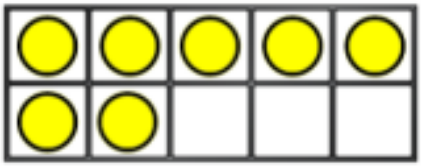
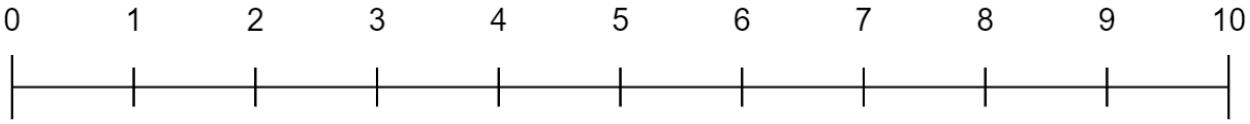
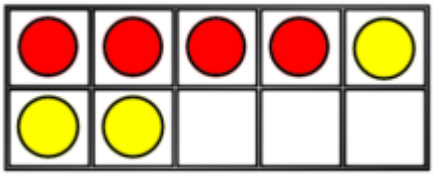
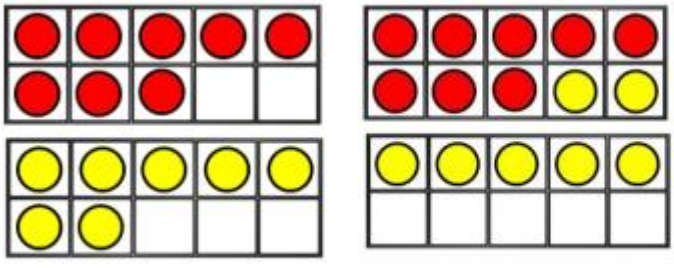
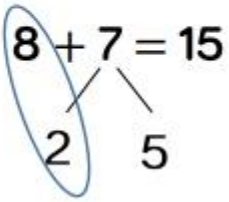
Parkwood Primary's Calculation Policy (Addition)

<table>
<tr><td>Vocabulary for Addition</td><td>Add
More
Plus
And
Make
Altogether
Total
Sum
Equal to
Equals
Double
Calculation</td><td>Most
Count on
Number line
Tens frame
Exchange (note: do not use 'carrying')
Hundred thousand
Ten thousand
Thousands
Hundreds
Tens</td><td>Ones
Number (made up of digits)
Digits
Inverse (opposite/from Year 3 onwards)
Estimate (from Year 3/round to estimate more accurately from Year 5 onwards)
Decimal point
Tenths
Hundredths
Thousandths</td></tr>
<tr><td>FS</td><td colspan="3">When exploring number related learning, use tens frames or simple number lines.
 
  </td></tr>
<tr><td>Year 1</td><td colspan="3">Add with numbers to 20, including zero.
Use tens frames so that children can visually represent the digits within the calculation.

4 + 3=
 

8 + 7 =
 
  </td></tr>
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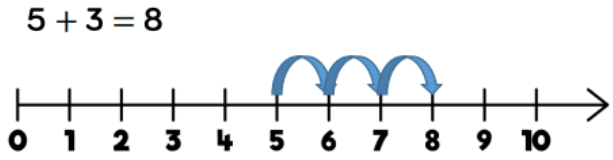
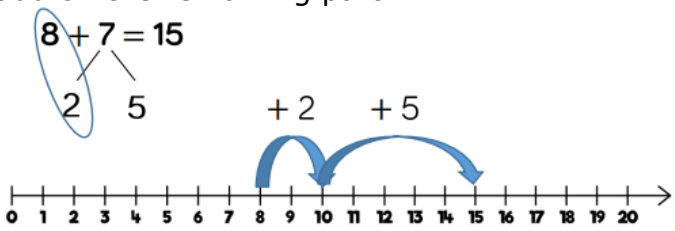
Year 1

Add with numbers to 20, including zero.

Use numbered number lines to add by counting on in ones. Encourage children to start with the larger number and count on.



Children can start by counting on in ones up the number line. Progressing further, children can add numbers by jumping to the nearest 10 and then jumping to the total. This links to the making 10 method which is supported by ten frames. The smaller number is partitioned to support children to make a number bond to 10 and to then add on the remaining part.



Note the following learning should be tackled using tens frames or number lines:

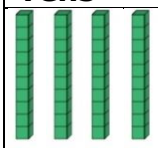
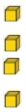
- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=).
- Solve one-step problems that involve addition and subtraction using concrete objects and pictorial representations, and missing number problems such as 7 = _ + 3

Year 2

Add a two-digit number and ones

- Children should be taught that addition is commutative.
- Answers should remain below 100.
- Use place value and base 10 as familiar manipulatives to solve addition calculations.

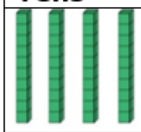
44 + 2 = 46

Tens	Ones
	
	
40	6

Children to add the ones and write their answer underneath. Then, write the amount of tens there are before combining to get their answer.

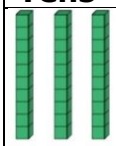
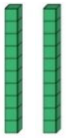
<table>
<tr>
<td>Year 2</td>
<td>
When the number of ones exceeds 10, the ones should be exchanged for a 10. See below.

48 + 4 = 52

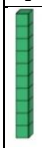
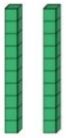
<table>
<tr><th>Tens</th><th>Ones</th></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td></td><td>  </td></tr>
<tr><td>50</td><td>2</td></tr>
</table>

</td>
</tr>
<tr>
<td>Year 2</td>
<td>
Add two-digit numbers and tens

34 + 20 = 54

<table>
<tr><th>Tens</th><th>Ones</th></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>  </td><td></td></tr>
<tr><td>50</td><td>4</td></tr>
</table>
Children to add the ones and then the tens before combining to get their answer.
</td>
</tr>
<tr>
<td>Year 2</td>
<td>
Add two two-digit numbers

14 + 22 = 36

<table>
<tr><th>Tens</th><th>Ones</th></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>30</td><td>6</td></tr>
</table>
When the number of ones exceeds 10, the ones should be exchanged for a 10. See below.
</td>
</tr>
</table>

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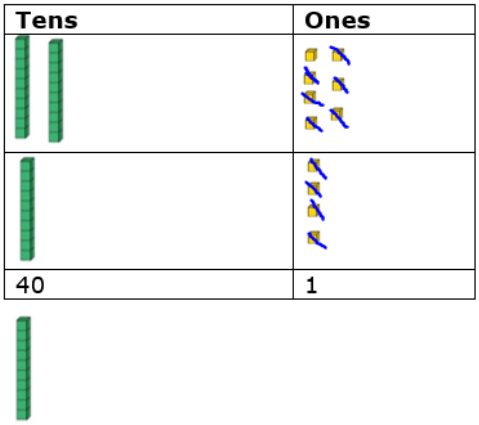
Year 2

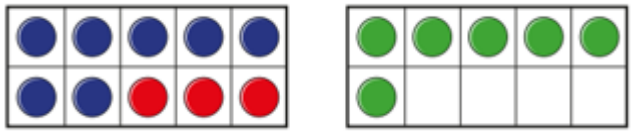
27 + 14 = 41



Add three one-digit numbers

- Chn to find the number bond to 10 and then add on the remaining ones.
- Use tens frames and counters to show the number bond and the remaining ones. See below.

7 + 6 + 3 =

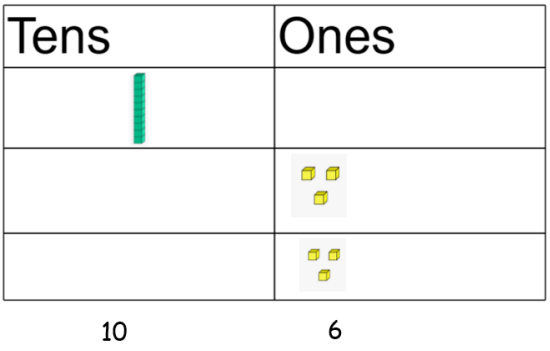


Year 2

Add two one-digit numbers to a 2-digit number

- Questions include a 2-digit number, plus two one-digit numbers
- Children also need to be able to add three two-digit numbers that are within the tens times tables e.g. 20 + 50 + 30 =

10 + 3 + 3 =

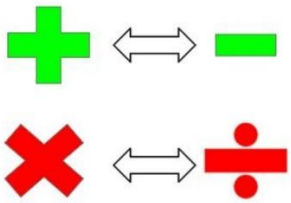


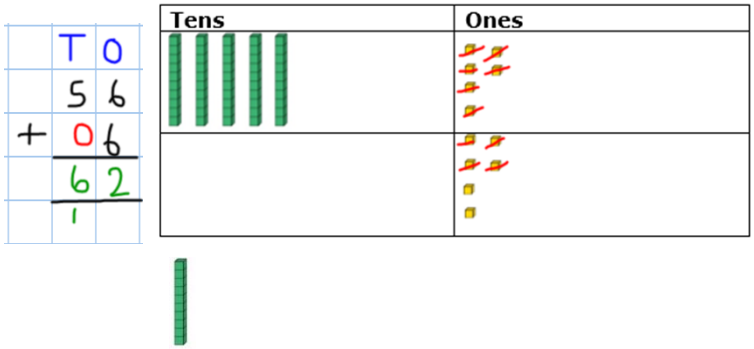
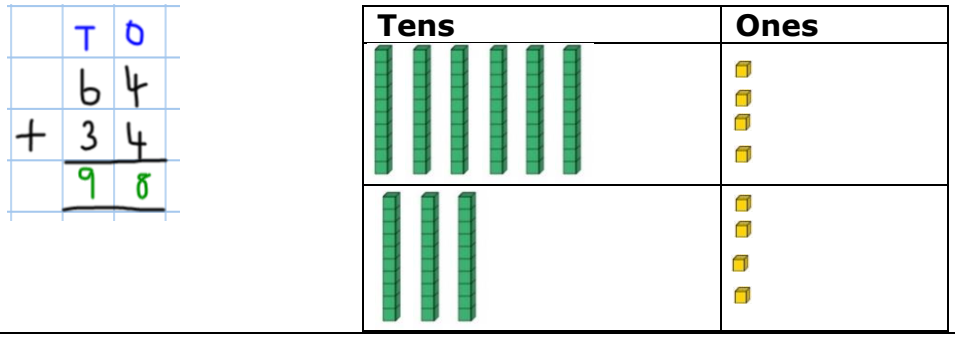
Add the ones and then write/add the amount of tens and combine to get their answer.

From Year 3 onwards, children should be actively encouraged to make an estimate before calculating.

Estimate	Calculate	Check (inverse can be used)

They should also be using the inverse as a way of checking answers from Year 3 onwards confidently (this learning begins in Year 2)



Year 3	**Add numbers with up to three digits using a formal written method (two-digit number add a one-digit number with one exchange)** **56 + 6=** Estimate: 50 + 6= 56 
Year 3	**Add numbers with up to three digits using a formal written method (two-digit number add a two-digit number with no exchange)** 64 + 34= Estimate: 60 + 30 = 90 

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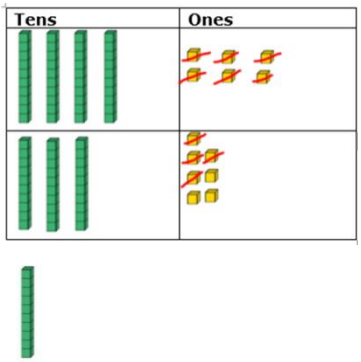
Year 3

Add numbers with up to three digits using a formal written method (two-digit number add a two-digit number with one exchange)

46 + 37= 83

Estimate: 40 + 30= 70

	T	O
	4	6
+	3	7
	8	3
	1	



Year 3

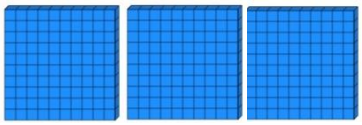
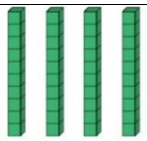
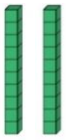
Add numbers with up to three digits using a formal written method (three-digit number add a two-digit number with no exchange)

342 + 24=

Estimate: 300 + 20 = 320

	H	T	O
	3	4	2
+	0	2	4
	3	6	6

Fill any gaps with a place holder (zero)

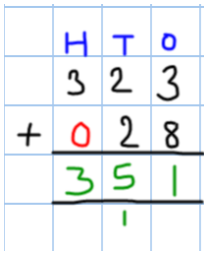
Hundreds	Tens	Ones
		
		

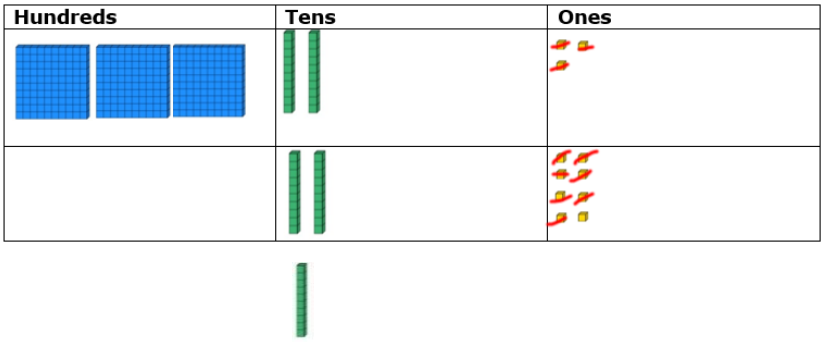
Year 3

Add numbers with up to three digits using a formal written method (three-digit number add a two-digit number with one exchange)

323 + 28=

Estimate: 300 + 20 = 320





Any gaps should be filled with a place holder (a zero).

When children show good confidence with one exchange, add in more than one exchange.

Children should be exposed to a variety of questions that involve numbers made up of a different number of digits (up to 3 digits) and it should be reinforced that addition can be done in any order.

463 + 633 =
633 + 463=
_____= 633+463
_____= 633+463

35 + 753=
753+ 35=
_____= 753 + 35
_____= 35 + 753

6 + 435 =
435 + 6=
____= 435 + 6
____= 6 + 435

Year 4

Add with up to four-digit numbers using a formal written methods using column addition

From Year 3 onwards, children should be actively encouraged to make an estimate before calculating.

Estimate	Calculate	Check

1264 + 453=

Estimate: 1200 + 500= 1700

Th	H	T	O
1	2	6	4
0	4	5	3
1	7	1	7
	1		

Any gaps should be filled with a place holder (0)

Children should be exposed to a variety of questions that involve numbers made up of a different number of digits (up to 4 digits) and it should be reinforced that addition can be done in any order.

4634 + 6332 =
6332 + 4634=
_____= 6332+4634
_____= 6332+4634

353 + 7532=
7532+ 353=
_____= 7532 + 353
_____= 353 + 7532

64 + 4353 =
4353 + 64 =
___= 4353 + 64
___= 64 + 4353

Year 5 and Year 6

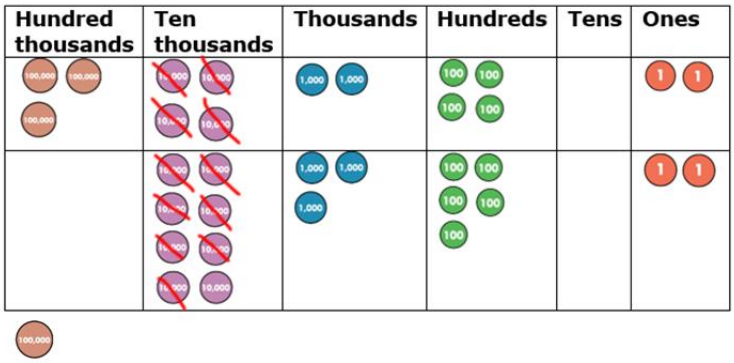
Add numbers with more than four digits, including using formal written methods

From Year 3 onwards, children should be actively encouraged to make an estimate before calculating.

Estimate	Calculate	Check

*Estimates should be more accurate from Year 5 onwards as the children should be confidently using their rounding skills.

342, 402 + 83, 532= 415, 904
Estimate: 300,000 + 80,000= 380,000

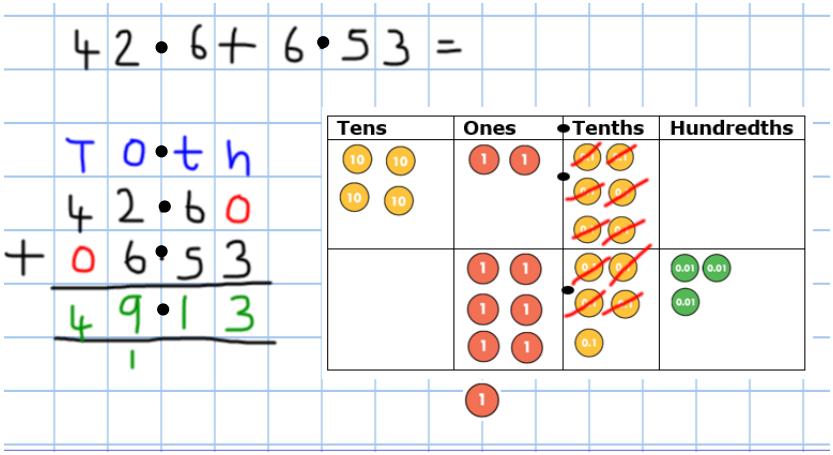


When the children can confidently explain the process of exchanging, the visual representation can be removed.

Year 5 and Year 6

Solve problems involving numbers with up to three decimal places

42.6 + 6.53=
Estimate: 40 - 7= 33



An emphasis needs to be placed on lining up decimal points up. This will help to get the digits in the correct place value columns. Also, the decimal point should sit on the line and not be given a column of its own.

When the children can confidently explain the process of exchanging, the visual representation can be removed.

Foundation Stage:

Mathematics

Number ELG

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.

Year 1

Statutory requirements

Pupils should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- 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.

Year 2

Statutory requirements

Pupils should be taught to:

- 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
- 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 addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Year 3:

Statutory requirements

Pupils should be taught to:
▪ add and subtract numbers mentally, including:
  ▪ a three-digit number 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.

Year 4:

Statutory requirements
Pupils should be taught to: ▪ 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.

Year 5:

Statutory requirements
Pupils should be taught to: ▪ add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) ▪ add and subtract 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 and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

- solve problems involving number up to three decimal places

Year 6

Parkwood Primary School

Statutory requirements

Pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-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 two-digit number using the formal written method of short division where appropriate, 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 addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why