EYFS	
EYFS Early Learning Goals	**Number ELG** • Have a deep understanding of numbers to 10, including the composition of each number. • Recall fluently number bonds up to 5 and some number bonds to 10. • Recognise quantities without counting up to 5. **Numerical Patterns ELG** Children at the expected level of development will: • Count reliably 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 patterns within numbers to 10, including doubling, halving and sharing.

Year 1

Basic mathematical vocabulary

+, add, more plus make, sum, total altogether score double, near double one more, two more… ten more how many more to make…? how many more is… than…? how much more is…?

Instructional vocabulary

start from, start with, start at, look at, point to, show me

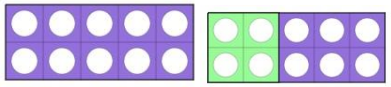
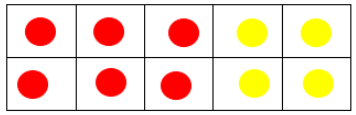
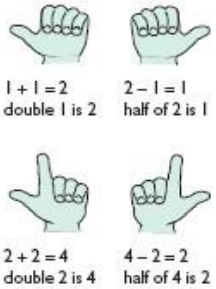
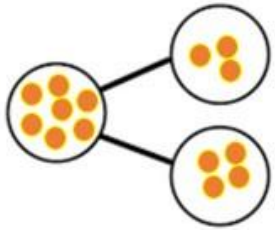
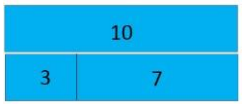
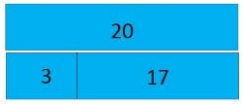
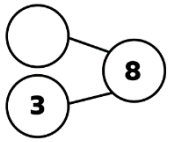
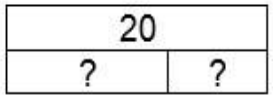
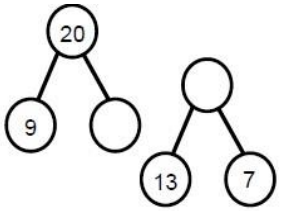
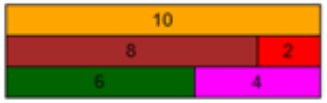
National curriculum link

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

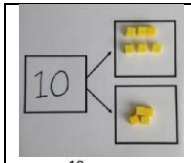
Objectives:

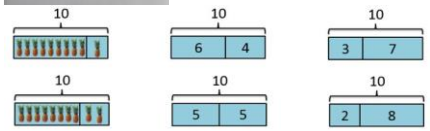
- Represent and use number bonds and related facts to 20
- Add one-digit and two-digit numbers to 20, including zero.
- Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as 9 = 4 + □
- Modelling of commutative layout. (3+6 =9, 6+3 =9)

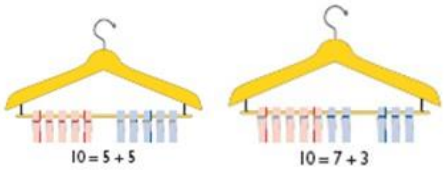
Progression in Addition at Wrekin View

Concrete	Pictorial	Abstract
Numicon  **Ten frames**  **Multi-link**   **Number bonds** Use bonds of 10 to calculate bonds of 20.	**Doubles**  Use pictures to add two numbers together.  **Count on**  Count on, on number lines in 1s **Develop knowledge of fact families**   	**Whole – part model** Use the part-whole model to move into the abstract  Fill in the missing number.   **Balance image for concept of equality.** 9 = 9 9 = 8 + 1 9 = 7 + 2 8 + 1 = 7 + 2  10 = 10 10 = 8 + 2 10 = 6 + 4 8 + 2 = 6 + 4 

Happy, successful, curious communicators







We have 10 pegs on the coathangers, how can we split them into 2 groups? Is there another way? How can we be sure we have got them all?

Pattern spotting

Use the pattern to complete the number sentences.

2 + ☐ = 10	10 - ☐ = 3
5 + ☐ = 10	10 - ☐ = 9
☐ + 4 = 10	10 – 0 = ☐

10 = 3 + 7	20 = 3 + 17
10 = 7 + 3	20 = 17 + 3
10 – 7 = 3	20 – 3 = 17
10 – 3 = 7	20 – 17 = 3

Year 2

Basic mathematical vocabulary

+, add, addition, more, plus make, sum, total, altogether, score, double, near double, one more, two more... ten more... one hundred more, how many more to make…? how many more is… than…? how much more is…?

Progression in Addition at Wrekin View

Instructional vocabulary

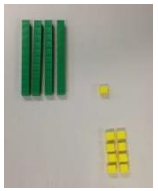
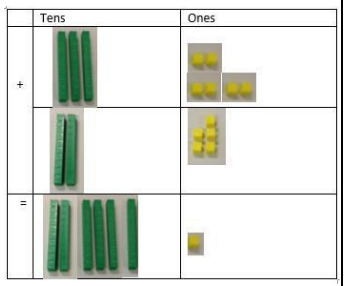
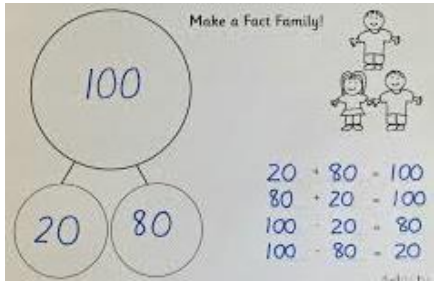
tell me, describe, name, pick out, discuss, talk about, explain, explain your method, explain how you got your answer, give an example of… show how you…

National curriculum link

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Objectives:

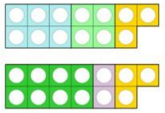
- Recall and use addition facts to 20 fluently, and derive and use related facts up to 100
- Understand that addition of two numbers can be done in any order (commutative).
- Recognise and use the inverse relationship between addition and subtraction to check calculations and solve missing number problems
- Add 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 and adding three one-digit numbers.

Concrete	Pictorial	Abstract
Base 10   All answers to be recorded in a number sentence following any informal recording. **Adding 3 one-digit numbers together**	**Pictorial representation of Base 10** Fact Families  9+1=10 1+9=10 100 = 80 + 20 100 = 20 + 80	**Recognising the equals sign in different positions** 7 + 8 = 15 15 = 8 + 7 **If I add zero to any number, the number stays the same.** 16 + 0 = 16 **Partition and recombine** Record partitioned steps in number sentences then add mentally. 34 + 23 = 57 30 + 20 = 50 4 + 3 = 7 Moving on to: 40+20=60 6+7 =13

Happy, successful, curious communicators

Progression in Addition at Wrekin View

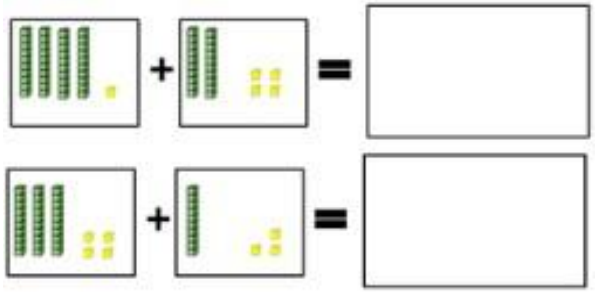
$6 + 3 + 4$
is the same as
$8 + 3 + 2$



Strategy to include looking for facts or bonds that are useful e.g., bonds up to and including 10, doubles or adding 10 to a given number. Ensure thinking is recorded.

Regrouping

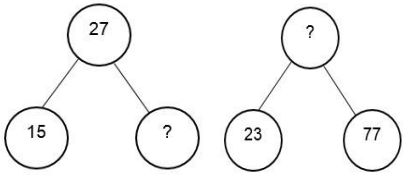
Bead strings to show how regrouping can make addition simpler. For example, 9 + 3 regrouped into 10 + 2



Whole-part model

27	
15	?

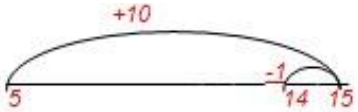
100	
23	77



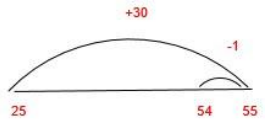
Fill in the missing numbers

Adjustment strategy

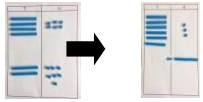
5 + 9 =
5 + 10 – 1= 14



25 + 29 =
25 + 30 – 1 = 54
(Round and adjust)



60+13=73 Moving on to:
46 + 27 = 60 + 13 = 73

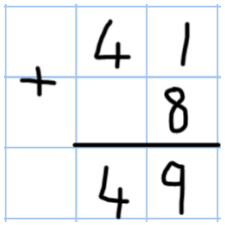


Regrouping the 10.

Re-arranging a calculation

$4 + 7 + 6 = \boxed{10} + \boxed{7}$
10
$= \boxed{17}$

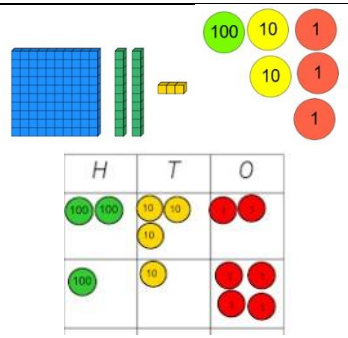
Column method



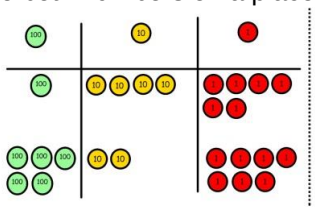
Children develop an understanding of the importance place value plays in using the column method correctly.

Happy, successful, curious communicators

Year 3		
Basic mathematical vocabulary +, add, addition, more, plus, make, sum, total, altogether, score, double, near double, one more, two more... ten more... one hundred more, how many more to make…? how many more is… than…? how much more is…? **Instructional vocabulary** explain your method, explain how you got your answer, give an example of… show how you… show your working		
National curriculum link Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction **Objectives:** • Estimate the answer to a calculation and use the inverse operation to check the answer. • To solve problems involving missing numbers, using number facts, place value, and more complex addition. • Use the formal written method of column addition to add numbers. • To add numbers mentally, including: a three-digit number and ones, a three-digit number and tens and a three – digit number and hundreds.		
Concrete	**Pictorial**	**Abstract**
Base 10 and place value counters Place value materials to represent 3-digit numbers 132 + 114	**Bar modelling** After practically using the base 10 blocks and place value counters, children can use bar models to represent the addition.	**Coloumn method - Expanded method first.** Start with least significant digit. No crossing of boundaries in the first instance (regrouping) 24 + 53 7 (4 + 3) + 70 (20 + 50) 77 Moving into..

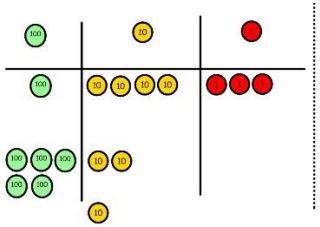


Make both numbers on a place value grid



146
+ 527

Add up the units and exchange 10 ones for one 10



146
+ 527

Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added.

?		
120	132	260

Use concrete or pictorial to support children's mental recall and understanding of near doubles and using known facts.

Near doubles

70 + 70 =
Double 7 = 14 then apply place value
10 times bigger = 140
150 + 152
150 + 150 = 300 then +2

Using known facts

4 + 8 = 12
40 + 80 = 120
So, 400 + 800 = 1200

67 +
24
11 (7+4)
+ 80 (60+20)
91
"7 add 4 equals 11 and 60 add 20 equals 80. 1+ 0 = 1 and 1 ten + 8 tens = 9 tens"

Column method

Once the children are confident in the expanded form move on to introducing the partitioning column method with numbers that do not bridge so children become confident with the method itself.

116 + 343= 459

343
+ 116
459

Once the method is secure, children are now ready to be introduced to 'carrying' which happens when bridging in the column method. Make sure children add the units first and 'carry' numbers are placed under the line.

245 + 84 = 329

245
+ 84
329
1

This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100.		

Year 4

Basic mathematical vocabulary

add, addition, more, plus, increase, sum, total, altogether, score, double, near double, how many more to make…?

Instructional vocabulary

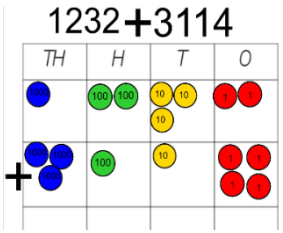
calculate, work out, solve, investigate, question, answer, check, justify, clarify, explain

National curriculum link

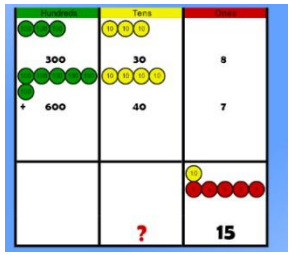
Add and subtract numbers with up to 4 digits using the formal written method of columnar addition and subtraction where appropriate.
Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Objectives:

- Add numbers up to 4 digits using formal written methods of columnar addition.
- Estimate and use inverse operations to check answers to a calculation.
- Solve two-step addition problems in contexts, deciding which operation and method to use and why.
- Use column addition in the context of measures including decimals.

Concrete	Pictorial	Abstract
Place value materials to represent calculations. Crossing a boundary 	After practically using the base 10 blocks and place value counters, children can use bar models to represent the addition. 	**Embedding Columnar addition method** 587 +475 1062 1 1 **Reminder: Ensure the correct vocabulary is used when discussing the steps of columnar addition.**

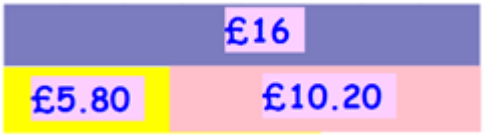
Progression in Addition at Wrekin View

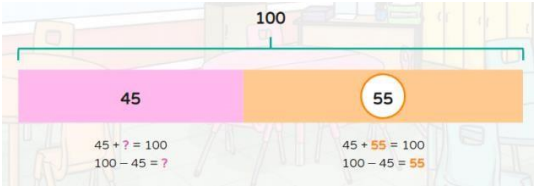


Use place value arrow cards to ensure that partitioning is understood.

6509 + 2170 = _____

1890 - 362 = _____





Using known facts
using
4 + 8 = 12
40 + 80 = 120
400 + 800 = 1200
4000 + 8000 = 12,000

"7 add 5 equals 12. That's 2 ones and 1 ten to carry over. 80 add 70 equals 150 and the 1 ten to carry makes 160. That's 6 tens and 100 to carry over. 500 add 400 equals 900 and the 1 hundred to carry makes 1000"

```
   7648
 + 1486
   9134
   1 1 1
```

Columnar addition (decimals) in contexts such as money and measurement

```
12.45
7.36
 + 24.50
   44.31
 1  1  1
```

Once confident with the method, analytical opportunities should be offered.

Calculation	Error	Correct solution
1 4 8 2 + 6 7 2 8 2 0 2		

Happy, successful, curious communicators

		Find the missing numbers in these calculations. $\begin{array}{r} 4\,\square\,3 \\ +\ 2\ 6\,\square \\ \hline \square\ 2\ 1 \\ \hline \end{array}$ **Representing problems** There are 259 more boys than girls in Lucy's school. If there are 789 girls, how many pupils are there altogether?

Year 5

Basic mathematical vocabulary

Add, addition, more, plus, increase, sum, total, altogether, score, double, near double, how many more to make…?

Instructional vocabulary

Put, place, arrange, rearrange, change, change over, split, separate

National curriculum link

Add and subtract numbers with up to 4 digits using the formal written method of columnar addition and subtraction where appropriate.
Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

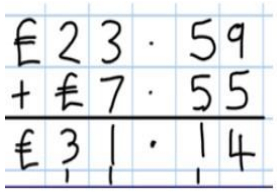
Objectives:

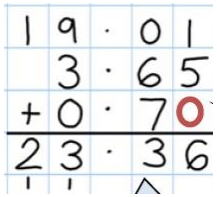
- Add numbers up to 4 digits using formal written methods of columnar addition.
- Add number mentally with increasingly larger numbers. (12,462 + 2300 = 14,762)
- Solve multi-step addition problems in contexts, deciding which operation and method to use and why.
- Use column addition in the context of measures including decimals.

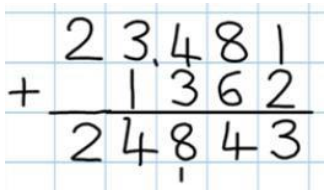
Columnar addition

Include calculations involving more than 2 numbers and carrying figures >1.

```
  25567
  16397
+ 15984
  57948
  1 1 2 1
```







124.9 + 7.25=

```
  124.90
+   7.25
  132.25
    1 1
```

Remember!

1) It is important that children say 6 tenths add 7 tenths so they understand that they are adding part of a number and not a whole number

2) Empty boxes should be filled with a zero to show the value of that place

Include calculations with ‘empty columns’ that require zero placeholders.

Representing problems

If 2541 is the answer, what’s the question? - Can you create three addition calculations? - Can you create three subtraction calculations? - Did you use a strategy?

Year 6

Basic mathematical vocabulary

Add, addition, more, plus, increase sum, total, altogether, score, double, near double, how many more to make…?

Instructional vocabulary

Put, place, arrange, rearrange, change, change over, adjusting, adjust, split, separate, carry on, continue, repeat, what comes next?
Predict, describe the pattern, describe the rule, find, find all, find different, investigate

National curriculum link

Solve problems involving addition, subtraction, multiplication and division.

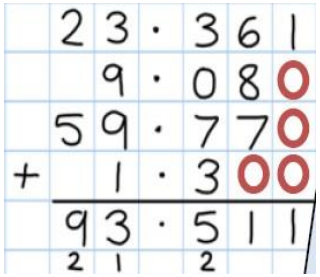
Objectives:

- 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 addition multi-step problems in contexts, deciding which operation and methods to use and why

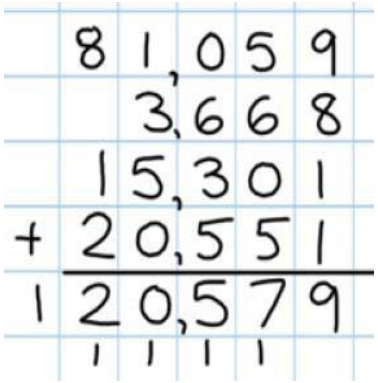
Columnar addition

Include calculations with up to 3 ‘empty columns.’
128.7 + 3.014

```
  128.700
+   3.014
  131.714
    1
```



Further examples of columnar addition



Children should continue to add multiple integers with 4 digits or more.

By the end of Year 6 the children should demonstrate greater fluency with the columnar method.