



Arunside Progression in Calculations

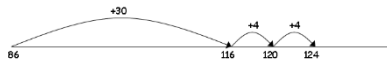
Year 3

Addition

Children use a variety of different methods to solve addition problems. This will develop their understanding of column addition, adding numbers with different numbers of digits. The children will add up to three digit numbers, beginning with the ones column.

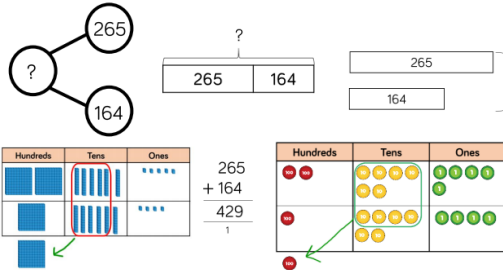
Children will continue to use empty number lines with increasingly large numbers, including compensation where appropriate. Count on from the largest number irrespective of the order of the calculation.

$$98 + 86 = 124$$



Children will begin to use informal jottings to support, record and explain partial mental methods building on existing mental strategies.

The children will use concrete representations to support their understanding of addition, including place value grids and counters and base 10. The children's understanding will be further developed by pictorial representations, including bar models, part-whole models, base 10 and place value grids.



Subtraction

Children will continue to use empty number lines with increasingly larger numbers, developing the counting on method, counting in hundreds, tens and ones.

$$102 - 89 = 13$$

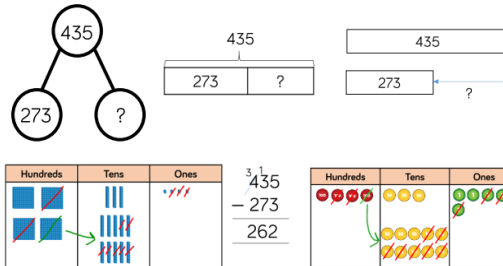


Children will begin to use jottings to support mental subtraction.

Mental subtraction is taught through partitioning and decomposition, using concrete and pictorial representations to support understanding.

Children will continue to develop their understanding of column subtraction, beginning to exchange.

The children's understanding of subtraction is developed using a variety on concrete and pictorial representations, including bar models, part-whole models, tens frames, base 10 and place value grids.



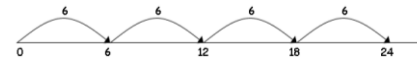
Multiplication

Children will continue to use:

Repeated addition

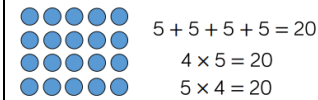
4 times 6 is $6 + 6 + 6 + 6 = 24$ or 4 lots of 6 or 6×4

Children should use number lines to support their understanding.



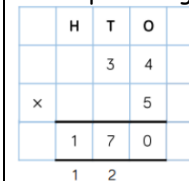
Arrays

Children should be able to model a multiplication calculation using an array. This knowledge will support with the development of the grid method.

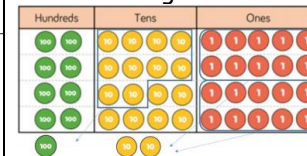


Formal methods

Children will learn the short multiplication method. Knowledge of times tables will be developed alongside this.



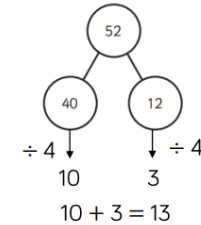
Bar models and place value counters are used to support the children's understanding.



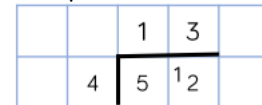
Division

Ensure that the emphasis in Y3 is on grouping rather than sharing.

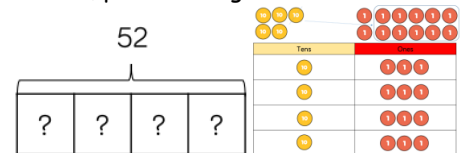
Children use partitioning as a method for division, reinforcing their understanding of part-part-whole.



Children should begin to use short division. They should know how to divide a 2-digit number by a 1-digit numbers using 2, 5, 10, 3, 4 and 8 times table. There should be an emphasis on the inverse and using this, they will begin to make connections between multiplication and division.



The children will begin to tackle more complex problems, involving remainders. Their development in knowledge of division is supported by concrete and pictorial representations, such as bar models, place value grids and base 10.



Arunside Progression in Calculations

Year 4

The children will learn both mental and written methods to solve addition calculations.

Mental methods will focus on partitioning numbers into hundreds, tens and ones, using informal jottings to solve the calculation.

$$34 + 63 = 97$$

$$30 + 60 = 90$$

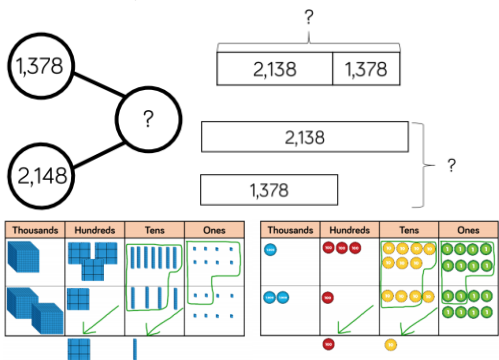
$$4 + 3 = 7$$

$$90 + 7 = 97$$

The children will continue to develop their use of the column addition method. They will add several different numbers with up to 4-digits, including decimals, in a variety of contexts, including measure.

1	3	7	8	
+	2	1	4	8
	3	5	2	6
		1	1	

The children's understanding of addition will be supported by a variety of different concrete and pictorial representations. This includes place value grids and counters, part-whole models, bar models, base 10 and tens frames. Tens frames are particularly important when learning about tenths and hundredths.



The children will learn both mental and written methods to solve subtractions.

Mental methods will focus on partitioning numbers into hundreds, tens and ones, using informal jottings to solve the calculation.

$$87 - 23 = 64$$

$$80 - 20 = 60$$

$$7 - 3 = 4$$

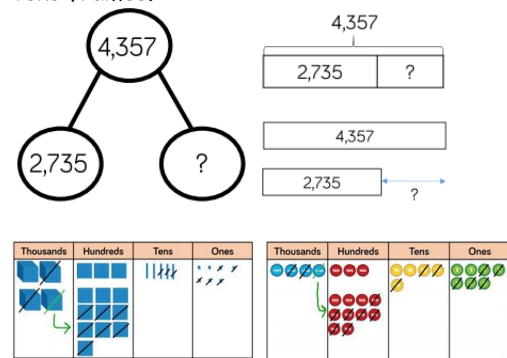
$$60 + 4 = 64$$

The children will use counting on and will develop their understanding of 'difference'.

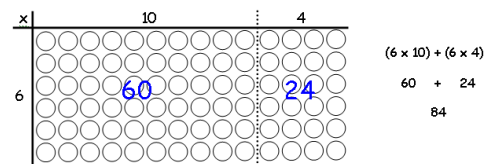
The children will continue to develop their use of the column subtraction method. They will add several numbers with different numbers of digits, including decimals, in a variety of contexts, including measure.

$$\begin{array}{r} 31 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

The children's understanding of subtraction will be supported by a variety of different concrete and pictorial representations. This includes place value grids and counters, part-whole models, bar models, base 10 and tens frames.



Children will continue to use arrays where appropriate leading into the grid method of multiplication.

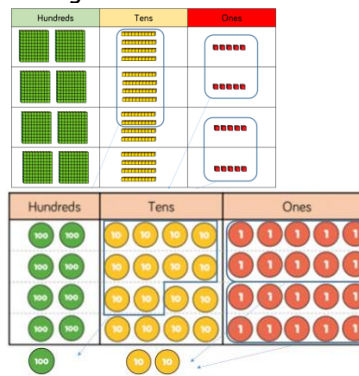


The children will learn how to multiply by multiples of 10 to support their development into using short multiplication.

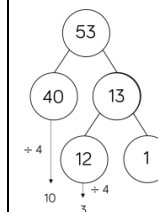
Short multiplication will be used, multiplying the digit in the ones column first. Times table knowledge from previous years will be revisited and reinforced.

	H	T	O
		3	4
x			5
	1	7	0
	1	2	

Understanding of multiplication will be supported using concrete and pictorial representation, including bar models, place value grids and counters and base 10.



Children use partitioning as a method for division, reinforcing their understanding of part-part-whole.



Children will continue to develop their understanding of short division, solving more complex problems involving remainders. The children will learn to make sensible decisions when solving word problems involving remainders, dependent on context.

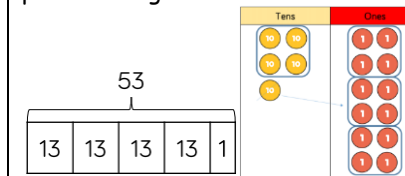
		1	3
	4	5	12

There is a clear focus on the inverse and using this to solve division questions with missing numbers.

$$36 \div \underline{\quad} = 6$$

$$6 \times 6 = 36$$

The teaching of division will be supported by concrete and pictorial representations, include bar models and place value grids and counters.



Arunside Progression in Calculations