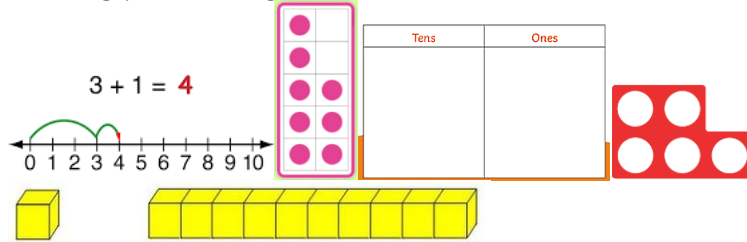




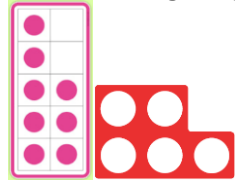
Arunside Progression in Calculations

Number

The children will develop a deep understanding of numbers to 10, including the composition of each number. They will use concrete and pictorial representations, including place value grids, tens frames, base ten, number lines and numicon.



Teachers support children as they begin to subitise to 5. In order for children to recognise quantities up to 5, without counting, they will need to be regularly exposed to numbers represented in both the concrete and pictorial. This will be taught through regular use of tens frames and numicon.



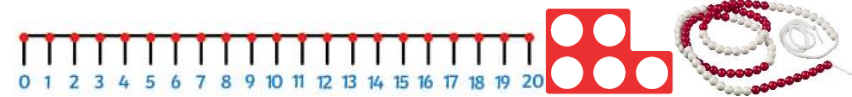
By the end of EYFS, most children will be able to recall number bonds up to 5 and some number bonds to 10. The children will begin using concrete representations, such as tens frames, place value grids and counters, to support their understanding of this. As the children become more confident, they will move onto using pictorial representations. As well as this, the children will develop their understanding of double facts. This will be taught using bead strings, tens frames and small objects with one-one correspondence.



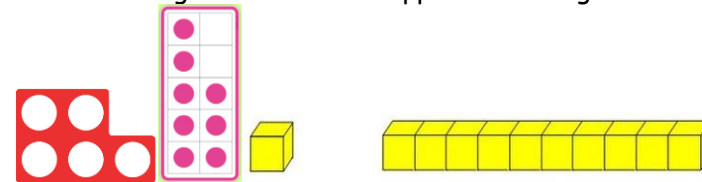
EYFS

Numerical patterns

Children will begin by using the one-one principle to verbally count, assigning a number to each concrete object being counted. This will ensure objects will not be counted twice or missed out. As they become more confident and begin counting beyond 20, they will use number lines, bead strings and numicon, to support them. The children begin to recognise the pattern of the counting system. The teacher will support the children's understanding of this by regular practice through routines, rhymes and songs.



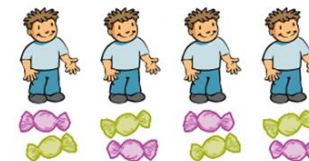
Children will compare quantities up to 10 in different contexts. They will be introduced to and able to use the correct mathematical language to describe greater than, less than or equal to another quantity. The children's understanding of this will be supported through concrete resources.



Children will explore and represent patterns within numbers up to 10. They will explore even and odd numbers. They will use concrete representations to support their understanding of this, particularly numicon.



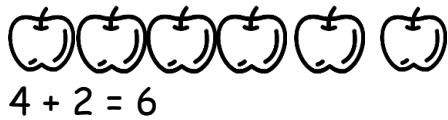
The children will be introduced to sharing, using concrete representations to distribute a number of items equally. They will use the correct mathematical vocabulary of sharing.



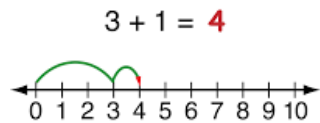
Arunside Progression in Calculations

Year 1

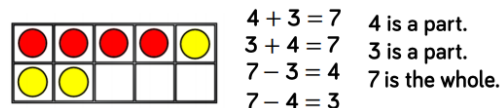
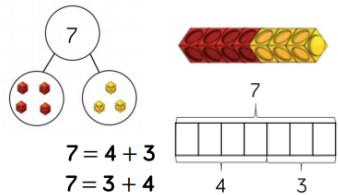
Children use concrete and pictorial representations to support their calculations and secure their knowledge of number bonds to 10.



Teachers model how to use a number line to support calculation. Children then begin to use numbered lines to support their own calculations.

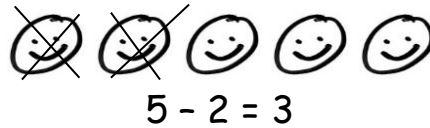
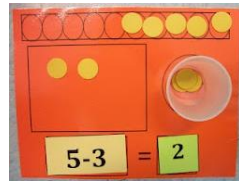


They move on to solving problems, involving measure and shape, independently using a range of strategies, such as a tens frame, bar models, part-whole models and number lines.

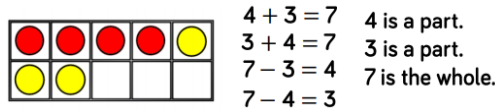


Children learn and use mathematical vocabulary and symbols correctly (+,=).

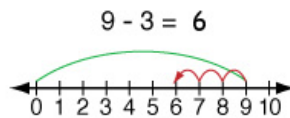
Children use concrete and pictorial representations to support their calculations.



Children progress onto using tens frames to support subtraction.



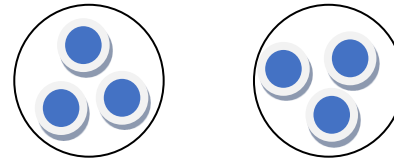
Children then begin to use numbered lines to support their own calculations - using a numbered line to count back in ones.



The number line should also be used to show that $9 - 3$ means the 'difference between 9 and 3' or 'the difference between 3 and 9' and how many jumps they are apart.

Children learn and use mathematical vocabulary and symbols correctly (+,=). The children will revisit and use their subtraction knowledge to solve problems involving shape and measure.

Children will use concrete and pictorial representations to find equal groups of objects.

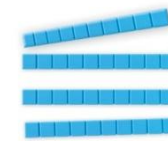


Children will make links between multiplication and repeated addition.

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



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



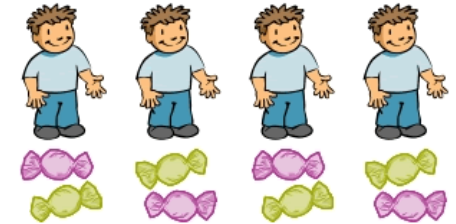
They will work on practical problem solving activities involving equal sets or groups. There is a strong focus on development of mathematical vocabulary.

The children will use number lines and 100 squares to skip count and look for multiplication patterns.

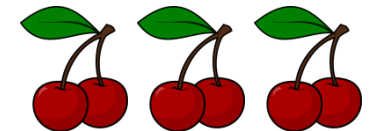
	+	×	+	=					
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
	=	×	+						



Children will understand equal grouping and sharing through the use of concrete and pictorial representation.

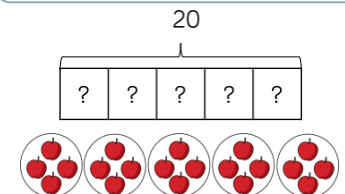


They will count in 2s, 5s and 10s. They will begin to make connections within the number system.



The children will use bar models to understand that groups of 2s, 5s and 10s make up the 'whole'.

There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?





Arunside Progression in Calculations

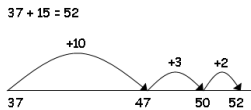
Year 2

Number

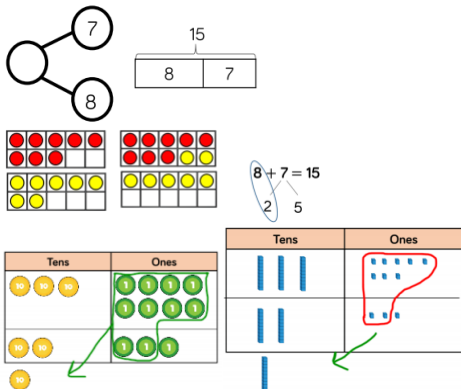
Children will learn to partition 2-digit numbers to support addition, adding the tens and the ones separately and combining the two to find a total.



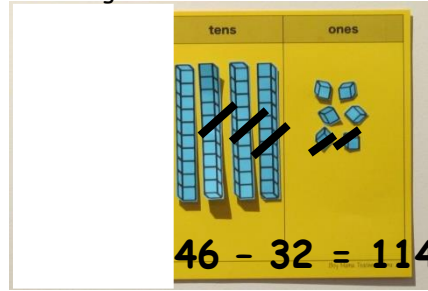
They will begin to use 'empty number lines' themselves starting with the larger number and counting on. First counting on in tens and ones, then the tens and ones in one jump and finally bridging through ten.



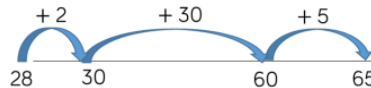
The children will learn column addition without exchanging and progress to exchanging. Tens frames, bar models, part-whole models, place value grids and counters and base 10 are used as a representation.



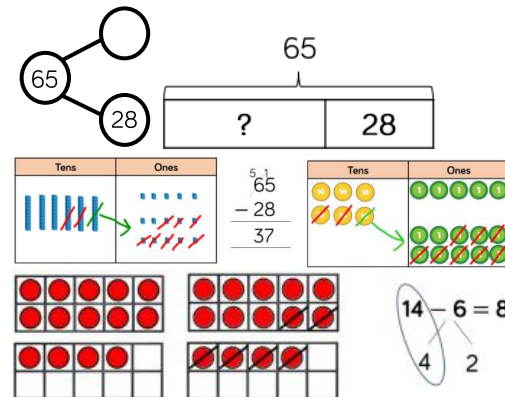
Children will use partitioning to support subtraction. Base 10 is used as a concrete resource to support the children's understanding.



They begin to use empty number lines to support subtraction calculations; counting on in tens and ones. Bridging through ten is taught to help the children become more efficient. Knowledge of number bonds is revisited from year 1 to support the children's understanding.



Column subtraction is taught without exchanging. The teaching of subtraction is supported through the use of tens frames, bar models, place value grids and counters and base 10.

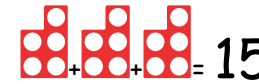


Numerical patterns

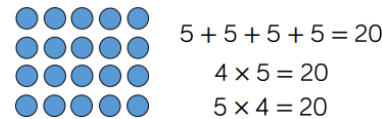
Children will develop their understanding of multiplication using concrete and pictorial representations and begin to use jottings to support calculation:

Repeated addition

3 times 5 is $5 + 5 + 5 = 15$ or 3 lots of 5 or 5×3



Children use arrays as a pictorial representation to support their understanding of multiplication as repeated addition. Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method

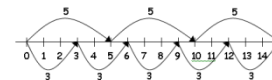


Commutativity

Children should know that 3×5 has the same answer as 5×3 .



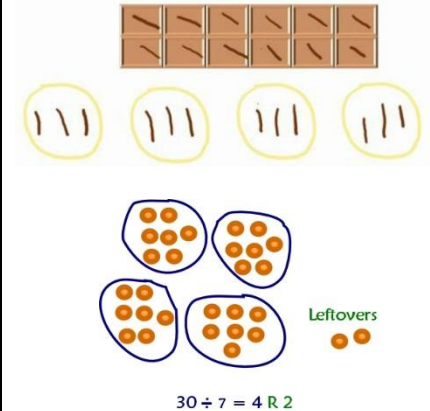
This can also be shown on a number line. Children will make links between multiplication and repeated addition.



Children will develop their understanding of division and use jottings to support calculation. The children's understanding will be supported through the use of concrete and pictorial representations.

Sharing and grouping

The children use a variety of different concrete representations, such as place value counters and base 10, to share and group equally. This progresses into written jottings.



The children further develop their mathematical vocabulary when solving a variety of problems, involving both grouping and sharing.

Arunside Progression in Calculations