BOWERHAM PRIMARY & NURSERY SCHOOL

Maths

POLICY

Date: September 2023

REVIEW DATE: July 2024

Curriculum Statement

At Bowerham Primary and Nursery School children are at the heart of our curriculum. We believe that every child should have the opportunity to develop and build their self-esteem, self-confidence and a love for learning. We encourage our children to have high aspirations and strive for the best. We want our children to be responsible and begin to understand how they learn most effectively by the time they leave Bowerham.

We have developed the curriculum that we provide for our children; our main aim is to provide exciting, stimulating topics which the children become fully absorbed in using a cross-curricular approach. We include as many curriculum subjects into each topic, making them relevant and meaningful for our children.

We use a number of different approaches to explore and deliver the topics to ensure we enable our children to develop all the skills they need to be confident and successful learners. All our children are involved in the planning stage of new topics as we value their ideas and contributions; we believe that children learn best when they are able to steer and direct their own learning.

INTRODUCTION

This school policy document for mathematics describes the purposes, management and nature of the mathematics learned and taught at Bowerham Community Primary School.

AIMS

It is our aim to develop: -

- A positive attitude towards mathematics.
- To develop fluency in number skills
- Confidence and competence in mathematical knowledge, concepts and skills.
- An ability to reason, to think logically and work systematically and accurately and to solve problems.
- The ability to work both independently and in co-operation with others.
- The ability to use and apply mathematical skills, knowledge and concepts across the curriculum and in real life.
- An understanding of mathematics through investigation.
- The ability to communicate maths.

SCHOOL POLICY AND THE NATIONAL CURRICULUM

At both Key Stage 1 and 2, teachers use the Lancashire Planning Support to ensure that all aspects of the National Curriculum Programme of Study are taught.

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for: -

- Practical activities and mathematical games.
- Problem solving.
- Individual, group and whole class discussion and activities.
- Open and closed tasks.
- Use a simple short step by step approach for calculation and then give opportunities to apply in different ways, e.g. mental, written and calculator.
- Use ICT in a mathematical context.
- A balance in the length of activities, those that are short and those that can be developed over a longer period.

PLANNING AND ORGANISATION

Our school scheme of work is a working document and is composed of medium and short term plans.

Teachers of the Reception pupils base their teaching on the objectives in the EYFS framework which ensures that they are working towards the Early Learning Goals for Mathematical Development. Towards the end of the Reception year, teachers aim to draw the elements of a daily mathematics lesson together, so that by the time the children enter Year 1 they are familiar with a longer lesson.

Teachers of KS1 pupils base their teaching on the objectives from the National Curriculum. They use different stations of work, small differentiated groups and various resources to ensure embedded learning is achieved.

Children in KS2 are set according to target-setting and achievement. All lessons include opportunities for children to relate their maths to the real world and we plan cross-curricular to help develop maths skills in other subjects.

Each teacher is responsible for maths in their class, in consultation with parallel class teachers and the maths subject leader.

Mathematics is taught daily for between 45 and 60 minutes and reflects the requirements of National Curriculum and the individual needs of the pupils.

DIFFERENTIATION

Each teacher plans and delivers lessons suitably differentiated for the pupils in the class, including SEN and AGT. Activities, grouping, resources and additional support staff are taken into account when planning for differentiation.

EQUAL OPPORTUNITIES

All our children are given the same mathematical opportunities regardless of gender, race or cultural background.

RECORDS OF PUPILS' WORK

The children record their work in workbooks and on worksheets in a style appropriate to their stage of development. They are taught one or two strategies to minimise confusion. The purpose of these recordings is to help them clarify their thinking, provide evidence of work done, communicate with others and act as notes for future reference.

HOMEWORK

It is our policy to provide homework tasks for the children to complete. These activities vary in length and provide the children with extra opportunities to promote their mathematical learning. We use MyMaths to set homework for children to apply their learning in different contexts away from the classroom environment (see homework policy). We also provide a pre-teach section on our PowerPoints for children to see what is coming up in their learning.

MARKING

To gain a daily assessment of learning and for learning teachers use pink and green markers to highlight correct or incorrect answers. (See marking policy). This allows us to react with intervention to keep children on target.

ASSESSMENT AND RECORD KEEPING

Teachers are expected to make regular assessments of the children's progress, alongside careful scrutiny of the daily work done in class. Each child has a tracker sheet which records their achievements in all areas of maths. These can be viewed on SHOWBIE alongside reports at the end of each term.

Our children also complete end of Key Stage 1 and 2 SATS and optional Year 3, 4 and 5 tests.

EVALUATION

Through a constant evaluation of teaching, marking, assessing and planning cycle, the children are always kept on track and where necessary intervention is put in place early to avoid any gaps in their learning journey.

MONITORING AND COLLECTING EVIDENCE

Monitoring of Maths is an on-going activity in accordance with the SIP. It includes planning and book scrutiny, pupil interviews, lesson observations and professional conversations with staff members.

THE ROLE OF THE SUBJECT LEADER

The duties and responsibilities of the co-ordinator include the following

1) Responsibility for the teaching of mathematics throughout the school.
2) Interpreting the requirements of the National Curriculum and advising staff as to what is required.
3) The ongoing review and evaluation of the school policy and practice.
4) Attendance at key courses on behalf of staff.
5) Provide in-school INSET as required.
6) Developing appropriate practices for assessment, testing and record keeping.
7) Provision of help, support and advice for all staff as required.

REPORTING TO PARENTS

Reports are completed and uploaded to SHOWBIE termly.

Parents are given the opportunity to discuss their child's progress at parent consultation meetings. Target levels are set each year and parents informed.

Teachers use information gathered from work and assessment to help them comment on individual children's progress.

THE GOVERNING BODY

The Maths Team will be representative for maths on the governing body.

In conclusion, this policy is a working document, which will be amended in the light of experience.

Maths Team
January 2023

Apendix 1

Wriiten Calculations Policy

2015 Calculation Policy

For EYFS to Y6

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school. Please note that early learning in number and calculation in Reception follows the Development Matters EYFS document, and this calculation policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Age stage expectations

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014, **however it is vital that pupils are taught according to the stage 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.

Providing a context for calculation:

It is important that any type of calculation is given a real life context or problem solving approach to help build children's understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems. This must be a priority within calculation lessons.

Choosing a calculation method:

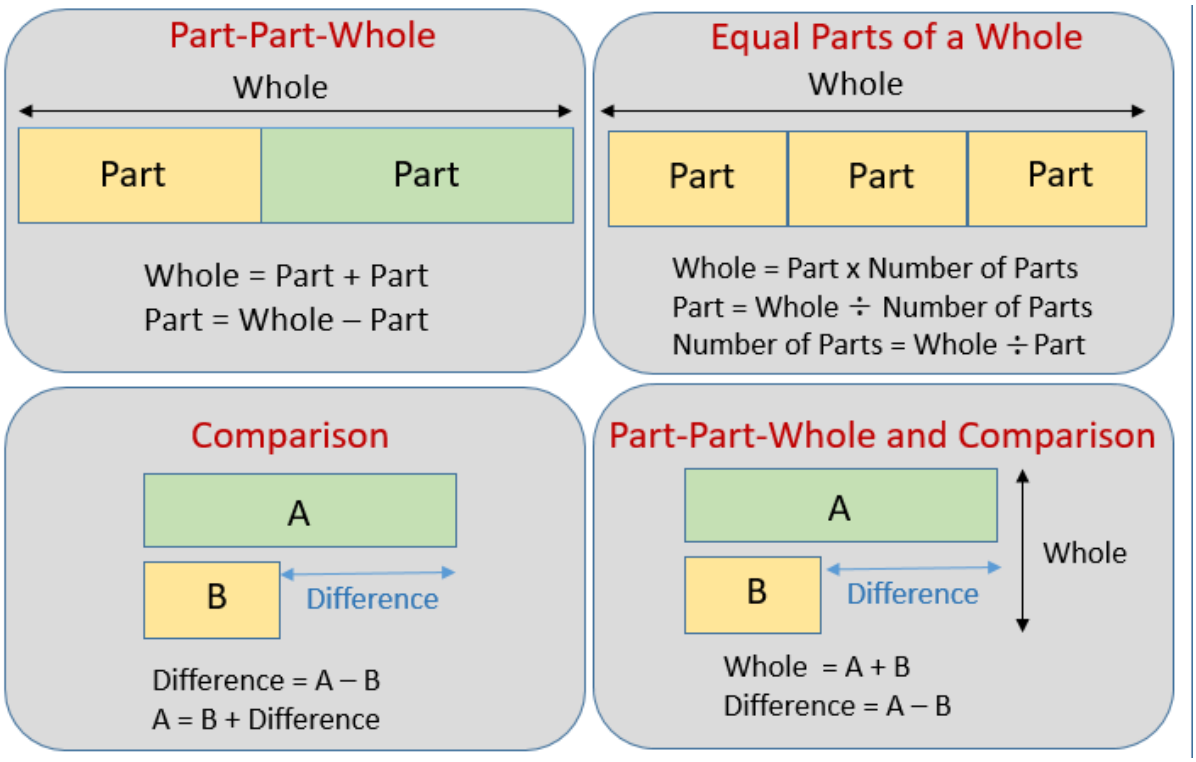
Children need to be taught and encouraged to use the following processes in deciding what approach they will take to a calculation, to ensure they select the most appropriate method for the numbers involved:

Understanding the problem	• What area of mathematics is this? • What exactly am I being asked to do? • What do I already know? • What do I need to find out? • What am I uncertain about? • Can I put the problem into my own words?
Devising a plan	• Work out the first few steps before leaping in! • Have I seen something like it before? • Is there a diagram I could draw to help? • Is there another way of representing? • Would it be useful to try some suitable numbers first? • Is there some notation that will help? Carrying out the plan
STUCK!	• Try special cases or a simpler problem • Work backwards • Guess and check • Be systematic • Work towards subgoals • Imagine your way through the problem • Has the plan failed? Know when it's time to abandon the plan and move on.
Looking back	• Have I answered the question? • Sanity check for sense and consistency • Check the problem has been fully solved • Read through the solution and check the flow of the logic.
Throughout the problem solving process it's important to keep an eye on how you're feeling and making sure you're in control:	• Am I getting stressed? • Is my plan working? • Am I spending too long on this? • Could I move on to something else and come back to this later? • Am I focussing on the problem? • Is my work becoming chaotic, do I need to slow down, go back and tidy up? • Do I need to STOP, PEN DOWN, THINK?

Bar Modelling:

We use Bar Modelling as another tool for children to use when problem solving, this is introduced in year 1 and built upon each year for children to use as an when they see appropriate. Staff use the Bar Model as a visual tool when teaching concepts such as addition and subtraction, multiplication and division and fractions.

The types of Bar Model:



<table>
<tr><th colspan="2">New Mathematics Calculation Policy: EYFS</th></tr>
<tr>
<td>CALCUATIONS IN EYFS
Calculations will be taught in a purposeful, practical way and children will use play and exploration to acquire the relevant mathematical skills to solve them. A large majority of mathematical work is practical, and learning will happen in many different contexts around the classroom and outside. Some mathematical concepts relating to calculations will be teacher led and children can also freely explore these concepts through a variety of different activities and resources set up each day. Learning is repeated using different resources and representations to embed understanding.</td>
<td>KEY LANGUAGE FOR CHILDREN
Number
More than
Less than
One more
One less
Add/make/plus/sum
Subtract/less/minus/take away
Total/Altogether/Equals/Same as

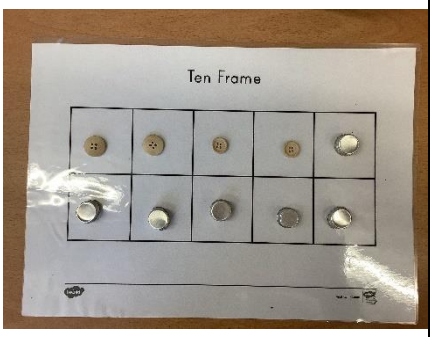
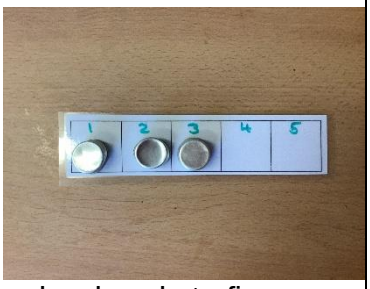
KEY LANGUAGE FOR STAFF
Subitise – To instantly recognise a small quantity without counting how many there are

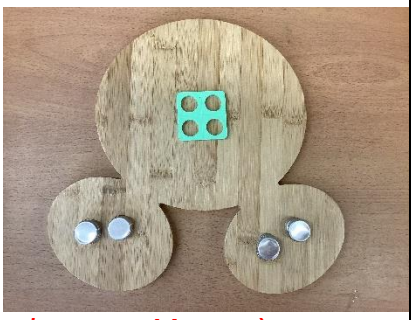
Numeral – The written symbol for a number</td>
</tr>
<tr>
<td>COUNTING
Children need to understand the 5 counting principles (Gelman and Gallistel,1978) before moving onto further calculations:
1. One-to-one principle – children should assign one number name to one object and count each object only once
2. Stable order principle – the numbers are in a certain order
3. Cardinal principle – The final number is the total number
4. Abstract principle – Things that can’t be touched can also be counted (E.g. jumps)
5. Order irrelevance principle – The order of counting objects in a group is irrelevant – there is still the same number of objects.

Link the number symbol (numeral) with its cardinal number
 

value. (Development Matters)</td>
<td>EARLY LEARNING GOALS
ELG for Number: Children at the expected level of development will:
- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

ELG Numerical Patterns: Children at the expected level of development will:
- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</td>
</tr>
</table>

Children in the early years use loose parts to represent different numbers.	
ADDITION *Understand the 'one more than/one less than' relationship between consecutive numbers. (Development Matters)*  Provide 'staircase' patterns which show that the next counting number is 'one more than' the current number. includes the previous number plus one. (e.g. Numicon) Children also use Number lines to aid this.  *Automatically recall number bonds for numbers 0–5 and some to 10. (Development Matters)* Children can explore using number bonds to five and ten by using objects and five and ten frames. *Have a deep*  *understanding of number to 10,*	**SUBTRACTION** *Understand the 'one less than' relationship between consecutive numbers. (Development Matters)*  Provide 'staircase' patterns which show that the previous counting number is 'one less than' the current number. (e.g. Numicon) *Automatically recall number bonds for numbers 0–5 (including subtraction facts) (Development Matters)*  Children can explore using number bonds to five including subtraction facts using objects and five frames. Introduce prepared number lines so that children can 'jump' backwards for subtraction.

including the composition of each number (Development Matters) Once children have understood the concrete aspect of using a ten frame the children can progress onto using a part whole model. Children also use number lines to aid this.	
MULTIPLICATION *Explore and represent patterns within numbers up to 10, including evens and odds, double facts.*  *(Development Matters)* Children should use numicon to explore odds and evens looking at the 'sticking up bit' and linking this to sharing.	**DIVISION** *How quantities can be distributed*  *equally. (Development Matters)* Children use the part whole model to share objects equally. Sharing will be done through practical activities and 'real life' problems within the Early Years.

New Mathematics Calculation Policy: Year 1

Addition

AS1.1 & AS1.2 The + and = signs and missing numbers

Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.

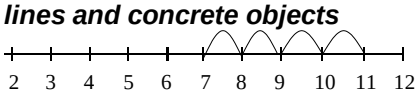
Example

2 = 1+ 1
2 + 3 = 4 + 1
3 = 3
2 + 2 + 2 = 4 + 2

Missing numbers need to be placed in all possible places.

3 + 4 = = 3 + 4
3 + = 7 7 = + 4
+ 4 = 7 7 = 3 +

NPV1.4, AS1.3 & AS1.4 Use of prepared number lines and concrete objects



Children are encouraged to record by drawing jumps on prepared lines.

Subtraction

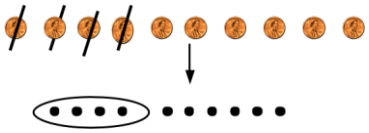
AS1.1 & AS1.2 The - and = signs and missing numbers

The notes opposite are relevant here.

7 - 3 = = 7 - 3
7 - = 4 4 = - 3

NPV1.4, AS1.3 & AS1.4 Use of pictures, marks and concrete objects

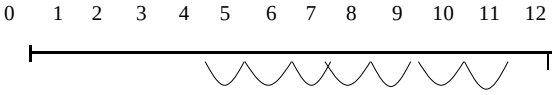
Sam spent 4p. What was his change from 10p?



Number Lines

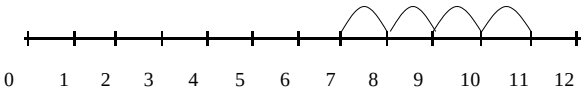
NPV1.4, AS1.3 & AS1.4 Example- Counting Back/Down

11 – 7



NPV1.4, AS1.3 & AS1.4 Example- Counting On/Up

The difference between 7 and 11



Children are encouraged to record by drawing jumps on prepared lines and constructing their own lines.

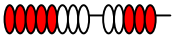
Multiplication

MD1.1, F1.1 & F1.2 Use of pictures and objects

There are 3 sweets in one bag.
How many sweets are there in 5 bags?

NPV1.2 Count in multiples of one, two, five and ten

Counting steps using bead string and on prepared number lines.



Counting in multiples using a range of objects, e.g. pairs of legs on animals; fingers in gloves etc.

NPV1.4 & MD1.1 Use of arrays

Counting in rows and columns

Two groups of three is six
Three groups of two is six

So 6 = 2 + 2 +2 or 6 = 3 + 3

Division

MD1.1, F1.1 & F1.2 Use of pictures and objects or marks 12 children get into teams of 4 to play a game. How many teams are there?

MD1.1 Sharing

6 sweets are shared between 2 people. How many do they have each?

Make use of practical activities involving sharing, e.g. hula hoops, distributing cards when playing a game, putting objects onto plates, into cups, hoops etc.

Video clips: Using a range of equipment and strategies to reinforce addition statements / bonds to 10

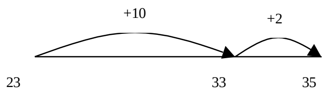
New Curriculum Mathematics Calculation Policy: Year 2

Addition

AS2.3 & AS2.8 The + and = signs and missing numbers
Continue using a range of equations (See Year 1) but with appropriate, larger numbers as specified in Year 2 grade level standards, i.e. extend to 14 + 5 = 10 + and 32 + + = 100 35 = 1 + + 5.

AS2.6 Partition into tens and ones and recombine
12 + 23 = 10 + 2 + 20 + 3
= 30 + 5
= 35

AS2.6 Partitioning the second number only
23 + 12 = 23 + 10 + 2
= 33 + 2
= 35



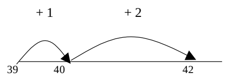
AS4.2, AS2.5 & AS2.6
Example: Add 9 or 11 by adding 10 and adjusting by 1
35 + 9 = 44

Sticks and crosses.

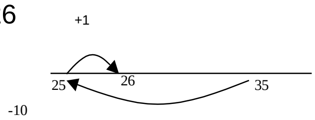
Subtraction

AS2.3 & AS2.8 The – and = signs and missing numbers
Continue using a range of equations (See Year 1) but with appropriate numbers in relation to Year 2 grade-level standards, i.e. extend to 14 + 5 = 20 - .

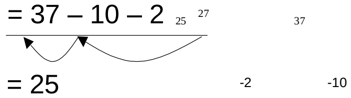
AS2.6 Find a small difference by counting up
42 – 39 = 3



AS2.4, AS2.5 & AS2.6
Example: Subtract 9 or 11 & begin to add/subtract 19 or 21
35 – 9 = 26



AS2.6 Use known number facts and place value to subtract (Partition second number only)
37 – 12 = 37 – 10 – 2 =
27 – 2
= 25



Multiplication

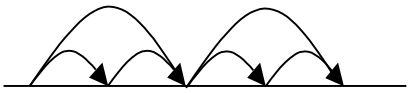
Division

MD2.1, MD2.2 & MD2.4 The x and = signs and missing numbers

7 x 2 = = 2 x 7
7 x = 14 14 = x 7 x 2
= 14 14 = 2 x

MD2.5 Use materials, arrays, repeated addition (including solving problems in context)

●● ●● ●● ●● 4 x 2 or 4
+ 4 ●● ●● ●●
●●
2 x 4



Or repeated addition

0 1 2 3 4 5 6 7 8

2 + 2 + 2 + 2

NPV2.2 & NPV2.6 Partitioning

15 x 2 ***OR***

x	10	5
2	20	10

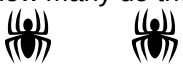
20 + 10 = 30

MD2.1, MD2.2 & MD2.4 The ÷ and = signs and missing numbers

6 ÷ 2 = = 6 ÷ 2
6 ÷ = 3 3 = 6 ÷
÷ 2 = 3 3 = ÷ 2

MD2.5 Use materials, arrays, repeated addition (including solving problems in context)
Use of sharing and grouping

Sharing
6 sweets are shared between 2 people.
How many do they have each?



●● ●● ●● ●● ●● ●●

Grouping
There are 6 sweets.
How many people can have 2 each? (How many 2's make 6?)

0 2 4 6

F2.1 Find and name fractions of length, shape and sets of objects and quantities
Use of diagrams- count all equal parts to determine denominator. Link to division into equal groups/parts.

Video clips: 1. Teaching for understanding of multiplication facts
2. Practical multiplication and the commutative law

New Curriculum Mathematics Calculation Policy: Year 3

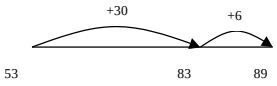
Addition

The + and = signs and missing numbers
Continue using a range of equations as in Year 1 and Year 2 but with appropriate larger numbers specified in the gradelevel standards.

AS3.1, AS3.2 & AS3.3 Progression in mental calculations with larger numbers
Calculate HTU + U
Calculate HTU + TU
Calculate HTU + HTU
Progress from no crossing of boundaries to crossing of boundary.

Partition into tens and ones and recombine
Develop from Year 2- partitioning both numbers and recombining.

Refine to partitioning the second number only:
36 + 53 = 53 + 30 + 6
= 83 + 6
= 89



Add a near multiple of 10 to a two-digit number
Continue work from Year 2 but with appropriate numbers:
35 + 19 is the same as 35 + 20 – 1.

AS3.4 Formal methods of columnar addition to add numbers with up to three digits

285
+73
8
150
200
358

AS3.4 & M3.3 Extend to decimals in the context of money

£ 2.50 + £ 1.75
£ 2.50
+ £ 1.75
£ 4.25
1

The expanded method should be used if children experience persisting difficulties.

***From Year 3 onwards, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**

Subtraction

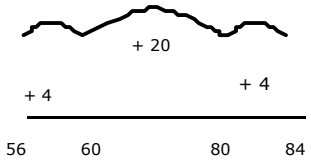
The - and = signs and missing numbers
Continue using a range of equations as in Year 1 and Year 2 but with appropriate larger numbers specified in the grade level standards.

Find a small difference by counting up
Continue from Year 2 but with appropriate numbers,
e.g. 102 – 97 = 5

AS3.1, AS3.2 & AS3.3 Subtract mentally a 'near multiple of 10' to or from a two-digit number, extending to three digit numbers
Continue as in Year 2 but with appropriate numbers e.g. 78 – 49 is the same as 78 – 50 + 1

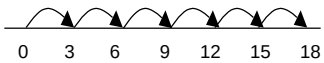
AS3.1, AS3.2 & AS3.3 Progression in mental calculations with larger numbers Calculate HTU - U
Calculate HTU - T
Calculate HTU - H
Progress from no crossing of boundaries to crossing of boundary.

Complementary addition
84 – 56 = 28



AS3.4 Formal methods of columnar subtraction to subtract numbers with up to three digits
See Appendix 1 examples in Year 5 and Year 6 section of this document.

***From Year 3 onwards, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**

Multiplication	Division
MD3.1 & MD3.2 The x and = signs and missing numbers Continue using a range of equations as in Year 2 but with appropriate numbers in relation to grade-level standards. **At Year 3, children progress to using more formal written methods. In this case, the grid method drawing on knowledge of place value, multiplication facts and their ability to recombine partitioned numbers to derive an answer.** ***From Year 3 onwards, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**	**MD3.2 The ÷ and = signs and missing numbers** Continue using a range of equations as in Year 2 but with appropriate numbers in relation to grade-level standards. **MD3.2 TU ÷ U Grouping** How many 3s make 18?  **MD3.2 & MD3.3 Remainders** 16 ÷ 3 = 5 r1 Sharing – There are 16 sweets shared between 3, how many left over? Grouping – How many 3s make 16, how many left over?  0 3 6 ***From Year 3 onwards, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**

Video clips: 1. Demonstration of expanded 3-digit column addition
2, Subtraction—teaching children to consider the most appropriate methods before calculating
3. Introducing partitioned column subtraction method, from practical to written

New Mathematics Calculation Policy: Year 4

Addition

The + and = signs and missing numbers
Continue using a range of equations as in Key Stage 1 and Year 3 but with appropriate numbers.

Partition into hundreds, tens and ones and recombine
Either partition both numbers and recombine or partition the second number only e.g.

358 + 73 = 358 + 70 + 3
= 428 + 3
= 431

Add or subtract the nearest multiple of 10 or 100, then adjust
Continue as in Year 2, 3 and 4 but with appropriate numbers e.g. 458 + 79 = is the same as 458 + 80 - 1

AS4.1 Addition of numbers with at least four digits using formal method of columnar addition

358
+73
431
1 1

3587
+675
4262
1 1 1

The formal, efficient method of columnar addition will involve crossing of boundaries (at the tens, hundreds and/or thousands). Take a systematic approach to teaching this looking at crossing each boundary in turn before mixed practice.

Revert to expanded method if children experience difficulties.

DF4.6 Extend addition to decimals (same number of decimals places) and adding several numbers (with different numbers of digits).

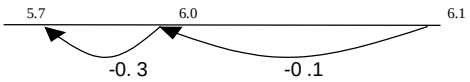
As specified in Year 3, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.

Subtraction

The – and = signs and missing numbers
Continue using a range of equations as in Key Stage 1 and Year 3 but with appropriate numbers.

Differences
Find a difference by counting up, e.g. 8006 – 2993 = 5013. This can be modelled on an empty number line.

DF4.6 Use known number facts and place value to subtract
6.1 – 0.4 = 5.7

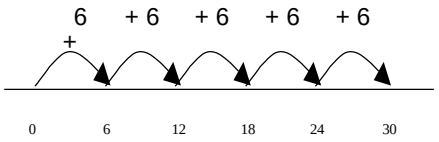
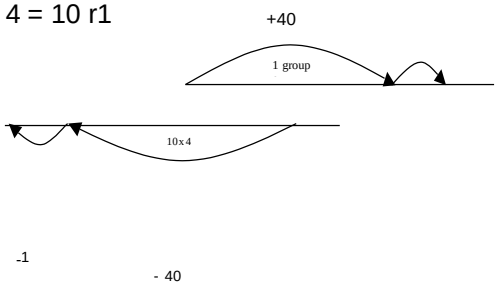


AS4.1 Subtraction with at least four digits using formal method of columnar subtraction
For instance, 6467 – 2684 = 3783
Using expanded column subtraction where children experience difficulty with decomposition and need to 'see' this.

DF4.6 Extend subtraction to decimals (same number of decimals places) and adding several numbers (with different numbers of digits)

As specified in Year 3, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.

Video clips: 1. Subtraction—teaching children to consider the most appropriate methods before calculating
2. Introducing partitioned column subtraction method, from practical to written
3, Moving to the compact column method of subtraction

Multiplication	Division
The x and = signs and missing numbers Continue using a range of equations but with appropriate numbers for Year 4. **MD4.5 TU x U** (See Year 3) **and HTU x U** (Introduced in Year 4 grade-level standards). **Partition** 23 x 4 = 92 23 x 4 = (20 x 4) + (3 x 4) = (80) + (12) = 92 **As specified in Year 3, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**	**The ÷ and = signs and missing numbers** Continue using a range of equations but with appropriate numbers for Year 4. **MD4.3 Sharing and grouping** 30 ÷ 6 can be modelled as: Grouping – groups of 6 taken away and the number of groups counted e.g.  Sharing – sharing among 6, the number given to each person. **Remainders** Note three approaches below: 41 ÷ 4 = 10 r1  41 = (10 x 4) + 1 **Progress onto 'Bus Stop' method without remainders and then with remanders.** Ensure a '**Multiplication Box'** is attempted before solving **As specified in Year 3, teachers need to keep in mind the methods specified in grade-level standards for end of Key Stage 2 (See Year 5 and Year 6 Calculation Policy Document). Children should be developing their capacity to use formal written methods for all four number operations.**

New Mathematics Calculation Policy: Year 5 and Year 6				
The exemplification of formal methods here should be taken into account by all Key Stage 2 teachers so children are adequately prepared by Year 5 and into Year 6 to use the means of calculating specified in grade-level standards.				
Addition & Subtraction				
AS5.1 Columnar Addition & Subtraction	789 + 642 becomes 7 8 9 + 6 4 2 1 4 3 1 1 1 Answer: 1431	874 – 523 becomes 8 7 4 − 5 2 3 3 5 1 Answer: 351	932 – 457 becomes 8 12 1 9 3 2 − 4 5 7 4 7 5 Answer: 475	932 – 457 becomes 1 1 9 3 2 − 4 5 7 5 6 4 7 5 Answer: 475
Multiplication & Division				

MD5.5 Short Multiplication (DfE, 2013, Appendix 1)

24 × 6 becomes

```
    2 4
×     6
  -----
  1 4 4
    2
```

Answer: 144

342 × 7 becomes

```
    3 4 2
×       7
  -------
  2 3 9 4
    2 1
```

Answer: 2394

2741 × 6 becomes

```
    2 7 4 1
×         6
  ---------
  1 6 4 4 6
    4 2
```

Answer: 16 446

MD5.7 & ASMD6.2b Short Division (DfE, 2013, Appendix 1)

98 ÷ 7 becomes

```
     1  4
   ------
7 |  9 ²8
```

Answer: 14

432 ÷ 5 becomes

```
      8  6 r2
   ----------
5 | 4 3 ³2
```

Answer: 86 remainder 2

496 ÷ 11 becomes

```
         4  5 r1
     -----------
1 1 | 4  9 ⁵6
```

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

MD5.5 & ASMD6.1 Long Multiplication (DfE, 2013, Appendix 1)

24 × 16 becomes

```
    ²
    2 4
×   1 6
 ------
  2 4 0
  1 4 4
 ------
  3 8 4
 ------
```

Answer: 384

124 × 26 becomes

```
    ¹ ²
    1 2 4
×     2 6
 --------
  2 4 8 0
    7 4 4
 --------
  3 2 2 4
 --------
  ¹ ¹
```

Answer: 3224

ASMD6.2a Long Division (DfE, 2013, Appendix 1)

Ensure a '**<u>Multiplication Box'</u>** is attempted before solving.

432 ÷ 15 becomes

```
          2  8 r 12
1 5 | 4  3  2
      3  0  0
     --------
      1  3  2
      1  2  0
     --------
         1  2
```

Answer: 28 remainder 12

432 ÷ 15 becomes

```
          2  8
1 5 | 4  3  2
      3  0  0    15×20
     --------
      1  3  2
      1  2  0    15×8
     --------
         1  2
```

$\frac{12}{15} = \frac{4}{5}$

Answer: $28 \frac{4}{5}$

432 ÷ 15 becomes

```
          2  8 · 8
1 5 | 4  3  2 · 0
      3  0  ↓   |
     --------   |
      1  3  2   ↓
      1  2  0
     --------
         1  2  0
         1  2  0
        --------
               0
```

Answer: 28·8

Video clips: 1. <u>Moving from grid method to a compact method</u> 2. <u>Reinforcing rapid times table recall:</u>
3. <u>Demonstration of long multiplication</u>

Assess against correct curriculum for a pupil, Early Learning Goals (delayed development Year 1), P Scales (SEN), EAL (English additional language)

EYFS/SEN/EAL

The number of statements routinely required for a step to be achieved is given for consistency and moderation purposes. Statements considered as attained must be securely embedded.

Early Learning Goals from 22-36 months			P Scales (to be assessed in order)						EAL (Sheffield, 2014)		
12 statements			21 statements						Step 1		
			P 5			P6					
1 Entering	2 Developing	3 Confident	*	**	***	*	**	***	*	**	***
1-3	4-9	10-12	0-2	3-5	6-7	8-12	13-19	20-21	1-3	4-10	11-13
Number: Place Value			**Number: Place Value**						**Number: Place Value**		
❖ Select a small number of objects from a group when asked, *eg, 'please give me two'.* ❖ Recite some number names in sequence. ❖ Create and experiment with symbols and marks representing ideas of number.			❖ Respond to and join in with familiar number rhymes, stories, songs and games. (5) ❖ Indicate one or two. (5) ❖ Demonstrate awareness of contrasting quantities. (5) ❖ Solve simple problems practically, (5) ❖ Make sets that have the same small number of objects in each. (5) ❖ Demonstrate an understanding of 1-to-1 correspondence in a range of contexts. (6) ❖ Join in rote counting up to five. (6) ❖ Count reliably to three. (6) ❖ Make sets of up to three objects. (6) ❖ Use numbers to three in familiar activities and games. (6) ❖ Join in with new number rhymes, songs, stories and games. (6)						❖ Talk in their home language about quantities and numbers. (22-36) ❖ Rote count to 5. (M1) ❖ Join in with number rhymes (numbers to 5). (M1) ❖ Differentiate between numbers and letters (numbers to 5). (M1) ❖ Say number names when looking at numbers (not matched to the number) (numbers to 5). (M1)		
Number: Calculation			**Number: Calculation**						**Number: Calculation**		
❖ Begin to make comparisons between quantities. ❖ Use some language of quantities, such as '*more*' and '*a lot*'. *Know that a group of things changes in quantity when something is:* ❖ added; ❖ taken away.			❖ Demonstrate an understanding of the concept of 'more'. (6)						❖ Join in with addition and subtraction rhymes (numbers to 5). (M1)		
Measures			**Measures**						**Measures**		
❖ Understand some talk about immediate past and future, *eg, 'before', 'later' or 'soon'.* ❖ Begin to categorise objects according to size. ❖ Anticipate specific time-based events such as mealtimes or home time.			❖ Compare the overall size of one object with that of another where the difference is not great. (6)						*Practically explore: (M2)* ❖ length; ❖ height; ❖ weight; ❖ capacity.		
Geometry: Properties of Shapes			**Geometry: Properties of Shapes**						**Geometry: Properties of Shapes**		
❖ Notice simple shapes and patterns in pictures. ❖ Begin to categorise objects according to properties of shape.			❖ Sort or match objects or pictures by recognising similarities. (5) ❖ Solve simple problems practically, *for example, selecting appropriate containers for items of different sizes; checking there is a knife for every fork.* (5) [U&A] ❖ Search for objects not found in their usual place demonstrating their understanding of object permanence. (6) ❖ Sort objects and materials according to a given criteria. (6) [U&A] ❖ Copy simple patterns or sequences. (6) [U&A] ❖ Manipulate three-dimensional shapes. (6)						❖ Sort resources into groups. (M1) ❖ Notice the difference between objects. (M2) ❖ Sort resources by matching. (M2)		
Geometry: Position & Direction			**Geometry: Position & Direction**						**Geometry: Position & Direction**		

	❖ Show understanding of words signs and symbols that describe positions (6) ❖	

Stage 2	Mathematics: Planning and Assessment	Name:

Assess against correct curriculum for a pupil: Early Learning Goals (delayed development Year 1), P Scales (SEN), EAL (English additional language)

The number of statements routinely required for a step to be achieved is given for consistency and moderation purposes. Statements considered as attained must be securely embedded.

Early Learning Goals from 30-50 months			P Scales P7- 10 statements		EAL (Sheffield, 2014) Step 2		
1 Entering	2 Developing	3 Confident	*	**	*	**	***
1-6	7-16	17-21	1-5	6-10	0-4	5-11	12-15
Number: Place Value			**Number: Place Value**		**Number: Place Value**		
❖ Use some number names accurately in play. ❖ Recite numbers in order to 10. ❖ Know that numbers identify how many objects are in a set. ❖ Begin to represent numbers using fingers, marks on paper or pictures. ❖ Sometimes match numeral and quantity correctly. ❖ Show curiosity about numbers by offering comments or asking questions. ❖ Show an interest in numerals in the environment. ❖ Show an interest in representing numbers. ❖ Realise not only objects, but anything can be counted, including steps, claps or jumps.			❖ Join in rote counting to 10, *for example, saying or signing number names to 10 in counting activities*. (7) ❖ Use familiar words in practical situations when they compare quantities. (7)		❖ Rote count to 10 in home language or in English. (M2) ❖ Join in with number rhymes to 10. (M2) ❖ Differentiate between numbers to 10 and letters. (M2) ❖ Say number names when looking at numbers to 10 (not matched to the number) in home language or in English. (M2) ❖ Make marks representing numbers to 10 in any script. (M3) ❖ Trace numbers to 10. (M3)		
Number: Calculation			**Number: Calculation**		**Number: Calculation**		
❖ Compare two groups of objects, saying when they have the same number. ❖ Show an interest in number problems. ❖ Separate a group of three or four objects in different ways, beginning to recognise that the total is still the same.			❖ Compare two groups of objects, saying when they have the same number. (7) ❖ Show an interest in number problems. (7) ❖ Separate a group of three or four objects in different ways, beginning to recognise that the total is still the same. (7) ❖ Respond appropriately to key vocabulary and questions, *for example, 'How many?'* (7) [U&A]		❖ Join in with addition and subtraction rhymes to 10. (M2) ❖ Match up to 5 objects practically (one-to-one correspondence). (M3) ❖ Make and draw sets to 5. (M3) ❖ Copy actions for add, subtract and equals. (M3)		
Measures			**Measures**		**Measures**		
❖ Begin to talk about the shapes of everyday objects, eg, *'tall'*.			❖ Use familiar words in practical situations when they compare sizes. (7)		❖ Begin to talk about shapes of objects in home language or in English(M2)		
Geometry: Properties of Shapes			**Geometry: Properties of Shapes**		**Geometry: Properties of Shapes**		
❖ Show an interest in shape and space by playing with shapes or making arrangements with objects. ❖ Show awareness of similarities of shapes in the environment. ❖ Show interest in shape by sustained construction activity or by talking about shapes or arrangements. ❖ Show interest in shapes in the environment. ❖ Use shapes appropriately for tasks. ❖ Begin to talk about the shapes of everyday objects, *eg, 'round'*.			❖ Complete a range of classification activities using a given criterion. (7) [U&A] ❖ Identify when an object is different and does not belong to a given familiar category. (7) [U&A] ❖ Pick out described shapes from a collection (7) ❖ Respond to 'forwards' and 'backwards' (7)		❖ Stack and join objects including 2D shapes. (M2) ❖ Sort resources by given criteria. (M3) ❖ Stack and join objects including 3D shapes. (M3)		

Geometry: Position & Direction	Geometry: Position & Direction	Geometry: Position & Direction
❖ Use positional language ❖ Shows understanding of prepositions such as 'under', 'on top', 'behind' by carrying out an action or selecting correct picture. [U]		❖ Explore positional language instructions in home language *forwards, backwards in home language or in English.* (M5)

[U] EYFS Communication & Language: Understanding **[U&A]** P Scales: Using & Applying **(M)** Sheffield EAL Mathematics step

Stage 3	Mathematics: Planning and Assessment	Name:

Assess against correct curriculum for a pupil: Early Learning Goals (delayed development Year 1), P Scales (SEN), EAL (English additional language)

The number of statements routinely required for a step to be achieved is given for consistency and moderation purposes. For statements to be completely embedded they should be demonstrated in a range of contexts and subject areas if applicable.

Early Learning Goals (from 40-60 months)			P 7- P8 (assess in order of P scale)				EAL		
41 statements			19 statements				(Sheffield, 2014)		
1 Entering	2 Developing	3 Confident	P7	P8	P8	P8	Threshold		
1-11	12-35	36-41	***	*	**	***	*	*	***
			1-3	4-10	11-16	17-18	1-12	13-26	26-32
Number: Place Value			**Number: Place Value**				**Number: Place Value**		
❖ Recognise some numerals of personal significance. ❖ Recognise numerals 1 to 5. ❖ Count up to three or four objects by saying one number name for each item. ❖ Count actions or objects which cannot be moved. ❖ Count objects to 10, and begin to count beyond 10. ❖ Count out up to six objects from a larger group. *Select the correct numeral to represent objects:* ❖ 1 to 5; ❖ 1 to 10. ❖ Count an irregular arrangement of up to ten objects. ❖ Estimate how many objects they can see and checks by counting them. ***With numbers from one to 20:*** ❖ place them in order; ❖ say which number is one more or one less than a given number. (ELG) ❖ **Children use everyday language to compare quantities and objects and to solve problems.** (ELG)			❖ Recognise numerals from 1 to 5 and understand that each represents a constant number or amount. (7) ❖ Count at least 5 objects reliably. (7) ❖ Respond appropriately to key vocabulary and questions, *for example, 'How many?'*. (7) ❖ Join in with rote counting to beyond 10. (8) ❖ Recognise numerals from one to nine and relate them to sets of objects, *for example, labelling sets of objects with correct numerals*. (8) ❖ Make simple estimates. (8)) [U&A] ❖ Use their developing mathematical understanding of counting up to ten to solve simple problems encountered in play, games or other work. (8) [U&A] ❖ Continue to rote count onwards from a given small number. (8) ❖ Estimate a small number (up to 10) and check by counting. (8) ❖ Use ordinal numbers (first, second, third) when describing the position of objects, people or events. (8)				❖ Write numbers to 10. (M4) ❖ Match up to 10 objects practically (1-to-1 correspondence). (M4) ❖ Make and draw sets to 10. (M4) ❖ Say the correct number when looking at the digit. (M4) ❖ Count backwards from 10 in English. ❖ Write numbers to 20 (M5) ❖ Match up to 20 objects practically (1-to-1 correspondence). (M5) ❖ Make and draw sets to 20. (M5) ❖ Say the correct numbers to 20, when looking at the digit(M5) ❖ Rote count backwards from 20 in English. (M6)		
Number: Calculation			**Number: Calculation**				**Number: Calculation**		

❖ Use the language of 'more' and 'fewer' to compare two sets of objects. ❖ Find the total number of items in two groups by counting all of them. ❖ Say the number that is one more than a given number. *Find one more or one less from a group of:* ❖ up to five objects; ❖ up to ten objects. ❖ In practical activities and discussion, begin to use the vocabulary involved in adding and subtracting. ❖ Record, using marks that they can interpret and explain. ❖ Begin to identify own mathematical problems based on own interests and fascinations. ❖ **Use quantities and objects, they add and subtract two single-digit numbers** and **count on or back to find the answers**. (ELG) ❖ Use everyday language to compare quantities and objects and to solve.	❖ Demonstrate an understanding of *'less'*. (7) ❖ In practical situations respond to '*add one'* or '*take one away'* from a number of objects. (7) ❖ Recognise differences in quantity. (8)	❖ Say if a number rhyme is addition or subtraction in home language or English. (M3) ❖ Use vocabulary such as '*more'* and '*less'* when comparing sets. (M3) ❖ Add numbers together practically to make a total up to 10. (M4) ❖ Subtract numbers practically within 10. (M4) ❖ Recognise that the number in the set does not change when the position of objects is changed. (M4) ❖ Say in English symbol names for add, subtract, equals. (M4) ❖ Add numbers together practically to make a total of up to 20. (M5) ❖ Subtract numbers practically within 20. (M5) ❖ Know number bonds to 10. (M6) *Count forwards and backwards in English in: (M6)* ❖ 2s; ❖ 5s; ❖ 10s. ❖ Represent pictorially addition and subtraction to 20. (M6) ❖ Solve addition and subtraction problems with single digit numbers. (M6)

Measurement	Measurement	Measurement
❖ Use everyday language related to time. ❖ Begin to use everyday language related to money. ❖ Order and sequences familiar events. ❖ Measure short periods of time in simple ways. *Order two or three items by:* ❖ length; ❖ height; ❖ weight; ❖ capacity. *Children use everyday language to talk about and solve problems relating to:* ❖ size; ❖ weight.	❖ Compare objects directly, focusing on one dimension such as length or height where the difference is marked and can indicate '*the long one'* or '*the tall one'*. (8) *Show awareness of time through some familiarity with:* ❖ names of the days of the week; (8) ❖ significant times in their day, such as meal times, bed times. (8)	❖ Use vocabulary such as big and small mostly in English or home language. (M3) *Can use the vocabulary (in home language and/or English): (M4)* ❖ tall / big and small; ❖ heavy and light; ❖ tall / long and short; ❖ full and empty. ❖ Recognise 1p, 2p, 5p and 10p coins. (M4) *Order up to 3 objects by: (M6)* ❖ length; ❖ height; ❖ weight; ❖ capacity. ❖ Order familiar events that are represented pictorially. (M6) ❖ Measure short periods of time in simple way, mostly in English or in home language. (M6)
Geometry: Properties of Shapes	**Geometry: Properties of Shapes**	**Geometry: Properties of Shapes**
Begin to use mathematical names for: ❖ solid' 3-D shapes; ❖ flat' 2-D shapes. ❖ Use mathematical terms to describe shapes. ❖ Selects a particular named shape. ❖ Use familiar objects and common shapes to create and recreate patterns and build models. ❖ Children use everyday language to talk about size, to compare objects and to solve problems.	❖ Talk about, recognise and copy simple repeating patterns and sequences. (8) [U&A] ❖ Respond to mathematical vocabulary such as '*straight*', '*circle*', '*larger'* to describe the shape and size of solids and flat shapes. (8) ❖ Describe shapes in simple models, pictures and patterns (8)	❖ Sort resources and explain how they have been sorted in their home language or English. (M4) ❖ Use the language of pattern. (M4) ❖ Complete repeating patterns of up to 3 colours or objects. (M4)
Geometry: Position & Direction	**Geometry: Position & Direction**	**Geometry: Position & Direction**
❖ Can describe their relative position such as '*behind*' or '*next to'*. ❖ **Talk about position**. (ELG)		❖ Follow directional language, *eg, left, right, turn.* (M6) in English or home language.

Bowerham Primary and Nursery School
Year 1 Maths Curriculum

Year 1	Maths at Bowerham
Autumn	**Number: Place Value** Count to **ten**, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to **10** in numerals and words. Given a number, identify one more or one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. **Number: Addition and Subtraction** Represent and use number bonds and related subtraction facts **within 10** Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Add and subtract one digit numbers **to 10**, including zero. Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems. **Geometry: Shape** Recognise and name common 2-D shapes, including: (for example, rectangles (including squares), circles and triangles) Recognise and name common 3-D shapes, including: (for example, cuboids (including cubes), pyramids and spheres.) **Number: Place Value** Count to **twenty**, forwards and backwards, beginning with 0 or 1, from any given number. Count, read and write numbers to **20** in numerals and words. Given a number, identify one more or one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.
Spring	**Number: Addition and Subtraction** Represent and use number bonds and related subtraction facts within 20 Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Add and subtract one-digit and two-digit numbers to 20, including zero. Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= □ – 9 **Place Value:** Count to **50** forwards and backwards, beginning with 0 or 1, or from any number. Count, read and write numbers to **50** in numerals. Given a number, identify one more or one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. Count in multiples of twos, fives and tens. **Measurement: Length and Height** Measure and begin to record lengths and heights. **Compare, describe and solve practical problems for:** lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) **Measurement: Weight and Volume** Measure and begin to record mass/weight, capacity and volume. **Compare, describe and solve practical problems for mass/weight:** [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
Summer	**Number: Multiplication and Division** Count in multiples of twos, fives and tens. Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. **Geometry: position and direction** Describe position, direction and movement, including whole, half, quarter and three quarter turns **Number: Fractions** Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. **Compare, describe and solve practical problems for: lengths and heights** (for example, long/short, longer/shorter, tall/short, double/half) **Compare, describe and solve practical problems for: mass/weight** [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]

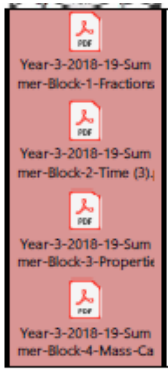
	Number: Place Value Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count, read and write numbers to 100 in numerals. Given a number, identify one more and one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than, most, least. **Measurement: Money** Recognise and know the value of different denominations of coins and notes. **Measurement: Time** Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. Recognise and use language relating to dates, including days of the week, weeks, months and years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] Measure and begin to record time (hours, minutes, seconds)

Bowerham Primary and Nursery School
Year 2 Maths Curriculum

YEAR	AUTUMN	SPRING	SUMMER
	Number – Place Value Read and write numbers to at least 100 in numerals and in words. Recognise the place value of each digit in a two-digit number (tens, ones). Identify, represent and estimate numbers using different representations including the number line. Compare and order numbers from 0 up to 100; use <, > and = signs. Use place value and number facts to solve problems. Count in steps of 2, 3 and 5 from 0, and in tens from any number, forward and backward.	**Measurement: Money** Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	**Number – fractions** Recognise, find, name and write fractions 13, 14, 24 and 34 of a length, shape, set of objects or quantity. Write simple fractions for example, 12 of 6 = 3 and recognise the equivalence of 24 and 12.
	Number – Addition and Subtraction Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers. Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures; applying their increasing knowledge of mental and written methods. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	**Multiplication and Division** Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	**Measurement: Time** Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day. Compare and sequence intervals of time.
		Measurement: length and height Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using >, < and =	**Statistics** Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.
	Geometry- properties of shape Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid. Compare and sort common 2-D and 3-D shapes and everyday objects.	**Measurement: Mass, Capacity and Temperature** Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. Compare and order lengths, mass, volume/capacity and record the results using >, < and =.	**Position and Direction** Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). Order and arrange combinations of mathematical objects in patterns and sequences.

Bowerham Primary and Nursery School
Year 3 Maths Curriculum

YEAR 3	Maths at Bowerham
Autumn  Year-3-Block-1-Place-Value.pdf  Year-3-Block-2-Addition-and-Subtraction.p  Year-3-Block-3-Multiplication-and-Division	**Number – Place Value** Identify, represent and estimate numbers using different representations. Find 10 or 100 more or less than a given number Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000 Read and write numbers up to 1000 in numerals and in words. Solve number problems and practical problems involving these ideas. Count from 0 in multiples of 4, 8, 50 and 100 **Number – Addition and Subtraction** Add and subtract numbers mentally, including: a three-digit nu mber and ones; a three-digit number and tens; a three digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. **Number – Multiplication and Division** Count from 0 in multiples of 4, 8, 50 and 100 Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objectives.
Spring  Year-3-2018-19-Spring-Term-Block-1-FINAL  Year-3-2018-19-Spring-Term-Block-2-FINAL  Spring-Year-3-2018-19-Block-3-FINAL.pdf  SOL-Year-3-2018-19-Spring-Term-Block-4-  Year-3-2018-19-Spring-Term-Block-5-FINAL	**Number – multiplication and division** Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objectives. **Measurement – money** Add and subtract amounts of money to give change, using both £ and p in practical contexts. **Measurement – length and perimeter** Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). Measure the perimeter of simple 2D shapes **Statistics** Interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. **Number – fractions** Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Solve problems that involve all of the above.
Summer	**Number – fractions** Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominators. Add and subtract fractions with the same denominator within one whole [for example, 57 + 17 = 67] Solve problems that involve all of the above. **Measurement – mass and capacity** Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). **Measurement – time**

	Tell and write the time from an analogue clock, including using Roman numerals from I to XII and 12-hour and 24-hour clocks. Estimate and read time with increasing accuracy to the nearest minute. Record and compare time in terms of seconds, minutes and hours. Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. Know the number of seconds in a minute and the number of days in each month, year and leap year. Compare durations of events [for example to calculate the time taken by particular events or tasks]. **Geometry – properties of shape** Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. Draw 2-D shapes and make 3- D shapes using modelling materials. Recognise 3-D shapes in different orientations and describe them.

Bowerham Primary and Nursery School
Year 4 Maths Curriculum

Year 4	Maths at Bowerham
Autumn	**Number – Place Value** **Count in multiples of** 6, 7, 9. **25 and 1000.** Find 1000 more or less than a given number. Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones) Order and compare numbers beyond 1000 Identify, represent and estimate numbers using different representations. Round any number to the nearest 10, 100 or 1000 Solve number and practical problems that involve all of the above and with increasingly large positive numbers. Count backwards through zero to include negative numbers. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. **Number- Addition and Subtraction** Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. Estimate and use inverse operations to check answers to a calculation. Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why. **Measurement: Length and Perimeter** Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Convert between different units of measure [for example, kilometre to metre] **Number – Multiplication and Division** Recall and use multiplication and division facts for multiplication tables up to 12 × 12. **Count in multiples of 6, 7, 9.** 25 and 1000 Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. **Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit**, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
Spring	**Number – multiplication and division** Recall and use multiplication and division facts for multiplication tables up to 12 × 12. Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. Multiply two digit and three digit numbers by a one digit number using formal written layout. Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. **Measurement- Area** Find the area of rectilinear shapes by counting squares. **Fractions** Recognise and show, using diagrams, families of common equivalent fractions. Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. Add and subtract fractions with the same denominator. **Decimals** Recognise and write decimal equivalents of any number of tenths or hundredths. Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths. **Solve simple measure** and money **problems involving fractions and decimals to two decimal places.** Convert between different units of measure [for example, kilometre to metre]

Summer	**Decimals** Compare numbers with the same number of decimal places up to two decimal places. Round decimals with one decimal place to the nearest whole number. Recognise and write decimal equivalents to 14, 12 and 34 Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths. **Time** **Convert between different units of measure [for example,** kilometre to metre; **hour to minute]** Read, write and convert time between analogue and digital 12- and 24-hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. **Statistics** Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. **Measurement- Money** Estimate, compare and calculate different measures, including money in pounds and pence. Solve simple measure and money problems involving fractions and decimals to two decimal places. **Geometry: Properties of shape** Identify acute and obtuse angles and compare and order angles up to two right angles by size. Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2-D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry. **Geometry- Position and Direction** Describe positions on a 2-D grid as coordinates in the first quadrant. Plot specified points and draw sides to complete a given polygon. Describe movements between positions as translations of a given unit to the left/ right and up/ down.

Bowerham Primary and Nursery School
Year 5 Maths Curriculum

Year 5	Maths at Bowerham
	Number – Place Value Read, write, order and compare numbers to at least 1000000 and determine the value of each digit. Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000 Solve number problems and practical problems that involve all of the above. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. **Number- Addition and Subtraction** Add and subtract numbers mentally with increasingly large numbers. Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. **Number – Multiplication and Division** Multiply and divide numbers mentally drawing upon known facts. Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers. Divide numbers up to 4 digits by a one digit number using the formal written method of short division and interpret remainders appropriately for the context. Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign. **Number – multiplication and division** Multiply and divide numbers mentally drawing upon known facts. Multiply and divide whole numbers by 10, 100 and 1000. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3) Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19 **Statistics** Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables including timetables. **Perimeter and Area** Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles (including squares), and including using standard units, cm2, m2 estimate the area of irregular shapes. **Number: Fractions** Compare and order fractions whose denominators are multiples of the same number. Identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example 25 + 45 = 65 = 1 15] Add and subtract fractions with the same denominator and denominators that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Read and write decimal numbers as fractions [for example 0.71 = 71 100] Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. **Number: Decimals and Percentages** Read, write, order and compare numbers with up to three decimal places. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. Round decimals with two decimal places to the nearest whole number and to one decimal place. Solve problems involving number up to three decimal places. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. Solve problems which require knowing percentage and decimal equivalents of 12, 14, 15, 25, 45 and those fractions with a denominator of a multiple of 10 or 25. **Number: Decimals** Solve problems involving number up to three decimal places. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.

	Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. **Geometry- Properties of Shapes and Angles** Identify 3D shapes, including cubes and other cuboids, from 2D representations. Use the properties of rectangles to deduce related facts and find missing lengths and angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Draw given angles, and measure them in degrees (o) Identify: angles at a point and one whole turn (total 360o), angles at a point on a straight line and ½ a turn (total 180o) other multiples of 90o. **Geometry-position and direction** Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. **Measures Volume** Estimate volume [for example using 1cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] Use all four operations to solve problems involving measure. **Measurement- converting units** Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml] Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Solve problems involving converting between units of time.

Bowerham Primary and Nursery School
Year 6 Maths Curriculum

Year 6	Maths at Bowerham
	Number: Place Value Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit. Round any whole number to a required degree of accuracy. Use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve all of the above.
	Geometry- Position and Direction Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane, and reflect them in the axes. **Number- addition subtraction, multiplication + division** Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication. Divide numbers up to 4 digits by a 2-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. Divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, interpreting remainders according to the context. Perform mental calculations, including with mixed operations and large numbers. Identify common factors, common multiples and prime numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations. Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy. **Fractions** Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions > 1 Generate and describe linear number sequences (with fractions) Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example 14 x 12 = 18] Divide proper fractions by whole numbers [for example 13 ÷ 2 = 16] Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example 38] Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. **Number: Decimals** Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places. Multiply one-digit numbers with up to 2 decimal places by whole numbers. Use written division methods in cases where the answer has up to 2 decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy. **Number: Percentages** Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison. Recall and use equivalences between simple fractions, decimals and percentages including in different contexts. **Number: Algebra** Use simple formulae Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables. **Measurement Converting Units** Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3dp. Convert between miles and kilometres. **Measurement: Perimeter, Area and Volume** Recognise that shapes with the same areas can have different perimeters and vice versa.

	Recognise when it is possible to use formulae for area and volume of shapes. Calculate the area of parallelograms and triangles. Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm3, m3 and extending to other units (mm3, km3) **Number: Ratio** Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. Solve problems involving similar shapes where the scale factor is known or can be found. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. **Problem Solving** **Statistics** Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. Interpret and construct pie charts and line graphs and use these to solve problems. Calculate the mean as an average. **Investigations**