Shaftesbury
Primary School
Growing together

Calculation Policy
2020-2021
Year 6

Addition - Year 6

End of Year Expectation:
To use formal written method (columnar addition) for larger numbers and decimals

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 larger numbers (and decimals), as appropriate.

1

21848 + 1523 = 23371

```
  21848
+  1523
 23371
 1  1
```

Continue to use the language of place value to ensure understanding.
Ensure that the digits that have been 'carried' are recorded

2 Use the formal written method for the addition of decimal numbers:

£154.75 + £233.82 = £388.57

```
 154·75
+ 233·82
 388·57
  1
```

Ensure that the decimal points line up.

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, decimal places, decimal point, tenths, hundredths, thousandths.

Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.

Subtraction - Year 6

End of Year Expectation:
To use formal written method (columnar subtraction) for larger numbers and decimals

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 larger numbers (and decimals), as appropriate.

1 Extend children with larger numbers (and decimal numbers).

12731 – 1367 = 11364

$$\begin{array}{r} {\scriptstyle 6\ \ 12\ 11} \\ 1\,2\,\cancel{7}\,\cancel{3}\,\cancel{1} \\ -\ \ 1\,3\,6\,7 \\ \hline 1\,1\,3\,6\,4 \end{array}$$

In this example it has been necessary to exchange from the tens and the hundreds columns.

2 Continue subtraction of decimals, initially in the context of money and measures.

£166.25 – £83.72 = £82.53

$$\begin{array}{r} {\scriptstyle 16\ \ 5\ \ 12} \\ 1\,\cancel{6}\,\cancel{6}\cdot\,\cancel{2}\,5 \\ -\ 8\,3\cdot 7\,2 \\ \hline 8\,2\cdot 5\,3 \end{array}$$

Ensure the decimal points line up.

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, tenths, hundredths, decimal point, decimal

Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.

Multiplication - Year 6

End of Year Expectation:

Multiply multi-digit numbers (including decimals) up to 4 digits by a two- digit whole numbers

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

Continue to practise and develop the formal short multiplication method and formal long multiplication method with larger numbers and decimals throughout Y6. Return to an expanded forms of calculation initially, if necessary (see Y5 guidance).

① The grid method (decimal number multiplied by a two-digit number):

53·2 x 24 = 1276·8

x	50	3	0·2	
20	1000	60	4	1064·0
4	200	12	0·8	212·8
				1276·8

② The formal written method of long multiplication:

53·2 x 24 = 1276·8

```
  5 3·2
x   2 4·0
  2 1 1 2·8   (53·2 x 4)
1 0 6 4·0     (53·2 x 20)
1 2 7 6·8
```

It is an option to include ·0 in this example, but not essential.

The prompts (in brackets) can be omitted if children do not need them.

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, **square, factor, integer, decimal, short/long multiplication, 'carry',** tenths, hundredths, decimal

Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.

Division - Year 6

End of Year Expectation:

> Divide numbers up to 4 digits by a two-digit number using the formal written method of long division where appropriate, interpreting remainders according to the context.
> Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
NB Ensure that children are confident with the methods outlined in the previous year's guidance before moving on.

1 Continue to practise the formal method of long division, with and without remainders, using the language of place value to ensure understanding (see Y5 guidance).

496 ÷ 11 = 45 r1

```
       4 5 r 1
11 ) 4 9 6
    -4 4 0
       5 6
     - 5 5
         1
```

Multiples of the divisor (11) have been subtracted from the dividend (496)

'40 (lots of 11) + 5 (lots of 11) = 45 (lots of 11)'

'1 is the remainder'

Answer: $45\frac{1}{11}$

2 This is an alternative way of recording formal long division:

432 ÷ 15 = 28·8

```
        2 8 · 8
15 )  4 3 2 · 0
      3 0
      1 3 2
      1 2 0
        1 2 0
        1 2 0
            0
```

NB Only teach this method when children are completely secure with the previous method. The remainder is expressed as a decimal.

Our aim is that by the end of Y6 children use mental methods (with jottings) when appropriate, but for calculations that they cannot do in their heads, they use an efficient formal written method accurately and with confidence.

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 quotient, prime number, prime factors, composite number (non-prime)

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

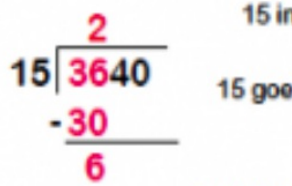
Use the steps to help teach long division to children.

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.

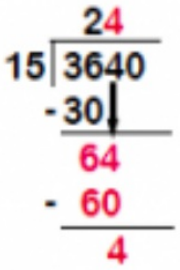
15 | 3640



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

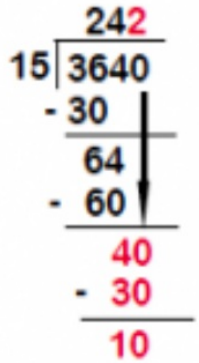
15 goes into 36 two times, so put a 2 above the 6.
15 x 2 = 30

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



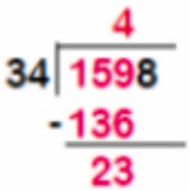
Carry the 0 down to make 40.

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

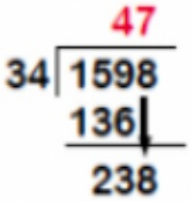
34 into 15 doesn't go, so , so look at the next digit.



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.