Childcare, education and community services for all
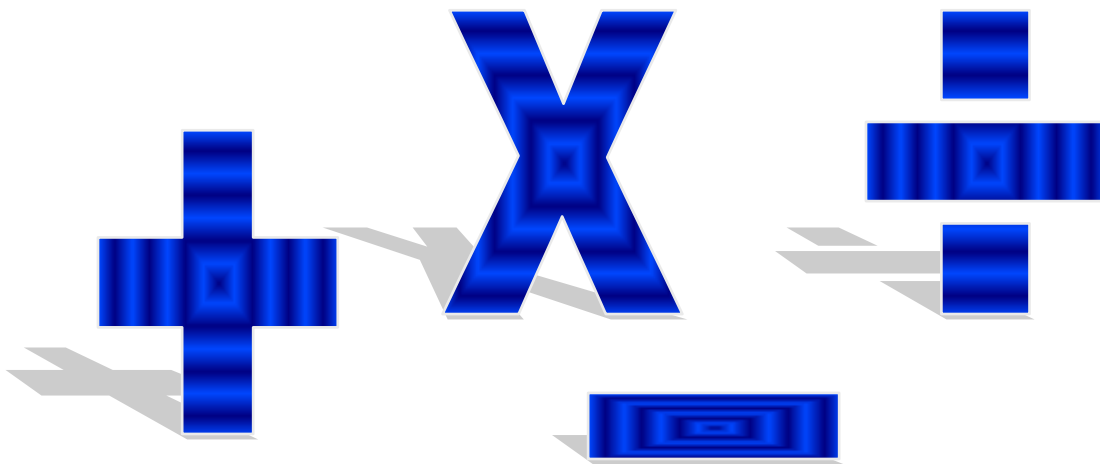
Bridgewater

Helping your child with calculations in year 4.

Calculation Policy for Parents.

This booklet has been designed as a guide for parents, to help them understand how the four operations (addition, subtraction, multiplication and division) are taught in our School.

The maths work your child is doing at school may look very different to the kind of 'sums' you remember. The teaching of maths is now about developing an understanding of number and not just knowing which kind of calculation to perform in a given situation. Initially children work through practical, oral and mental activities as children begin to understand these ideas they develop ways of recording to support their thinking. These informal methods become more efficient and succinct and lead to efficient written methods.

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014, **however pupils will be taught according to the level that they are currently working at,** being moved onto the next level as soon as they are ready, or working at a lower stage until they are secure enough to move on. This means a pupil currently achieving below the average level is likely to be working at the level of year groups below, and vice versa for pupils working at above average levels. Please feel welcome to come and ask your child's class teacher to clarify with you the stages / methods your child is working on if you are unsure.

If your child gets 'stuck' on a particular stage it is always worth revisiting the previous stage or stages to review their understanding.

Talk to your child about how you work things out.

Ask your child to explain their thinking.

When faced with a calculation problem, encourage your child to ask…

1. Can I do this in my head?

2. Could I do this in my head using drawings or jottings to help?

3. Do I need to use a written method?

4. Do I need to use a calculator?

Also help your child to estimate and then check their answer. Encourage them to ask…

Is the answer sensible?

Addition – add with up to 4 digit numbers

Children are taught to understand addition as combining two sets or more and counting on.

346+ 238 = 585 300 + 40 + 6 <u>200 + 30 + 8</u> <u>500 + 70 + 14</u> = 584	Children will move onto the expanded columnar addition method. They will initially be supported in this by using practical equipment.

2 6 7
<u>+ 3 2 4</u>
   1 1 (7 +4)
   80 (60 +20)
<u>+ 5 0 0</u> (200 + 300)
  5 9 1
	The children will quickly move on to adding the least significant digit first.
	As children begin to understand the value of number they will move on from the expanded method.

3 6 7
+   8 5
   4 5 2
    1   1
	When the children show a good understanding of number they will move on to the compact column method with carrying. The carried over number is written below the line. Also they can add a different number of digits together.

| Key number skills	Key vocabulary
Select most appropriate method: mental, jottings or written and explain why. Recognise the place value of each digit in a four-digit number. Round any number to the nearest 10, 100 or 1000. Estimate and use inverse operations to check answers. Find 1000 more or less than a given number.	add, more, plus, and, make, altogether, total, equal to,, equals, double, most, count on, number line, sum, tens, ones, partition, addition, column ,tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact thousands, hundreds, digits, inverse

Subtraction – subtract with up to 4 digit numbers

Children are taught to understand subtraction as taking away (counting back) and finding the difference (counting up).
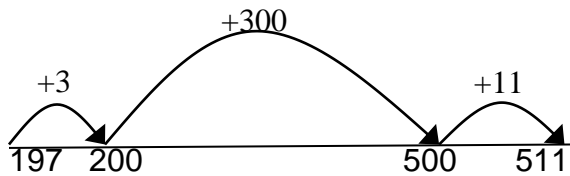
511 – 197 = 314 +300 +3 +11 197 200 500 511	**Counting on.** If the numbers in a calculation are close together or near to a multiple of 10, 100 etc. children can use the counting on method. Starting from the smallest number and counting up to the largest number. Finding out how many are in between.

2	7	5	4	-	1	5	6	2	=	1	1	9	2
					6	0	0	1	5	0			
2	0	0	0	+	7	0	0	+	5	0	+	4	
-	1	0	0	0	+	5	0	0	+	6	0	+	2
	1	0	0	0	+	1	0	0	+	9	0	+	2

Children will use **partitioning**. They will use place value cards and Thousands, Hundreds, tens and units practical apparatus to help them see the numbers. Children will not exchange at first.

6 15 2 ~~7~~ ~~5~~ 4 - 1 5 6 2 1 1 9 2	This leads to **decomposition**.

Key number skills

Subtract by counting on where numbers are close together or are near to multiples of 10, 100 etc. (87-79, 202-197)

Estimate and use inverse operations to check answers.

Solve addition and subtraction 2-step problems in contexts, choosing which operations and methods to use and why.

Find 1000 more or less than a given number.

Count backwards through zero to include negative numbers.

Recognise the place value of each digit in a four-digit number.

Round any number to the nearest 10, 100 or 1000.

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

exchange, decrease, hundreds, value, digit

inverse

Multiplication – multiply 2 and 3 digit numbers by a single digit

Children are taught to understand multiplication as repeated addition and scaling. It can also describe an array.

4 x 9 = 36
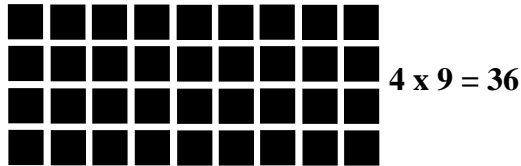
9 x 4 = 36

Arrays are still useful.

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

     =   150   +   40

     =   190

Children will multiply larger numbers using their times tables knowledge and **partitioning** the numbers.

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x	300	40	6	
9	2700	360	54	= 3114

This will lead onto the children using the **grid method** for multiplication.

Key skills

Count in multiples of 6, 7, 9, 25 and 1000

Recall multiplication facts for multiplication tables up to 12x12.

Recognise place value of digits in up to 4-digit numbers

Use place value, known facts and derived facts to multiply mentally, e.g. multiply by 1, 10, 100, by 0, or multiply 3 numbers.

Use commutativity and other strategies in mental calculations 3 x 6 = 6 x 3 , 2 x 6 x 5 = 10 x 6 , 39x7 = 30 x 7 + 9 x 7.

Key vocabulary

groups of, lots of, times, array, altogether, multiply, total, count up in, multiplied by, column, row, repeated addition, commutative, sets of, equal groups, _ times as big as, once, twice, three times etc. partition, grid method, multiple, product, tens, units, value

square, factor, integer, decimal, short / long multiplication, 'carry'

Division – Divide up to 3-digit numbers by a single digit (without remainders)

Children are taught to understand division as repeated subtraction, sharing and grouping.

Children will use counting on to lead towards a method called **chunking**.

From small steps to chunking

10×5

4×5

$10 + 4 = 14$
So $70 \div 5 = 14$
because
$14 \times 5 = 70$
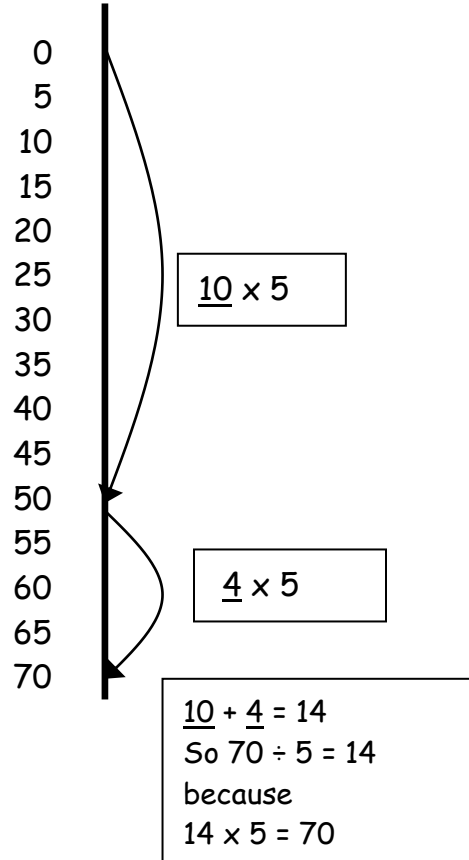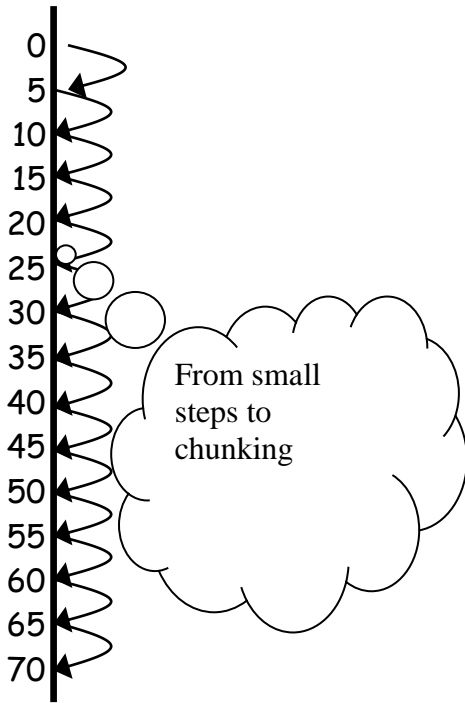
```
        2 1 8
   4 ) 8 7 2
     -  8 0 0   (200 × 4)
        0 7 0
     -    4 0   (10 × 4)
          3 2
     -    3 2   (8 × 4 )
           0
```

This leads to a vertical recording of chunking.

Top tip: Children to subtract chunks they are most comfortable with

Work out 2x

        5x

        10x

$218 \div 4$

```
        2 1 8
   4 ) 8 7³2
```

This will lead to short division but only when the children have a good understanding of the numbers. E.g. how many 3's are in 70. A link to multiplication would be beneficial here.

Key skills	Key vocabulary
Recall all multiplication and division facts up to 12 x 12. (in red) *Use place value, known and derived facts to multiply and divide mentally, incl. multiplying and dividing by 10 and 100 and *Use short division with exact answers. *Extend mental methods to 3-digit numbers, deriving facts, for example 200 × 3 = 600 so 600 ÷ 3 = 200 *Solve 2-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.	share, share equally, one each, two each…, group, 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 (in red)

Key skills

Recall all multiplication and division facts up to 12 x 12.

*Use place value, known and derived facts to multiply and divide mentally, incl. multiplying and dividing by 10 and 100 and

*Use short division with exact answers.

*Extend mental methods to 3-digit numbers, deriving facts, for example 200 × 3 = 600 so 600 ÷ 3 = 200

*Solve 2-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as three cakes shared equally between 10 children.

Key vocabulary

share, share equally, one each, two each…, group, 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