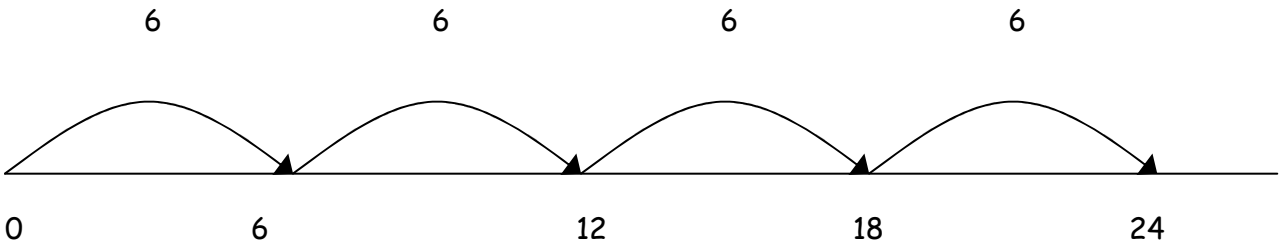
Stage 3 (Yr 2 to yr 3)

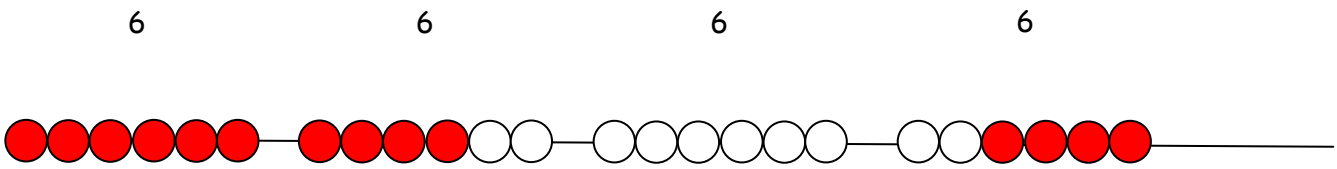
Children will continue to use:

Repeated addition

4 times 6 is 6 + 6 + 6 + 6 = 24 or 4 lots of 6 or 6 x 4

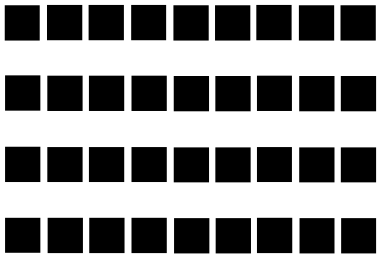
Children should use number lines or bead bars to support their understanding.





Arrays

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the 'grid method' of calculation.



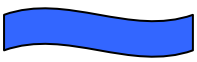
4 x 9 = 36

9 x 4 = 36

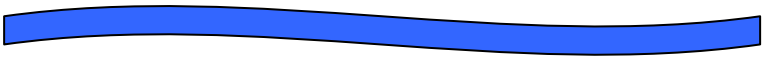
Children will also develop an understanding of -

Scaling

e.g. Find a ribbon that is 4 times as long as the blue ribbon



5 cm



20 cm

Using symbols to stand for unknown numbers to complete equations using inverse operations

□ x 5 = 20 3 x △ = 18 □ x O = 32

Partitioning

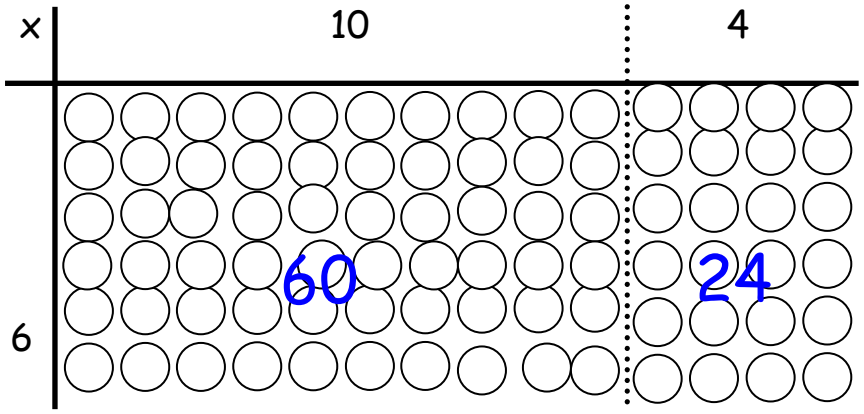
38 x 5 = (30 x 5) + (8 x 5)

= 150 + 40

= 190

Stage 4 (Yr 3 to yr 4)

Children will continue to use arrays where appropriate leading into the grid method of multiplication.



(6 x 10) + (6 x 4)

60 + 24

84

The Grid method for X

TU x U

(Short multiplication – multiplication by a single digit)

23 x 8

Children will approximate first

23 x 8 is approximately 25 x 8 = 200

Then place the digits in a grid with careful attention to place value

x	20	3
8	160	24

160

+ 24

184

Stage 5 (Yr 4 to yr 5)

Grid method – this is continued with larger values and decimals

HTU x U

(**Short multiplication** – multiplication by a single digit)

346 x 9

Children will approximate first and use this to check if their answer is reasonable!

346 x 9 is approximately 350 x 10 = 3500

x	300	40	6	
9	2700	360	54	= 3114

Encourage the children to add up mentally first but then they may need a suitable written method if they cannot add mentally.

TU x TU

(Long multiplication – multiplication by more than a single digit)

72 x 38

Children will approximate first

72 x 38 is approximately 70 x 40 = 2800

x	70	2	
30	2100	60	
8	560	16	= 2736

Encourage the children to add up mentally first but then they may need a suitable written method if they cannot add mentally.

Using similar methods, children will be able to multiply decimals with one decimal place by a single digit number, approximating first. They should know that the decimal points line up under each other.

e.g. 4.9 x 3

Children will approximate first 4.9 x 3 is approximately 5 x 3 = 15

x	4	0.9		
3	12	2.7	=	14.7

Stage 6 (Yr 5 to yr 6)

ThHTU x U

(Short multiplication – multiplication by a single digit) 4346 x 8

Children will approximate first 4346 x 8 is approximately 4346 x 10 = 43460

x	4000	300	40	6
8	32000	2400	320	48

32000
+ 2400
+ 320
+ 48
34768

HTU x TU

(Long multiplication – multiplication by more than a single digit) 372 x 24

Children will approximate first 372 x 24 is approximately 400 x 25 = 10000

x	300	70	2
20	6000	1400	40
4	1200	280	8

6000

+ 1400

+ 1200

+ 280

+ 40

+ 8

8928

Using similar methods, they will be able to multiply decimals with up to two decimal places by a single digit number and then two digit numbers, approximating first. They should know that the decimal points line up under each other.

For example:

4.92 x 3

Children will approximate first

4.92 x 3 is approximately 5 x 3 = 15

x	4	0.9	0.02
3	12	2.7	0.06

12

+ 0.7

+ 0.06

12.76

The next step is to represent the method of recording in a column format, but showing the working. This method is linked to the organisation needed for the grid method.

Children should describe what they do by referring to the actual values of the digits in the columns. For example, the first step in 38 × 7 is 'thirty multiplied by seven', not 'three times seven', although the relationship 3 × 7 should be stressed.

56 × 27 is approximately 60 × 30 = 1800.

```
  56
× 27
1000     50 × 20 = 1000
 120      6 × 20 =  120
 350     50 × 7  =  350
  42      6 × 7  =   42
1512
 1
```

It is <u>not necessary</u> to teach the shortened × methods –

<u>only</u> if the children are very secure in their understanding.

PROGRESSION THROUGH CALCULATIONS FOR DIVISION

MENTAL CALCULATIONS (ongoing)

*These are a **selection** of mental calculation strategies:*

Doubling and halving

e.g. Knowing that halving is dividing by 2

Deriving and recalling division facts (using times table knowledge to support this)

Written Calculations for Division

Stage 1 (Rec to year 1)

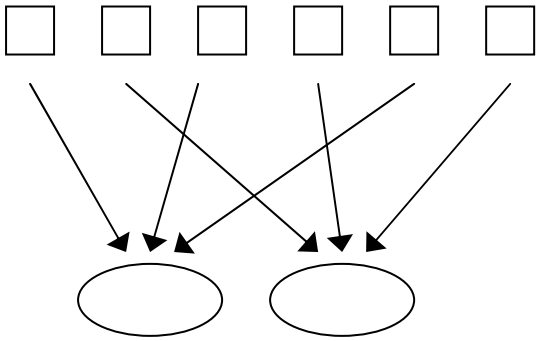
Children will understand equal groups and share items out in play and problem solving. They will count in 2s and 10s and later in 5s.

Stage 2 (Some Rec and Year 1 to yr 2)

Children will develop their understanding of division and use jottings to support calculation

Sharing equally

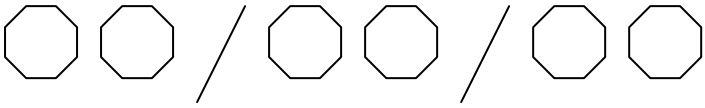
6 sweets shared between 2 people, how many do they each get?



It is really important that the children have lots of practical experience of sharing and grouping.

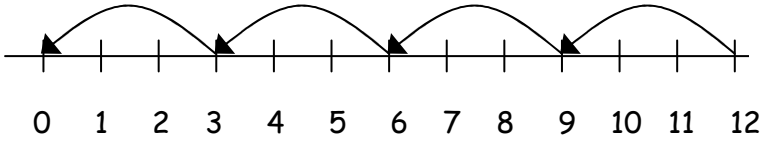
Grouping or repeated subtraction

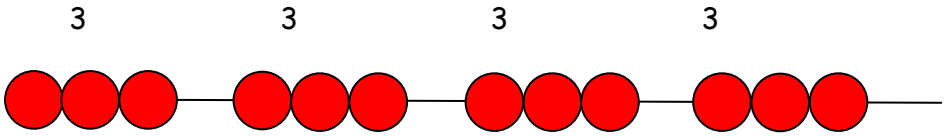
There are 6 sweets, how many people can have 2 sweets each?



Repeated subtraction using a number line or bead bar

12 ÷ 3 = 4





The bead bar will help children with interpreting division calculations such as 12 ÷ 3 as 'how many 3s make 12?'

Using symbols to stand for unknown numbers to complete equations using inverse operations

□ ÷ 2 = 4 20 ÷ △ = 4 □ ÷ △ = 4

Stage 3 (Yr 2 to yr 3)

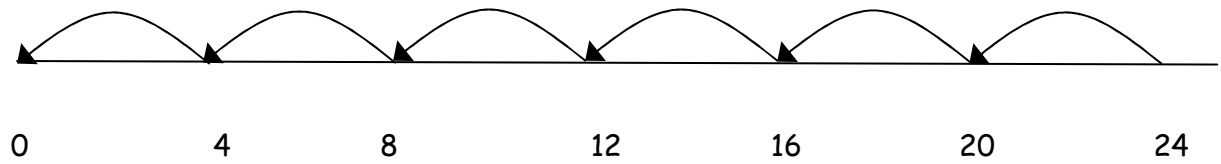
The emphasis in stage 3 is on grouping rather than sharing.

Children will continue to use:

Repeated subtraction using a number line

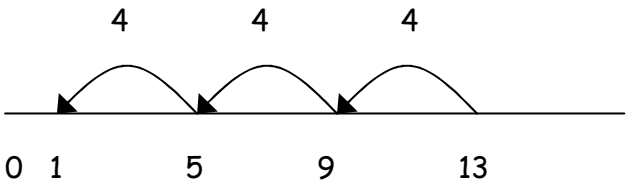
- Children will use an empty number line to support their calculation.

24 ÷ 4 = 6



Children should also move onto calculations involving remainders.

13 ÷ 4 = 3 r 1



- ✓ **Using symbols to stand for unknown numbers to complete equations using inverse operations**
- ✓ 26 ÷ 2 = ☐ 24 ÷ △ = 12 ☐ ÷ 10 = 8

Children can divide by repeated subtraction of the divisor or by addition of the divisor.

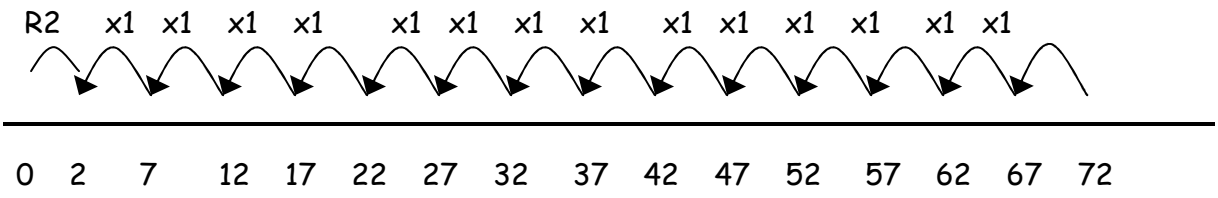
The above method can be shown as adding up jumps of the divisor on a number line too. Some children may prefer this and later we will use adding up 'chunks' of the divisor.

N.B. As a school we have decided to promote chunking by <u>addition</u> of the divisor as most children find addition easier than subtraction.

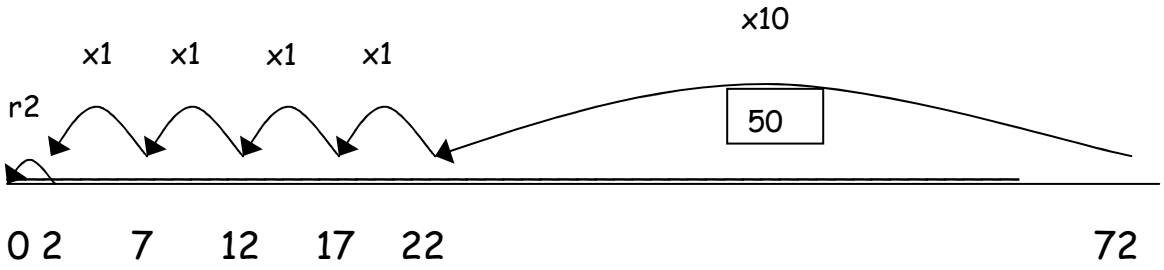
Stage 4 (Yrs 3 and 4)

Children will develop their use of repeated subtraction to be able to subtract multiples of the divisor. Initially, these should be multiples of 10s, 5s, 2s and 1s – numbers with which the children are more familiar.

72 ÷ 5

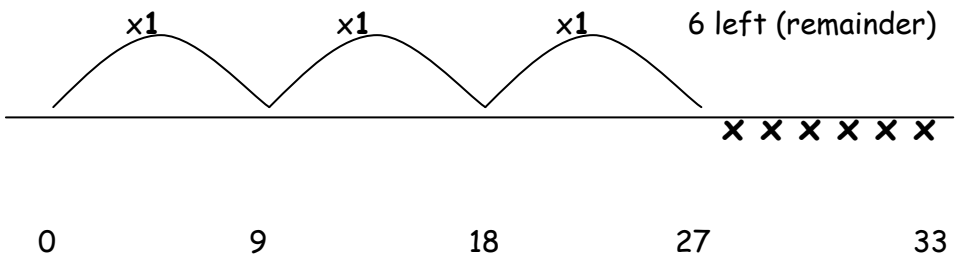


Moving onto:



Some children may access this better by adding on a number line: we teach both methods

33 ÷ 9 =



=3 lots of 9 remainder 6

so 33 ÷ 9 = 3 r 6

Stage 5 (Yr 4 to 5)

Then onto the vertical method:

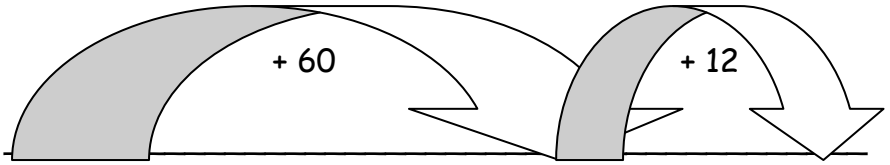
Short division TU ÷ U

CHUNKING ADDING UP

(The preferred method at Mayfield)

Make jottings about the divisor and use these to support calculations – a number line vertical or horizontal can be used

72 ÷ 3 = ?



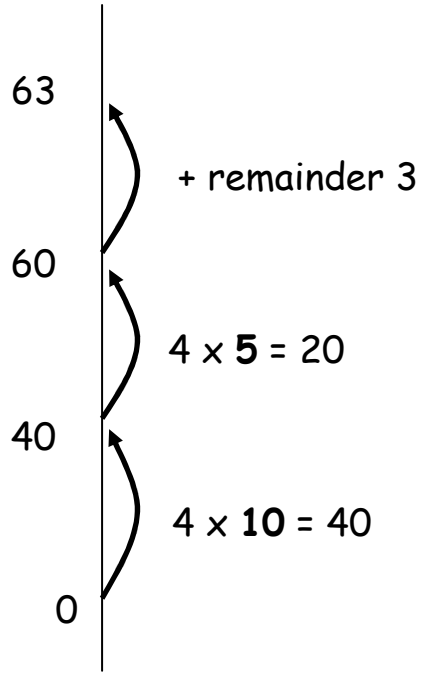
(20 x 3) and (4 x 3)

24 x 3 so Ans = 24

0 (20x3) **60** (4x3) **72**

Chunking by addition 63 ÷ 4 = ?

1.



Jottings are needed here for division

Make notes about the divisor

5 x 4 = 20

10 x 4 = 40

20 x 4 = 80 (too big)

Use these to help organise the jumps

Finally add up the jumps 10 + 5 = 15 r 3

So 63 ÷ 4 = 15 r 3

Remainders after Division.

Any **remainders** should be shown as integers, i.e. 20 remainder 2 or 20 r 2.

Remainders can also be shown as **fractions** -20 2/10ths and **decimal fractions** - 20.2

Children need to be able to decide what to do after division either to show a remainder or round up or down.

They should make sensible decisions about **rounding up or down** after division. For example 62 ÷ 8 is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context. (Typical examples of this are placing eggs in a box or people on a coach – there may have to be empty spaces!)

e.g. I have 62p. Sweets are 8p each. How many can I buy?

Answer: 7 (the remaining 6p is not enough to buy another sweet)

Apples are packed into boxes of 8. There are 62 apples. How many boxes are needed?

Answer: 8 (the remaining 6 apples still need to be placed into a box)

Children will continue to use written methods to solve short division TU ÷ U.

Children can start to use larger multiples of the divisor, e.g. 30x

<u>Stage 6</u> (Year 5 to 6)

Children will continue to use written methods to solve short division TU ÷ U and HTU ÷ U. They will continue to use the 'Chunking' method, adding up multiples of the divisor.

By year 6 children choose their most effective method for division, depending on the context.

A few may be confident enough to move on to the more formal method (expanded and later contracted)

Helpful note about context with Division.

Difficulties children experience with division can be due to the calculations being abstract numbers to work with. Giving the children contextual division problems will provide them a context to hang on to.

For example 72 ÷ 3 = ?

In this situation, if we had introduced the calculation as 'I have 72 chocolate bars that I need to make up into bags of 3 for the Christmas fair, how many whole bags can I make up?' Then we can talk to the children in terms of chocolate bars and bags instead of abstract numbers.

x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷ x÷

We hope that this guide has been useful for you to support your child in mathematics.

Please feel free to contact your class teacher or maths subject leader if you wish further guidance.

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