St. John's C. of E. Primary School

Mathematics Calculation Policy

Date agreed: September 2011
Date for review: September 2013

This policy contains the key pencil and paper procedures that will be taught within St John's C. Of E. Primary School. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement.

Although the focus of the policy is on pencil and paper procedures it is important to recognise that the ability to calculate mentally lies at the heart of the Primary National Strategy for mathematics. The mental methods in the *Primary Framework for teaching mathematics* will be taught systematically from Reception onwards and pupils will be given regular opportunities to develop the necessary skills. However mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it. In every written method there is an element of mental processing. Sharing written methods with the teacher encourages children to think about the mental strategies that underpin them and to develop new ideas. Therefore written recording both helps children to clarify their thinking and supports and extends the development of more fluent and sophisticated mental strategies.

During their time at St John's children will be encouraged to see mathematics as both a written and spoken language. Teachers will support and guide children through the following important stages:

- developing the use of pictures and a mixture of words and symbols to represent numerical activities;
- using standard symbols and conventions;
- use of jottings to aid a mental strategy;
- use of pencil and paper procedures;
- use of a calculator.

This policy concentrates on the introduction of standard symbols, the use of the empty number line as a jotting to aid mental calculation and on the introduction of pencil and paper procedures. It is important that children do not abandon jottings and mental methods once pencil and paper procedures are introduced. Therefore children will always be encouraged to look at a calculation/problem and then decide which is the best method to choose – pictures, mental calculation with or without jottings, structured recording or a calculator. Our long-term aim is for children to be able to select an efficient method of their choice (whether this be mental, written or using a calculator) that is appropriate for a given task. They will do this by always asking themselves:

'Can I do this in my head?'
'Can I do this in my head using drawings or jottings?'
'Do I need to use a pencil and paper procedure?'
'Do I need a calculator?'

By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved.

Children should only be encouraged to go onto the next stage if:

1) **they are ready.**
2) **they are confident.**
3) **They understand the mathematic al theory behind the practice.**

In order to become confident, efficient and accurate mathematicians, children at St John's will be encouraged to:

- ✓ **approximate their answers before calculating.**
- ✓ **check their answers after calculation using an appropriate strategy.**
- ✓ **consider if a mental calculation would be appropriate before using written methods.**

<u>Contents of Policy</u>

PROGRESSION THROUGH CALCULATIONS FOR ADDITION

MENTAL CALCULATIONS
(ongoing)
These are a **selection** of mental calculation strategies:

Mental recall of number bonds

6 + 4 = 10	□ + 3 = 10
25 + 75 = 100	19 + □ = 20

Mental recall of doubles

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

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

Point to remember:

- Use the language '**calculation**' not 'sum' ('sum' means 'plus or 'total'.)
- Use the language '**digit**' not number (number is the amount or quantity)

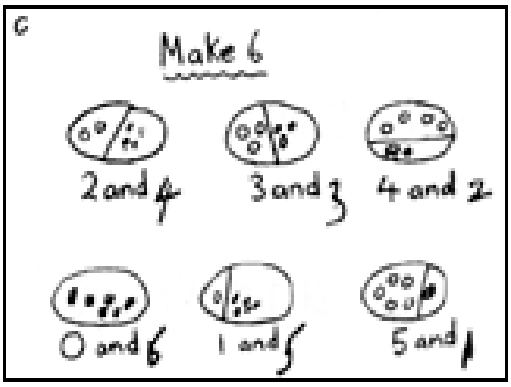
Addition vocabulary to be used through all stages:

add, addition, more, plus, increase, sum, total, altogether, score, double, near double, how many more to make…?, how many more/fewer is.. than…?, how much more/less is…?, is the same as, equals, sign, tens boundary, hundreds boundary, units boundary, tenths boundary, inverse.

WRITTEN METHODS FOR ADDITION

Stage 1

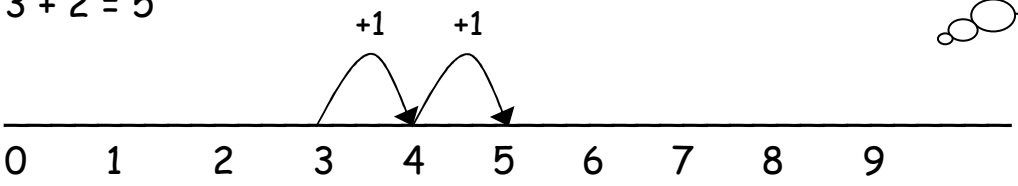
- Children are encouraged to use practical working (linked to topic e.g. growth – beans and seed packets/plant pots and bulbs)
- Speaking and listening using a range of addition vocabulary (plus, add, total, addition)
- Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They develop ways of recording calculations using pictures, number sentences etc.



Stage 2

- Children are encouraged to count on using practical resources e.g. using fingers, cubes
- They use given number lines to count on
-

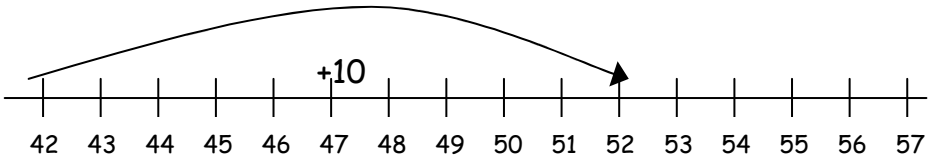
3 + 2 = 5



- Reinforce vocabulary (count on/add/one more) through visual as well as oral prompts. Encourage children to use a range of different language.

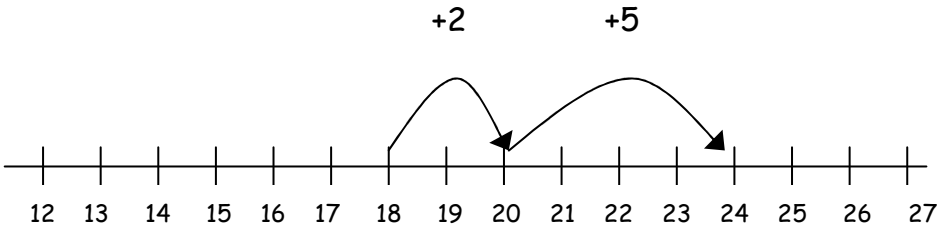
Stage 3

- Children to count up in tens using a number line or square labelled in ones



- Children to bridge from the largest number using a number line labelled in ones

18 +7 = 25



- Children will also be able to count on and up using a 100 square with numbers

✓ To add 10 children to move down one row

✓ To add 9 children to move down one row and back 1 square

✓ To add 11 children to move down one row and forward 1 square

26 +10	27	28	29	30
36	37 +9	38	39	40
46	47	48 +11	49	50
56	57	58	59	60

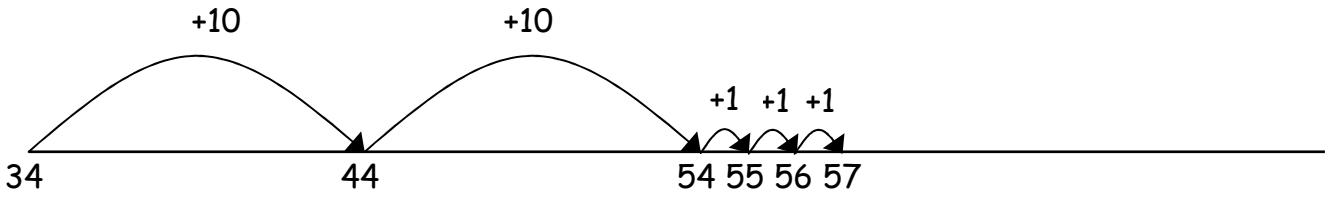
TIP: Number square and number line to both be introduced and used. Children to select their preferred method according to the calculation.

Stage 4

- Elements of stage 3 (bridging, counting up in 10s)
- Children will begin to use 'empty number lines' themselves starting with the larger number and counting on.

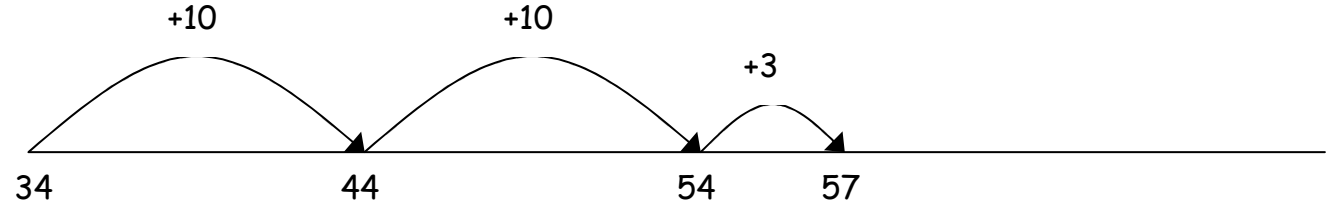
✓ First counting on in tens and ones.

34 + 23 = 57



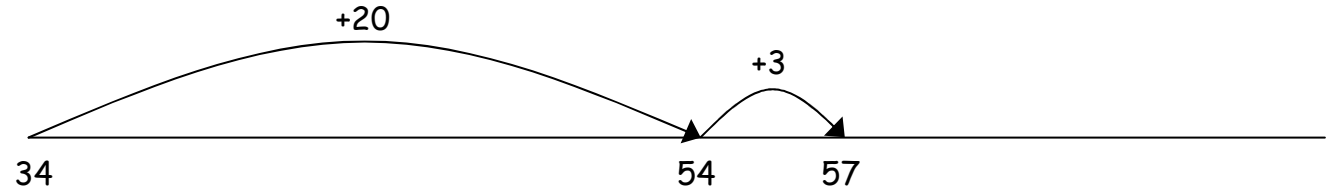
✓ Then helping children to become more efficient by adding the units in one jump (by using the known fact 4 + 3 = 7).

34 + 23 = 57



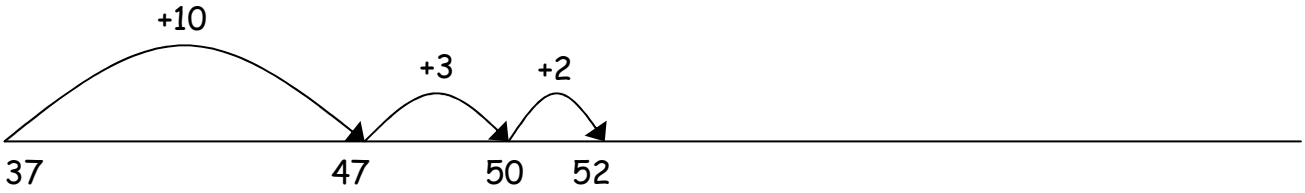
✓ Followed by adding the tens in one jump and the units in one jump.

34 + 23 = 57



✓ Bridging through ten can help children become more efficient.

37 + 15 = 52

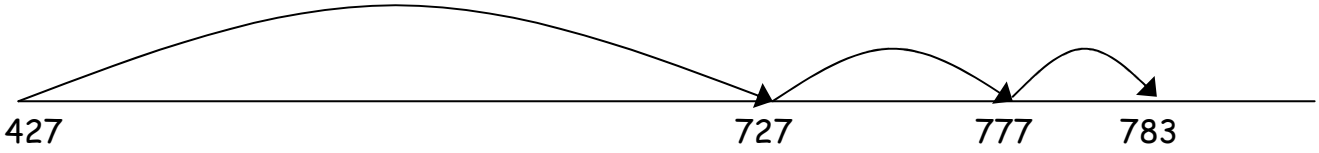


Children will continue to use empty number lines with increasingly large numbers e.g. 356 + 427

✓ Count on from the largest number irrespective of the order of the calculation.

+300

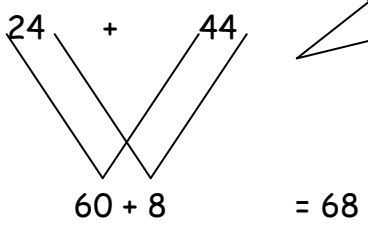
+50 +6



Stage 5

Children to use partitioning.

24 + 44 =

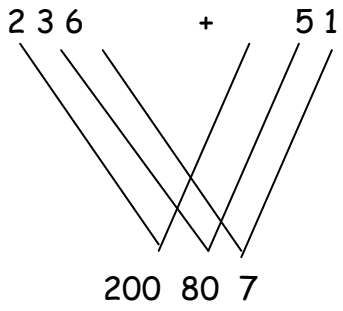


= 68

20 add 40 is 60
4 add 4 is 8
60 add 8 is 68

Can extend to HTU + HTU

236 + 51 =



200 add 0 is 200
30 add 50 is 80
6 add 1 is 7
200 add 80 add 7 is 287

Stage 6

- Begin to use column without carrying

24 + 44 =

TIP: Add the units first

20 + 4
40 + 4
60 + 8 = 68

TIP: Remember this is 20 not 2!

24
+ 44
68

Stage 7

Children to begin to carry

TIP: Ensure children use squares in book to keep digits in correct columns

27 + 46

20 + 7
40 + 6
60 + 13 = 73

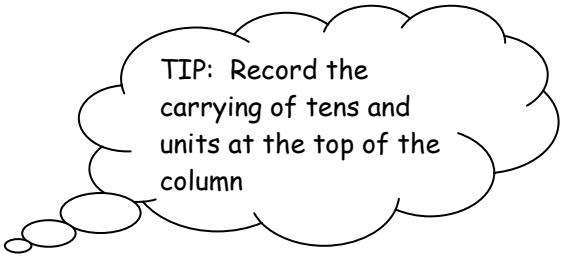
From this, children will begin to carry above the line.

$$\begin{array}{rr} & {\scriptstyle 1}\\ & 27\\ + & 46\\ \hline & 63 \end{array}$$

Children should extend the carrying method to larger numbers including decimals

$$\begin{array}{rr} & {\scriptstyle 1\ 1}\\ & 587\\ + & 475\\ \hline & 1062 \end{array}$$

$$\begin{array}{rr} & {\scriptstyle 1\ 1\ 1}\\ & 3587\\ + & 675\\ \hline & 4262 \end{array}$$



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;*
- ✓ *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	10 - □ = 2

Find a small difference by counting up
82 – 79 = 3

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

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

Subtraction vocabulary to be used through all stages:

subtract, take away, minus, decrease, leave, how many are left/left over?, difference between, half, halve, how many more/fewer is../than…?, how much more/less is…?, is the same as, equals, sign, tens boundary, hundreds boundary, units boundary, tenths boundary, inverse

WRITTEN METHODS FOR SUBTRACTION

Stage 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.

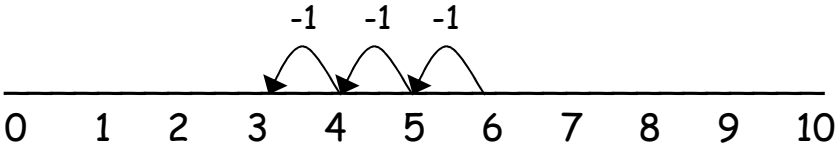
They use practical resources to support calculations e.g. objects or cubes
They use mental methods using fingers to support

Children are able to write number sentences with support and resources.
They can record with number and symbols.

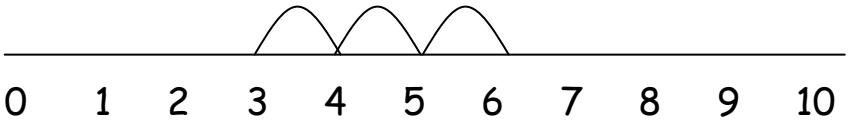
Stage 2

- Children to subtract using a number line or square staring with the largest number and counting back in ones (subtracting a single number).

6 – 3 = 3

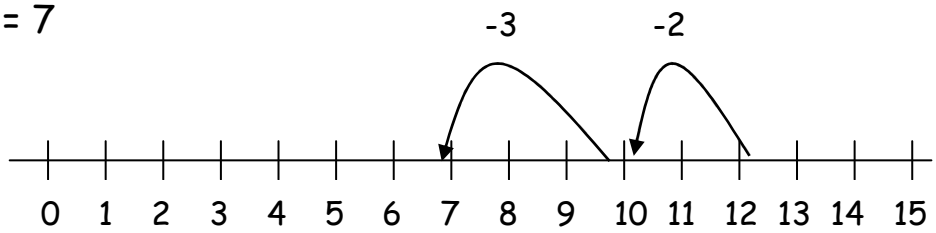


- The numberline should also be used to show that 6 - 3 means the 'difference between 6 and 3' or 'the difference between 3 and 6' and how many jumps they are apart.



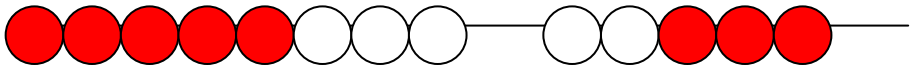
- Children to use a number line bridging through 10

12 – 5 = 7



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

13 – 5 = 8



- Subtract a multiple of 10 from a 2 digit number (using a number square)

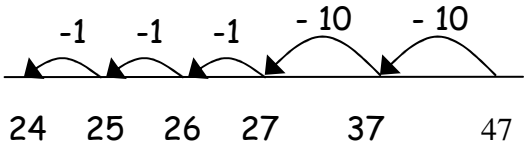
Stage 3

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

- **Children begin by counting back on an empty number line.**

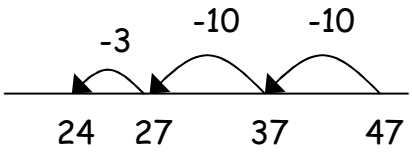
✓ First counting back in tens and ones.

47 – 23 = 24



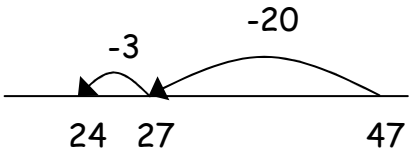
✓ Then helping children to become more efficient by subtracting the units in one jump (by using the known fact 7 – 3 = 4).

47 – 23 = 24



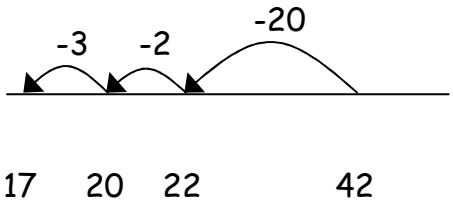
✓ Subtracting the tens in one jump and the units in one jump.

47 – 23 = 24



✓ Bridging through ten can help children become more efficient.

42 – 25 = 17

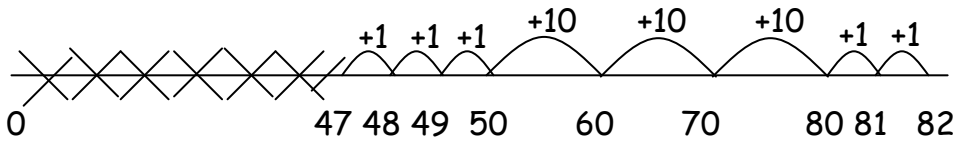


- If the numbers involved in the calculation are close together or near to multiples of 10, 100 etc, it can be more efficient to count on.

When subtracting the number line can also be used to 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 'taking away'.

82 - 47



Help children to become more efficient with counting on by:

✓ Counting the units in one jump;
✓ Counting the tens in one jump and the units in one jump;
✓ Bridging through ten.

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

Stage 5

Children to use expanded column subtraction

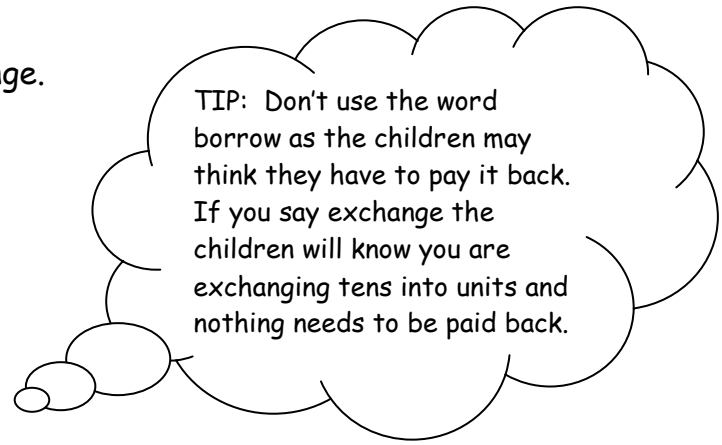
This process should be demonstrated using arrow cards to show the partitioning and base 10 materials to show the decomposition of the number.

$$\begin{array}{rcl} 89 & = & 80 + 9 \\ -\ 57 & & \underline{50 + 7} \\ & & 30 + 2 = 32 \end{array}$$

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

From this the children will begin to exchange.

$$\begin{array}{rl} 71 & = \\ -\ 46 & \end{array}$$



Step 1

$$\begin{array}{rl} & 70 + 1 \\ - & \underline{40 + 6} \end{array}$$

Step 2

$$\begin{array}{rl} & 60 + 11 \\ - & \underline{40 + 6} \\ & 20 + 5 = 25 \end{array}$$

The calculation should be read as e.g. 1 take away 6 which you can't do.

This would be recorded by the children as

$$\begin{array}{rl} & \overset{60}{\cancel{70}} + {}^{1}1 \\ - & \underline{40 + 6} \\ & 20 + 5 = 25 \end{array}$$

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

754 =
- 86

Step 1 700 + 50 + 4
- 80 + 6

4 take away 6 can't be done so you have to exchange from the tens.

Step 2 700 + 40 + 14 *(adjust from T to U)*
- 80 + 6

40 take away 80 can not be done so you have to exchange from the hundreds

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
- 80 + 6
600 + 60 + 8 = 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

= 8 + 0.8 + 0.15 *(adjust from T to U)*
- 4 + 0.3 + 0.08
4 + 0.5 + 0.07

= £4.57

leading to

1
8.85
- 4.38

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

Stage 6

Children to use formal column subtraction beginning with 2/3 digit numbers and borrowing. Extend to 4 digit numbers including zeros.

```
  614 1
  7 ~~1~~4
- 286
  468
```

```
  5 13 1
  6467
- 2684
  3783
```

Children to use column subtraction for decimals in context including money

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.*

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

Using multiplication facts

Tables should be taught regularly from Y2 onwards, either as part of the mental oral starter or other times as appropriate within the week. All children should know these by heart by:

Year 2	2 times table
	5 times table
	10 times table
Year 3	2 times table
	3 times table
	4 times table
	5 times table
	6 times table
	10 times table
Year 4	Derive and recall all multiplication facts up to 10 x 10
Years 5 & 6	Derive and recall quickly all multiplication facts up to 10 x 10.

Using and applying multiplication facts
Children should be able to utilise their tables knowledge to derive other facts.
e.g. If I know 3 x 7 = 21, what else do I know?
30 x 7 = 210, 300 x 7 = 2100, 3000 x 7 = 21 000, 0.3 x 7 = 2.1 etc

Use closely related facts already known
13 x 11 = (13 x 10) + (13 x 1)
= 130 + 13
= 143

Multiplying by 10 or 100
Knowing that the effect of multiplying by 10 is a shift in the digits one place to the left.
Knowing that the effect of multiplying by 100 is a shift in the digits two places to the left.

Partitioning

23 x 4 = (20 x 4) + (3 x 4)

= 80 + 12

= 102

Use of factors

8 x 12 = 8 x 4 x 3

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

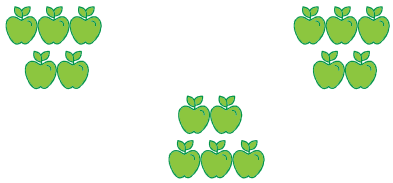
Multiplication vocabulary to be used through all stages:

lots of, groups of, times, product, multiply, multiplied by, multiple of, once, twice, three times, four times, five times,… ten times, repeated addition, array, row, column, double, halve, group in pairs, threes… tens, factor, quotient, inverse

WRITTEN MULTIPLICATION METHODS

Stage 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.



Stage 2

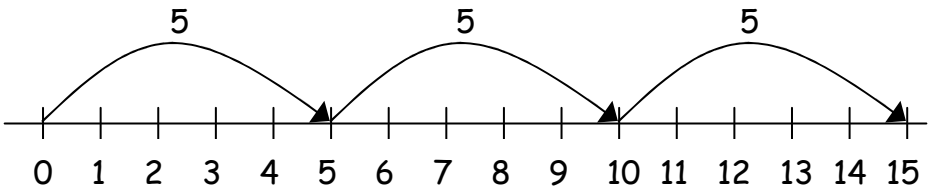
Children will develop their understanding of multiplication and use jottings to support calculation:

- ✓ **Repeated addition**

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

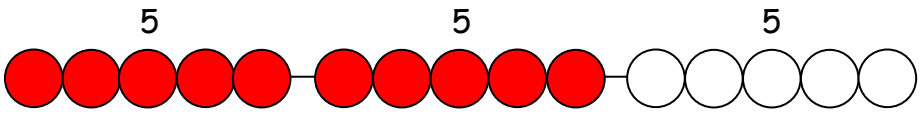
Repeated addition can be shown easily on a number line:

5 x 3 = 5 + 5 + 5



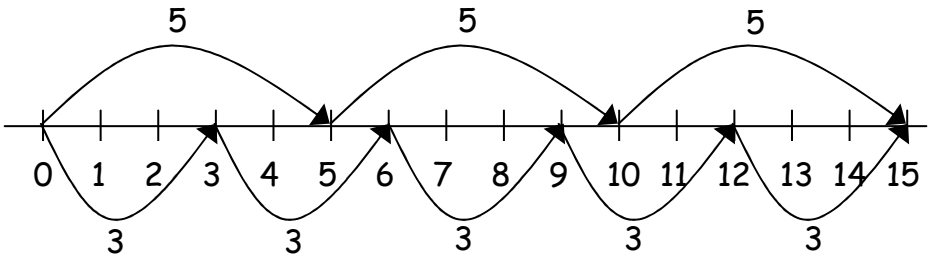
and on a bead bar:

5 x 3 = 5 + 5 + 5



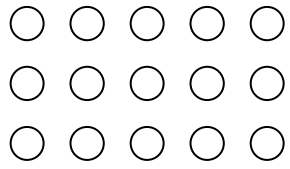
✓ **Commutativity**

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

✓ **Children to then begin to use and apply known methods to find symbols that stand for unknown numbers to complete equations**

□ x 5 = 15 3 x △ = 18 □ x O = 32

Stage 3

Children to partition using the grid method (secure place value needed)

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

x	20	3
8	160	24

160
+ 24
184

HTU x U
(Short multiplication – multiplication by a single digit)

346 x 9

Children will approximate first
346 x 9 is approximately 350 x 10 = 3500

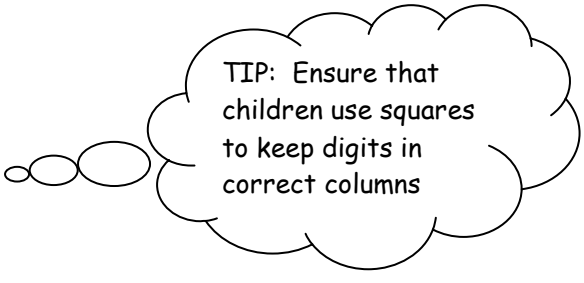
x	300	40	6
9	2700	360	54

2700
+ 360
+ 54
3114
1 1

Stage 4

Children to use expanded column method
TU x U
(Short multiplication – multiplication by a single digit)
HTU x U
(Short multiplication – multiplication by a single digit)

e.g.
223
x 6
18 (6 x 3)
120 (6 x 20)
1200 (6 x 200)

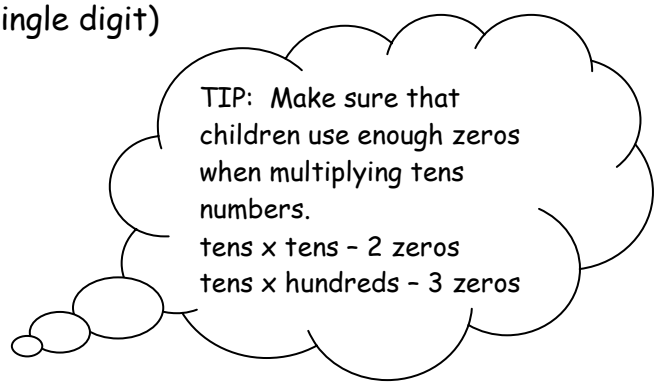


1338

Stage 5

Children to continue to use the grid method and expanded column method

TU x TU
(Long multiplication – multiplication by more than a single digit)
HTU 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

2100
+ 560
+ 60
+ 16
1
2736

Children to be encouraged to use grid method for decimals

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

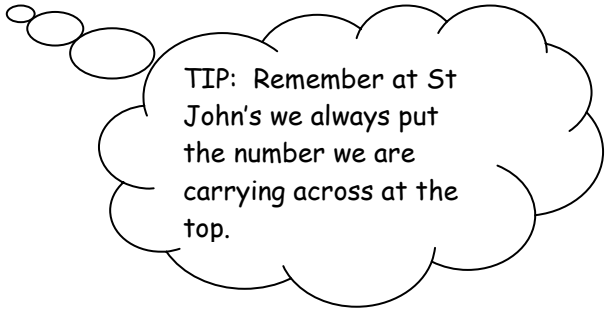
Stage 6

Formal long and short multiplication

N.B. It is not essential that children undertake this method – grid or expanded column methods are suitable up to and including year 6

```
  346
x   9
 45
3114
```

```
   72
 x 38
  576
 2160
  1
 2736
```



PROGRESSION THROUGH CALCULATIONS FOR DIVISION

MENTAL CALCULATIONS
(ongoing)
These are a **selection** of mental calculation strategies:

Doubling and halving
Knowing that halving is dividing by 2

Deriving and recalling division facts

Tables should be taught regularly from Y2 onwards, either as part of the mental oral starter or other times as appropriate within the week. All children should know these by heart by:

Year 2
- 2 times table
- 5 times table
- 10 times table

Year 3
- 2 times table
- 3 times table
- 4 times table
- 5 times table
- 6 times table
- 10 times table

Year 4 Derive and recall division facts for all tables up to 10 x 10

Year 5 & 6 Derive and recall quickly division facts for all tables up to 10 x 10

Using and applying division facts
Children should be able to utilise their tables knowledge to derive other facts.
e.g. If I know 3 x 7 = 21, what else do I know?
21 ÷ 7 = 3 so 210 ÷ 7 = 30, 210 ÷ 3 = 70, 210 ÷ 70 = 3 etc

Dividing by 10 or 100
Knowing that the effect of dividing by 10 is a shift in the digits one place to the right.
Knowing that the effect of dividing by 100 is a shift in the digits two places to the right.

Use of factors
378 ÷ 21 378 ÷ 3 = 126 378 ÷ 21 = 18
126 ÷ 7 = 18

Use related facts
Given that 1.4 x 1.1 = 1.54
What is 1.54 ÷ 1.4, or 1.54 ÷ 1.1?

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

Division vocabulary to be used through all stages:

lots of, groups of, times, product, multiply, multiplied by, multiple of, once, twice, three times, four times, five times,… ten times, repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each…, group in pairs, threes… tens, equal groups of, divide, divided by, divided into, divisible by, remainder, factor, quotient, inverse

WRITTEN DIVISION METHODS

Stage 1

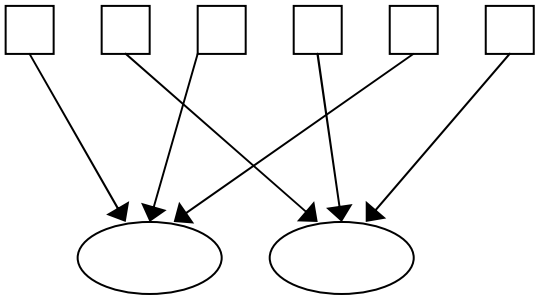
Children will understand equal groups and share items out in play and problem solving.

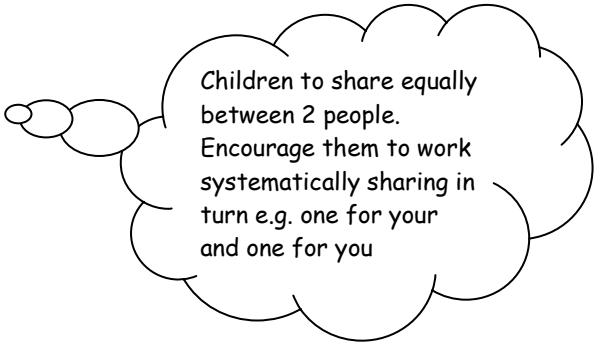
They will count in 2s and 10s and later in 5s.

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

- **Sharing equally**

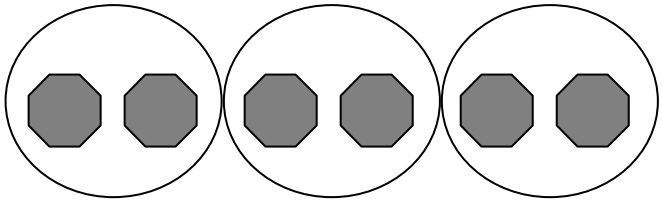
6 sweets shared between 2 people, how many do they each get?

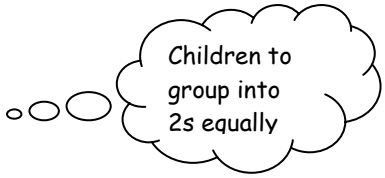




- **Grouping or repeated subtraction (using dot array)**

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



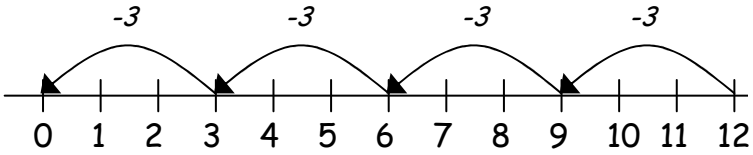


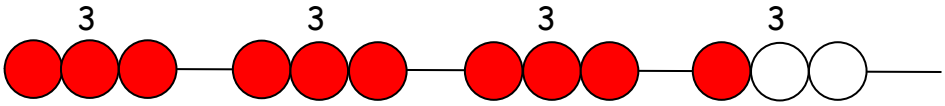
For children who need more support to understand use pictures or physically use objects e.g. hoops/beanbags

Stage 2

- **Repeated subtraction using a number line or bead bar**

12 ÷ 3 = 4





The bead bar will help children with interpreting division calculations such as 10 ÷ 5 as 'how many 5s make 10?'

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

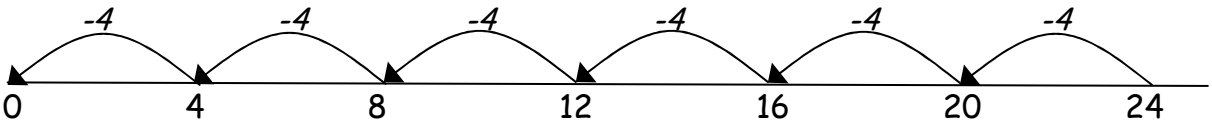
□ ÷ 2 = 4 20 ÷ △ = 4 □ ÷ △ = 4

Stage 3

- **Repeated subtraction using an empty number line**

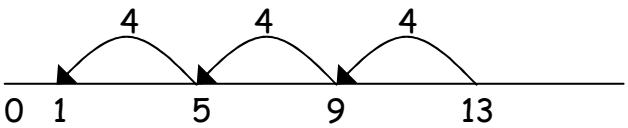
Children will use an empty number line to support their calculation. Children to draw own line or label a blank line.

24 ÷ 4 = 6



Children should also move onto calculations involving remainders.

13 ÷ 4 = 3 r 1



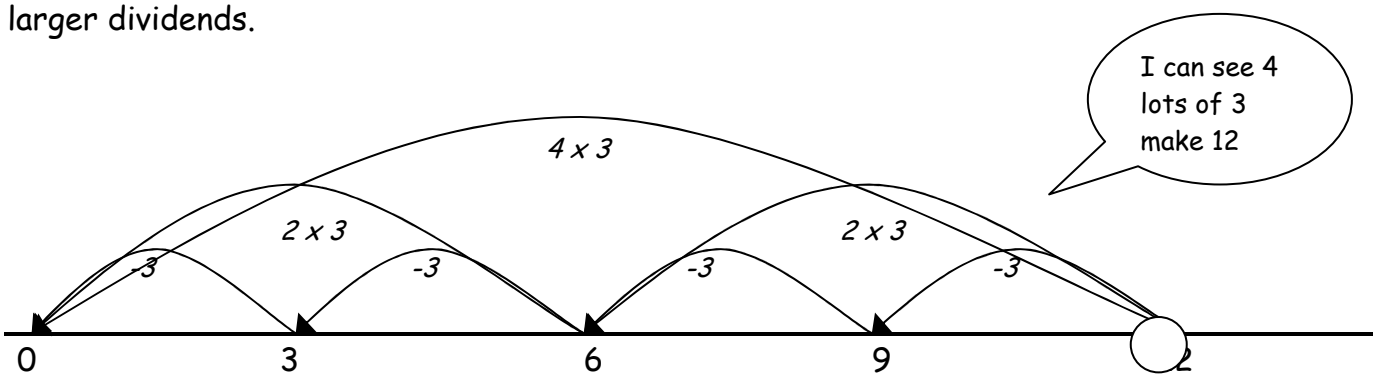
Using symbols to stand for unknown numbers to complete equations using inverse operations

$26 \div 2 = \square$ $24 \div \triangle = 12$ $\square \div 10 = 8$

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.

Introduce: Counting up as well as down
Estimating
Linking to multiplication

Children to understand that counting up in 'groups/chunks' of the divisor can help reach larger dividends.



Children can choose the size of jumps that they are most comfortable with using.

Stage 4

Children will be able to use chunking

Without remainders

72 ÷ 3

3) 72	
- 30	10x3
42	
- 30	10x3
12	
- 6	2x3
6	
- 6	2x3
0	↓
Answer :	24

Always begin with 10 lots if possible

Always write size of chunk first and underline

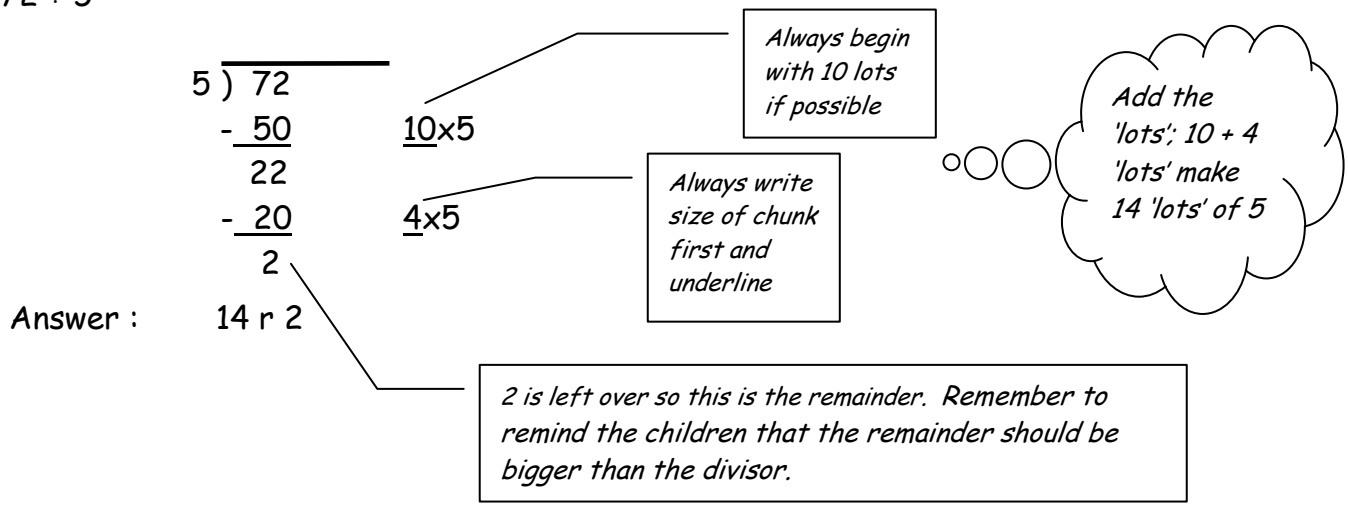
Add the 'lots'; 10 + 10 + 2 + 2 'lots' make 24 'lots' of 6

6
12
18
24
30
36
42

Jot and use the times table needed to help down side of page

Leading to division using chunking with remainders:

72 ÷ 5



Any remainders should be shown as integers, i.e. 14 remainder 2 or 14 r 2.

Children need to be able to decide what to do after division and round up or down accordingly. 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.

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)

Stage 5

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

296 ÷ 14

```
   313
- 280      20x14
   33
-  28       2x 14
    5
```

Answer : 22 remainder 5 or 22 r 5

Any remainders should be shown as integers, i.e. 14 remainder 2 or 14 r 2.

Children need to be able to decide what to do after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example 240 ÷ 52 is 4 remainder 32, but whether the answer should be rounded up to 5 or rounded down to 4 depends on the context.

Stage 6

Children will use the 'bus stop' method

196 ÷ 6

```
    32 r 4
6 ) 196
  - 180     30x
    16
  -  12      2x
     4
```

Answer : 32 remainder 4 or 32 r 4

972 ÷ 36

```
      27
36 ) 972
   - 720      20x
     252
   - 252       7x
       0
```

Answer : 27

Any remainders should be shown as fractions, i.e. if the children were dividing 32 by 10, the answer should be shown as $3\ ^{2}/_{10}$ which could then be written as $3\ ^{1}/_{5}$ in it's lowest terms.

Stage 7

Long Division; Extend to decimals with up to two decimal places. Children should know that decimal points line up under each other.

87.5 ÷ 7

```
     12.5
7 )  87.5
   - 70.0      10x
     17.5
   - 14.0       2x
      3.5
   -  3.5      0.5x
      0
```

Answer : 12.5

TIP: These methods will need to be supported by jottings. When teaching please model this for the children.

Progressing to Short Division:

72 ÷ 5 = 1 4 r 2

```
5) 7 2 0
```

256 ÷ 7 = 0 3 6 r 4

```
7) 2 5 6
```