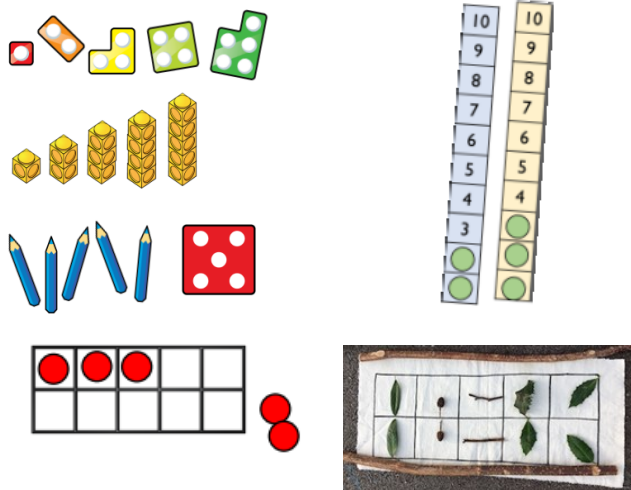


- Early Learning Goals:
- Have a deep understanding of number to 10, including the composition of each number
- Subitise (recognise quantities without counting) up to 5
- Verbally count beyond 20, recognising the pattern of the counting system
- Automatically recall (without reference to rhymes, counting or other aids) number bonds to 5 and some number bonds to 10, including double facts
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity
- (Solve real world mathematical problems with numbers up to 10)

Concrete

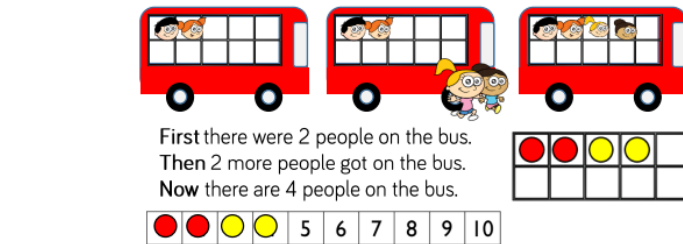
Adding more using real objects— stories using first, then, now



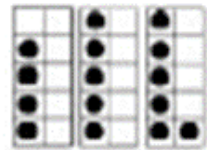
Show me 5 fingers. Now show me 2 more.
 How many fingers now? How do you know there are 7?
 Did you count them all 1, 2, 3, 4, 5, 6, 7?
 Is there another way to count them? We know we have 5 on this hand? Can we count on? 6, 7?

Pictorial

Using number tracks to count on



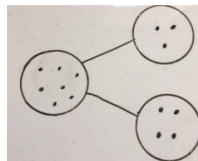
First there were 2 people on the bus.
 Then 2 more people got on the bus.
 Now there are 4 people on the bus.



Note: It is important to teach children the correct vocabulary for comparison: more than, fewer than, equal to, the same as. Remember that children are currently working with numbers to 5. Encourage children to line up their groups to make direct comparisons:



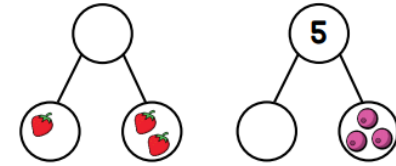
Provide many opportunities for children to count two sets of identical objects and compare them.
 How many ___ are there in this group?
 How many ___ are there in this group?
 Which group has more? Which group has fewer?
 Are the groups equal?
 How do you know?



Abstract

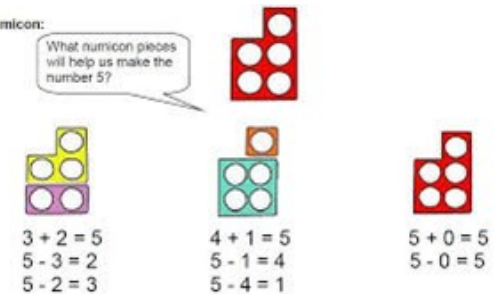
- Adding to 5 and 10

Show the children a part-whole model with either one of the parts or the whole missing.



Numicon:

What numicon pieces will help us make the number 5?



Key Vocabulary:

first-then-now, more, add, addition, makes, total, altogether, equals, is equal to, balances, how many more to make? number sentence

STEM/ model Sentences:

How many ___ are there in this group? Which group has more? Are the groups equal? How do you know? First there were..., then ... more came, now there are ...

NC Learning Objectives:

End of Year 1:

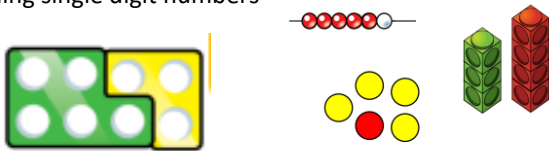
- Read, write and interpret mathematical statements involving addition (+) and equals (=) signs.
- Represent and use number bonds within 20
- Add one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations
- Solve missing number problems

End of Year 2:

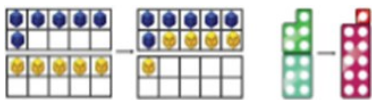
- Solve problems with addition using concrete objects and pictorial representation, including those involving numbers, quantities and measures, applying increasing knowledge of mental and written methods
- Recall and use addition facts to 20 fluently, and derive and use related facts to 100
- Add numbers using concrete objects, pictorial representations, and mentally, including two-digit number and ones; a two digit number and tens; two two-digit numbers; adding three one-digit numbers
- Show that addition of two numbers can be done in any order (commutative)

Concrete

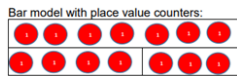
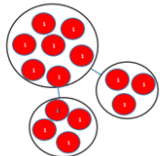
Adding single digit numbers



Making 10



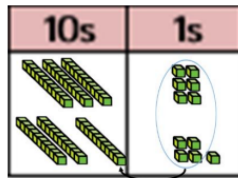
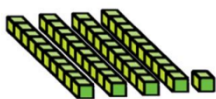
Making patterns



20 = 1 + 19 2 + 18 3 + 17

36 + 25, exchanging 1s

41 + 8, no exchange



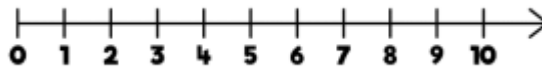
Pictorial

• Add 1's

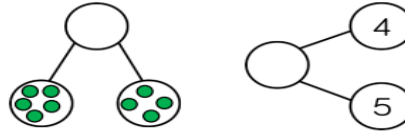
Create sentences based on the picture.



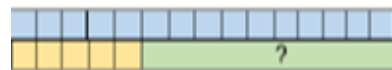
Example
There are 4 children playing in a park. One more child joins them so there will be 5 children playing together.



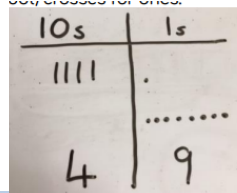
Complete the part-whole models by drawing counters and then writing the numerals.



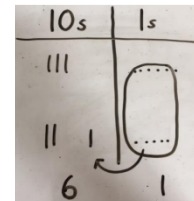
Bar models



Adding 10s and 1s with no exchange



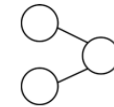
with exchange



Abstract

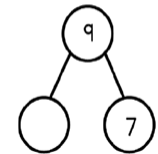
Complete the part-whole model and the number sentence.

$\square + \square = \square$

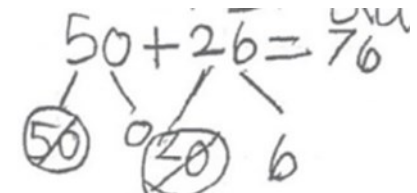


Complete the part-whole model.

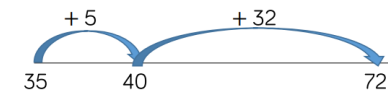
Bar Modelling



Partitioning and combining



35 + 37 = 72



Key Vocabulary: number sentence, calculation, add, addition, total, altogether, plus, more, equals, is equal to/whole, parts, fact family, increase, commutative, partition, combine, one-digit, two-digit, three-digit, exchange, regroup, base 10, tens, ones, number bonds/pairs, check, symbols, missing number

STEM/ model Sentences:

What is the part? What is the whole?
If ? is the whole, then ? is the part and ? is the part.

NC Learning Objectives:

End of Year 3:

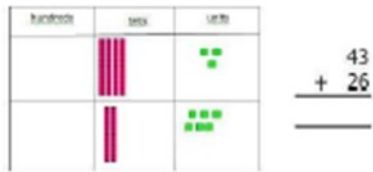
- Add numbers mentally including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds
- Add numbers with up to three digits, using formal written methods of columnar addition
- Estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, using number facts, place value and more complex addition

NC Learning Objectives:

End of Year 4:

- Add numbers with up to four digits using the formal written methods of columnar addition where appropriate
- Estimate and use inverse operations to check answers to a calculation
- Solve addition two-step problems in contexts, deciding which operations and methods to use and why

Concrete

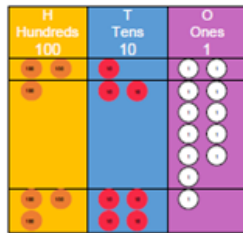
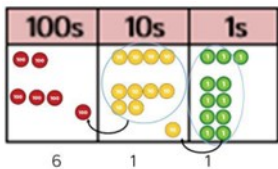


$$\begin{array}{r} 43 \\ + 26 \\ \hline \end{array}$$

We can use Base 10 to solve $245 + 7$



Place value counters



Use counters and a place value grid to calculate $3,242 + 2,213$

1,000s	100s	10s	1s
1000 1000 1000	100 100	10 10 10 10	1 1
1000 1000	100 100	10	1 1 1

Pictorial

Adding two 3 digit numbers with and without renaming

Picture with PV counters

- Adding 4 digit numbers with one exchange

Picture with PV counters

Abstract

Column addition

Renamed digits under the calculation

Cross out the digit once it's been used.

$$\begin{array}{r} 243 \\ +368 \\ \hline 611 \\ \hline \end{array}$$

Work out the missing numbers.

	Th	H	T	O
	4	—	6	—
+	2	5	—	1
	—	7	8	9

Key Vocabulary: add, addition, altogether, total, calculate, exchange, calculation, increase, 100 more, column addition, digit, mental method, formal method, written method, estimate, boundary, adjust, combine, rounding, commutativity, decimal addition

STEM/ model Sentences:

Can we make an exchange? Why? How many ones altogether? How many ones do we exchange for one ten? Which columns are affected if there are more than 10 tens?

NC Learning Objectives:

End of Year 5:

- Add whole numbers with more than four digits,, including using formal written methods of columnar addition
- Add numbers mentally with increasingly large numbers
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- Solve addition multi-step problems in contexts, deciding which operations and methods to use
- Add decimals up to three places

NC Learning Objectives:

End of Year 6:

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

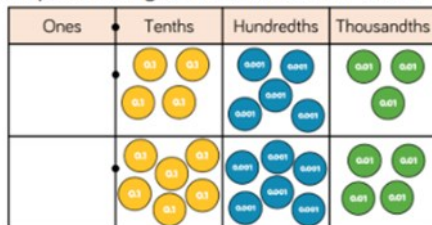
Concrete

A range of concrete apparatus always available to support fluency, reasoning and problem solving (enabling children to show how). E.g place value counters, dienes, multi-link, multiplication grids etc.

$$104,328 + 61,731 = 166,059$$



Use the place value grid to answer $0.453 + 0.664$

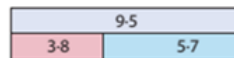


Pictorial

Ali had £10. He bought a DVD for £6.70 and a CD for £2.90. How much money did he have left?

£10		
£6.70	?	£2.90

Write four number facts that this bar diagram shows.



$$\square + \square = \square$$

$$\square + \square = \square$$



Abstract

Using place value knowledge to line digits up accurately

Always carrying below the equals line. Cross out once used.

Calculate.

	?	4	?	3	?
+	2	?	5	?	2
	7	8	5	2	9

	3	4	6	2	1
+	2	5	7	3	4

$$67,832 + 5,258$$

PICTURE

Key Vocabulary: calculate, calculation, total, sum, commutative, commutativity, exchange, inverse, mental method, column method, written, method, formal method, integers, known facts, rounding, exact answer, approximate answer, order, operation, brackets

STEM/ model Sentences:

What happens when there is more than 9 in a place value column? Can we use the inverse to find missing digits? Is column always the best method? When should we use mental methods?