Shaftesbury
Primary School
Growing together

Calculation Policy
2020-2021
Year 4

Addition - Year 4

End of Year Expectation:
Add numbers with up to 4 digits using the formal written method of columnar addition where appropriate.

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Continue to teach the use of empty number lines with three and four digit numbers, as appropriate.

1

Further develop the formal written method of addition, with three-digit numbers.
Revisit the expanded method first, if necessary:

176 + 147 = 323

	176	
+	147	
	13	(7 + 6)
+	110	(70 + 40)
	200	(100 + 100)
	323	

This will lead into the formal written method…

2

176 + 147 = 323

Use the language of place value to ensure understanding:
'Seven add six equals 13. Write three in the units column and 'carry one across into the tens column (10).
40 add 70 and the ten that we carried equals 120.
Write 2 in the tens column (20) and 'carry' 1 across into the hundreds column (100). 100 add 100 and the 100 that has been carried equals 300. Write 3 in the hundreds column (300).

	1 4 7	
+	1 7 6	
	3 2 3	
	1 1	

Children use and apply this method to money and measures.

Key vocabulary add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact, thousands, hundreds, digits, inverse

3

If children are confident, introduce the addition of a four-digit number and a three digit number:

1845 + 526 = 2371

	1845	
+	526	
	2371	
	1 1	

Continue to develop with addition of two four-digit numbers and with decimals (in the context of money or measures).

Subtraction - Year 4

End of Year Expectation:
Subtract numbers with up to 4 digits using the formal written method of columnar subtraction where appropriate

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Continue to teach the use of empty number lines with three and four digit numbers, as appropriate.

1 Continue to develop the formal written method of subtraction by revisiting the expanded method first, if necessary.
Continue to use base-ten materials to support

258 - 73 = 185

$$\begin{array}{r} 200 + 50 + 8 \\ -\quad 70 + 3 \\ \hline \end{array} \quad \text{becomes} \quad \begin{array}{r} 100 + 150 + 8 \\ -\quad 70 + 3 \\ \hline 100 + 80 + 5 \end{array} = 185$$

This leads to the formal written method, involving decomposition.

$$\begin{array}{r} {\scriptstyle 1\ \ 15} \\ 2\ \not{5}\ 8 \\ -\ 7\ 3 \\ \hline 1\ 7\ 5 \end{array}$$

Use the language of place
ensure understa
In this example it has been n
to exchange from the hu
colum

2 Further develop by subtracting a three-digit number from a three-digit number:

637 – 252 = 385

$$\begin{array}{r} 600 + 30 + 7 \\ -\ 200 + 50 + 2 \\ \hline \end{array} \qquad \begin{array}{r} 500 + 130 + 7 \\ -\ 200 + \ \ 50 + 2 \\ \hline 300 + \ \ 80 + 5 \end{array} = 385$$

Ensure that children are confident in partitioning numbers in this way.

This leads to a formal written method:

$$\begin{array}{r} {\scriptstyle 5\ \ 13} \\ \not{6}\ \not{3}\ 7 \\ -\ 2\ 5\ 2 \\ \hline 3\ 8\ 5 \end{array}$$

Use the language of place value to ensure understanding and use baseten materials, if necessary.

3 When children are confident, develop with four digit numbers and decimal numbers (in the context of money and measures).

3625 – 1219 = 2406

$$\begin{array}{r} {\scriptstyle 1\ \ 15} \\ 3\ 6\ \not{2}\ \not{5} \\ -\ 1\ 2\ 1\ 9 \\ \hline 2\ 4\ 0\ 6 \end{array}$$

Key vocabulary equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is..., difference, count on, strategy, partition, tens units, take and make, exchange, digit, value, hundreds, inverse

Multiplication - Year 4

End of Year Expectation:

> Recall multiplication facts for multiplication tables up to 12 x 12

> Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

Continue to teach the use of empty number lines, as appropriate. (Y3 guidance)

1 Further develop the grid method for two-digit numbers multiplied by a one- digit number.

36 x 4 = 144

X	30	6
4	120	24

120 + 24 = 144 (add the partial products)

2 Expanded short multiplication (two-digit number by a one-digit number):

36 x 4 = 144

```
  3 6
x   4
+ 2 4   (4 x 6)
  1 2 0 (4 x 30)
  1 4 4
```

Include an addition symbol when adding partial products.

3 This leads to short multiplication (formal method) of a two–digit number multiplied by a one- digit number:

```
  3 6
x   4
  1 4 4
    2
```

36 x 4 = 144

Use the language of place value to ensure understanding. Ensure that the digit 'carried over' is written under the line in the correct column.

Continue to practise the formal method of short multiplication of a two-digit number by a one -digit number throughout Y4.

4 If children are confident, continue to develop short multiplication with three- digit numbers multiplied by a one-digit number.

127 x 6 = 762

```
  1 2 7
x   6
    4 2   (6x7)
+ 1 2 0   (6x20)
  6 0 0   (6x100)
  7 6 2
```

then onto th →

```
  1 2 7
x   6
  7 6 2
  1   4
```

Key vocabulary groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, sets of, equal groups, times as big as, once, twice, three times..., partition, grid method, multiple, product, tens, units, value, inverse

Division - Year 4

End of Year Expectation:
> Recall multiplication and division facts for multiplication tables up to 12 × 12.
> Use place value, known and derived facts to divide mentally.
> Divide two-digit and three-digit numbers by a one-digit number using formal written layout.
NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

1 Continue to write and calculate mathematical statements for division using the multiplication tables that the children know e.g.

32 ÷ 8 = 4
63 ÷ 9 = 7
100 ÷ 10 = 1
24 ÷ 2 = 1

Continue using the formal written layout for division using multiplication tables that they know:

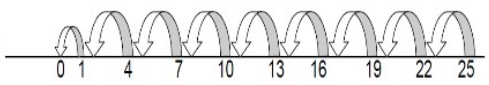
$$8 \overline{)\,32} \quad 4$$

'How many eights are there in thirty two?'

2 *Continue using the formal written layout, introducing remainders:*

$$3 \overline{)\,25} \quad 8 \text{ r } 1$$

This could be modelled using an empty number line, if necessary: 'Eight jumps of three and one left over.'



3 This will lead into the formal written method of long division:

98 ÷ 7 = 14

$$7 \overline{)\,9^{2}8} \quad 1\,4$$
$$-7\downarrow$$
$$28$$
$$-28$$
$$0$$

Key vocabulary share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, 'carry', remainder, multiple, divisible by, factor

If children are confident develop further, by dividing three-digit numbers by a onedigit number using the formal method of long division with whole number answers (no remainders).

Long division step by step guidance Years 4-6

Part 1 Dividing a 2 or more digit number by a one digit number

Divide :	2 → Dividing 7 tens by 3, we get 2 tens, and some extra. 3)74
Multiply :	2 3)74 6 → 3×2 tens = 60 tens.
Subtract :	2 3)74 −6 → Subtracting 6 tens from 7 tens 1
Bring down :	2 3)74 −6↓ 14 → 1 ten 4 ones = 14 ones
Repeat or find the Remainder :	24 → Dividing 14 ones by 3, we get 4 ones and some extra. 3)74 −6 14 −12 → 3×4 ones = 12 ones. 2 → Remainder

74 divided by 3 equals 24 r2

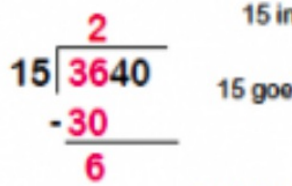
Use the steps to help teach long division to children.

Ask children to write DMSA and tick off as they go through the steps until they are confident.

Long division step by step guidance Years 4-6 Part 2.

Dividing by a two digit number.

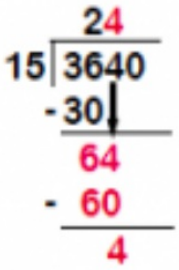
15 | 3640



15 into 3 doesn't go, so look at the next digit.

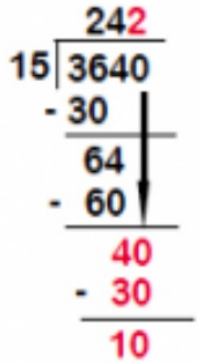
15 goes into 36 two times, so put a 2 above the 6.
15 x 2 = 30

Take that 30 away from the 36 to get your remainder.
36 - 30 = 6



Next, carry the 4 down to make 64.
15 goes into 64 four times, so put a 4 above the 4.
15 x 4 = 60

Take 60 from the 64 to get your remainder.
64 - 60 = 4



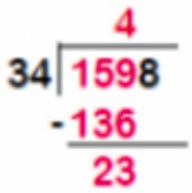
Carry the 0 down to make 40.

15 goes into 40 two times, so put a 2 above the 0.
15 x 2 = 30

Take 30 from the 40 to get your remainder.
40 - 30 = 10

34 | 1598

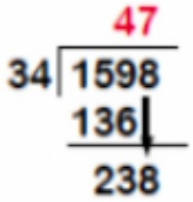
34 into 15 doesn't go, so , so look at the next digit.



How many times does 34 go into 159? You may not be able to do this in your head, so use trial and error and multiply 34 by various numbers to get a close answer. If we multiply 34 by 4 we get 136. We put a 4 over the 9 and then write 136 under the 159.
34 x 4 = 136

Take that 136 away from 159 to get your remainder.
159 - 136 = 23

Next, carry the 8 down to make 238.



We now have a new number: 238. We need to work out how many times 34 goes into this number by trial and error again.

34 x 7 = 238, so we write 7 over the 8 at the top.

Now we have our answer: 47.