Calverton Primary School Calculation Policy Subtraction
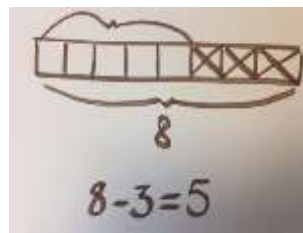
Subtraction Year 1

CPA Approach
(Concrete, pictorial, Abstract)

Understand subtraction as crossing out (take-away) (within 20):
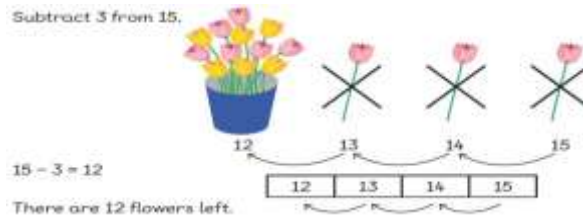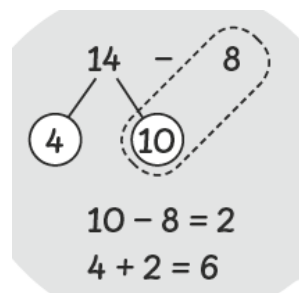
7 – 2 = 5

8 – 3 = 5

Using knowledge of number bonds to subtract (within 20):

Understand subtraction as counting back (within 20):

Use concrete objects and pictorial representations. Progress from using number lines with every number shown to number lines with significant numbers shown.

4   –   3   =   1
whole   part   part

Subtract 3 from 15.

15 – 3 = 12

There are 12 flowers left.

Partitioning to subtract

Children should be able to separate 2 digit numbers to subtract from the tens then add the leftover ones.

$14 - 8$

$10 - 8 = 2$
$4 + 2 = 6$

Ensure doing this time you are counting backwards in steps as well as counting forwards

Missing number problems e.g.

7 = □ – 9
20 – □ = 9
15 – 9 = □
□ – □ = 11

Vocabulary

Subtraction, Subtract, Take Away, Minus, Less, Backwards,
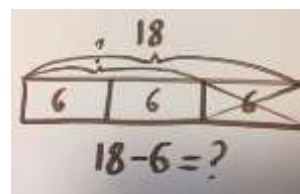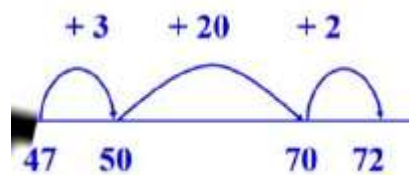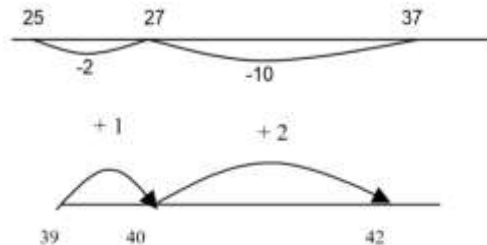
Subtraction Year 2

**CPA Approach
(Concrete, Pictorial, Abstract)**

Recall and use subtraction facts to 20 fluently

It is valuable to use a range of representations (also see Y1). Continue to use Base Ten, number lines, ten frames and objects to model take-away and difference.

The link between the two may be supported by an image like this, with 47 being taken away from 72, leaving the difference, which is 25.
Using number lines that do not need to go to 0

Bar Modelling by crossing out from the total

Towards written methods within 100

Record addition and subtraction in columns, the numbers may be represented with objects and pictorial representations. E.g. 23 – 5. Progress to renaming (borrowing).

Missing number problems, including use of inverse relationships

18 - 6 = ?

Regroup 1 ten into 10 ones.
Subtract the ones.
13 ones – 5 ones = 8 ones
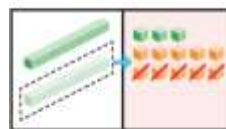
52 – 8 = □
□ – 20 = 25
22 = □ – 21
6 + □ + 3 = 11

Vocabulary

Subtraction, Subtract, Take Away, Minus, Less, Backwards, inverse

Subtraction Year 3

**CPA Approach
(Concrete, pictorial, Abstract)**

Mental methods

Should continue to develop, supported by a range of models and images, including the number line Children should make choices about which strategy to use, depending on the numbers involved.

This will **lead** to renaming (borrowing), modelled using place value counters or Base Ten

Bar Model

To show visualisation of subtraction problem

Written methods (progressing to 3-digits)

Continue to model column subtraction with no renaming (Regrouping/decomposition), modelled with objects such as place value counters, Numicon and Base ten.

3 digit - 3 digit with tens value in subtrahend being greater – exchange from hundreds (no zero place values **)**

Missing number problems, including use of inverse relationships e.g.

$8 - 6 = 2$

334
- 153
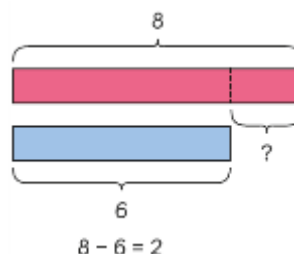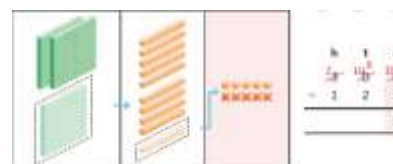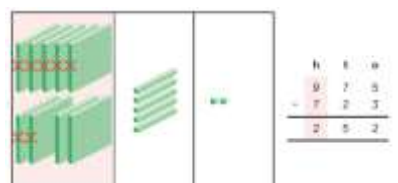
□ = 43 – 27
145 – □ = 138
274 – 30 = □
245 – □ = 195
532 – 200 = □
364 – 153 =

Vocabulary

Subtraction, Subtract, Take Away, Minus, Less, Backwards, inverse
Subtrahend (amount being taken away) Minuend (the quantity from which another will be subtracted) Difference.

Subtraction Year 4

**CPA Approach
(Concrete, pictorial, Abstract)**

Mental methods (within 10,000)

Children should continue to develop, supported by a range of models and images, including partitioning.

Bar Model
To support the visualisation of subtraction. The missing element as a question mark

boys 358
girls 128 difference **?**

Written methods (progressing to 4-digits & 1 dp)

Continue to use column subtraction modelled with place value counters, objects, pictorial representations and the Bar Method (See Appendix 1)

$$\begin{array}{r} 3437 \\ - 2016 \\ \hline 1421 \end{array}$$

Extend to numbers with at least four digits, including renaming between various columns (borrowing).

$$\begin{array}{r} 5\ 2\ \overset{7}{\cancel{8}}\ \overset{10}{\cancel{0}} \\ - 3\ 1\ 6\ 9 \\ \hline 2\ 1\ 1\ 1 \end{array}$$

Use place value counters to explore compensation method

Select and use different methods to solve word problems,

Involve two step problems in context.
Missing number/digit problems, including use of inverse relationships:

200 – 90 – 80 = ☐
225 – ☐ = 150
☐ – 25 = 67
☐ – 2000 = 900

Vocabulary
Subtraction, Subtract, Take Away, Minus, Less, Backwards, inverse
Subtrahend (amount being taken away) Minuend (the quantity from which another will be subtracted) Difference.
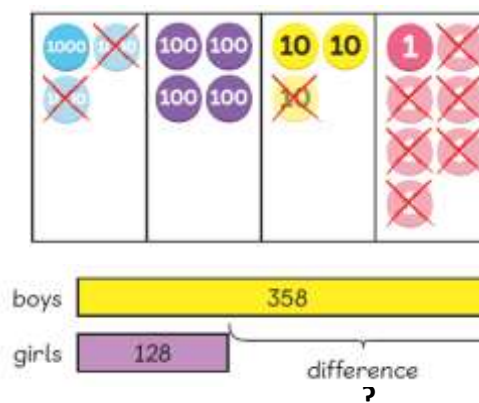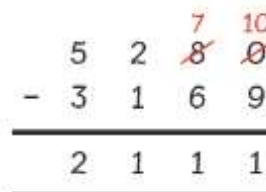
Subtraction Year 5

CPA Approach
(Concrete, pictorial, Abstract)

Mental methods (within 1 000 000) should continue to develop, supported by a range of models and images, including partitioning.

Written methods (progressing to more than 4-digits)
As in Year 4, continue to use place value counters to support understanding of decomposition (renaming/borrowing) in formal written method.
E.g. 96 420 – 87 531 =

Continue to select and use different methods to solve word problems, involving two step problems in context.

Bar Model to support problem solving
Use of bar model for missing number problems; questions with more than one answer; Numbers involving negatives.

Missing number/digit problems:

6.45 = 6 + 0.4 + □;
119 - □ = 86; 1 000 000 - □ = 999 000;
600 000 + □ + 1000 = 671 000; 12 462 – 2 300 =
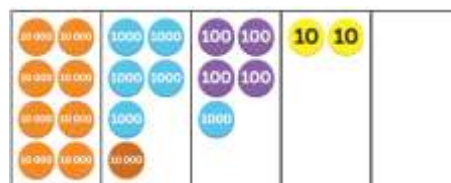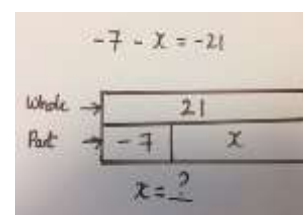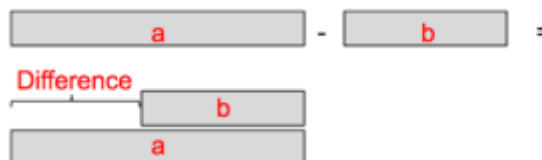
Vocabulary
Subtraction, Subtract, Take Away, Minus, Less, Backwards, inverse
Subtrahend (amount being taken away) Minuend (the quantity from which another will be subtracted) Difference

Subtraction Year 6

**CPA Approach
(Concrete, pictorial, Abstract)**

Mental methods

should continue to develop, supported by a range of models and images,

Written methods Alongside visual methods such as Bar Modelling

As in Year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue to model with place value counters, objects, pictorial representations and the Bar Method.
Continue calculating with decimals, including those with different numbers of decimal places, and develop procedural fluency with decomposition (Regrouping) to be secured.

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Problem Solving

Teachers should ensure that pupils have the opportunity to apply their knowledge in a variety of contexts and problems (exploring cross curricular links) to deepen their understanding

Bar Model

place value in decimal numbers

0.62
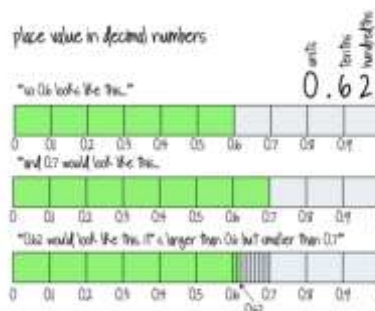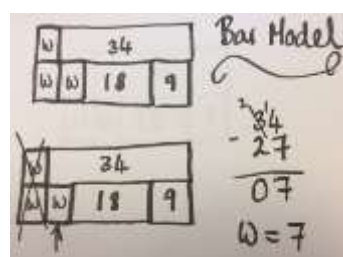
3/4 of 64 - 1/8 of 64 =

Vocabulary
Subtraction, Subtract, Take Away, Minus, Less, Backwards, inverse
Subtrahend (amount being taken away) Minuend (the quantity from which another will be subtracted) Difference, Zero digit

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Micro Steps

The year group markings relate to Mental Arithmetic sessions.
To be used also in planning where appropriate to learning

1. 2 digit - 2 digit Where no exchange required E.g. 67-32	35 24 - 24 +11 11 35	Year 3 Term 1
2. 3 digit - 3 digit Again no exchange required E.g. 476 - 354	926 815 -815 + 111 111 926	Year 3 Term 1
3. As above for pairs of numbers with 4 or more digits (each number same number of digits). No exchange E.g. 87567 – 26312	58964 24412 - 34552 +34552 24412 58964	Year 3 Term 1	Year 3 Term 3 Greater depth
4. 3 digit - 2 digit (checking place value alignment only). No exchange E.g. 459 – 27	587 563 - 24 + 24 563 587	Year 3 Term 3
5. As above involving pairs of numbers were the subtrahend is one digit shorter in place value. No exchange E.g. 8392 - 211	5853 5431 - 422 + 422 5431 5853	Year 3 Term 3	Year 3 Term 5 Recap on Learning
6. As above involving pairs of numbers were the subtrahend is two digit shorter in place value. No exchange E.g. 85673 - 421	32245 - 112	Year 3 Term 3	Year 3 Term 5 Greater Depth
7. Repeat steps above including decimal numbers with no exchanging E.g. 7.8 – 1.5	7.9 2.8 -2.8 +5.1 5.1 7.9	Year 3 Term 5

Assessment of stages 1-7
Children to work from Step appropriate if not met attainment

8. 2 digit - 2 digit with unit value in subtrahend being greater – exchange from tens. (no zero place values) E.g. 47 - 19	84 65 -65 +19 19 84	Year 3 Term 5

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9. 3 digit - 3 digit with unit value in subtrahend being greater – exchange from tens. (no zero place values) E.g. 456 - 139	234 -11**5**	**Year 3 Term 5**	
10. 3 digit - 3 digit with tens value in subtrahend being greater – exchange from hundreds (no zero place values) E.g. 348 - 153	334 - 1**5**3	**Year 3 Term 5**	**Year 4 Term 1 Recap on Learning**
11. 3 digit - 3 digit with units and tens value in subtrahend being greater – exchange from tens and hundreds. (no zero place values) E.g. 877 - 498	334 - 1**55**	**Year 4 Term 1**	
12. As above but when solution results in 0 being in hundreds column (no zero place values). E.g. 453 - 367	334 - 2**55** **0**79	**Year 4 Term 1**	**Year 4 Term 3 Recap on Learning**
13. 3 digit - 2 digits with value unit in subtrahend being greater (no zero place values). E.g. 456 - 38	334 - 1**5**	**Year 4 Term 1**	**Year Four Term 3 Greater Depth**
14. 3 digit – 2 digits with tens value in subtrahend being greater (no zero place values) E.g. 764 - 83	334 - **4**3	**Year Four Term 3**	**Year 4 Term 5 Recap on Learning**
15. 3 digit – 2 digits with units and tens value in subtrahend being greater (no zero place values) E.g. 234 - 58	334 - **55**	**Year Four Term 3**	**Year 4 Term 5 Greater Depth**
16. Repeat 13 – 15 with numbers involving 4 or more digits and the subtrahend having the same number or less digits (no zero place values). E.g. 4532 - 85	4334 - **15**	**Year 4 Term 5**	

Step	Example	Term	Recap
17. Repeat steps 8 – 16 but to include decimal numbers (no zero place values) E.g. 15.76 – 3.88	15.34 - 3.15	**Year 4 Term 5**	
Assessment of stages 8 – 17 **Children to work from Step appropriate if not met attainment**			
18. 3 digit – 3 digit where unit place value in both numbers are zero E.g. 760 - 450	0s 340 - 210	**Year 4 Term 5**	**Year 5 Term 1 Recap on Learning**
19. 3 digit – 3 digit where tens place value in both numbers are zero E.g. 506 - 203	T 304 -201	**Year 5 Term 1**	
20. As above where for any size numbers including decimals the zeros in place value align (must be the same number of decimal places in decimal cases) E.g. 14.06 – 1.03	3.04 - 2.01	**Year 5 Term 1**	**Year 5 Term 3 Recap on Learning**
21. 3 digit – 2 digit where a non-zero units digit in the subtrahend is aligned with a zero digit above, and there is always a non- zero digit in the tens place value E.g. 340 - 26	U 350 - 24	**Year 5 Term 3**	
22. 3 digit – 2 digit where a non-zero units digit in the subtrahend is aligned with a zero digit above, and there is always a non- zero digit in the hundreds place value E.g. 207 - 32	T 305 - 24	**Year 5 Term 3**	
23. 3 digit – 2 digit where the units digit in the subtrahend is greater and a non-zero tens place value in the subtrahend is aligned with a zero tens digit above E.g. 201 - 32	TU 302 - 34	**Year 5 Term 3**	
24. 3 digit – 2 digit where the units and tens digit in the subtrahend are both aligned with zeros above. E.g. 300 -57	500 - 34	**Year 5 Term 5**	

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25. 4 digits – 3 digits where the non-zero values in the tens and hundreds place values in the subtrahend both align with zeros above the units place value in the subtrahend is smaller E.g. 4007 - 652	TU 3007 - 415	**Year 5 Term 5**		
26. 4 digits – 3 digits where the non-zero values in the tens and hundreds place values in the subtrahend both align with zeros above the units place value in the subtrahend is larger E.g. 1004 - 457	3007 - 419	**Year 5 Term 5**		
27. Repeat steps 18 – 26 using calculating change money contexts (forced two decimal places E.g. £10.00 - £1.23	£ 30.07 - 4.15	**Year 5 Term 5**	**Year 6 Term 1** **Recap On Learning**	
Assessment of stages 18 – 27 **Children to work from Step appropriate if not met attainment**				
28. Decimal with one decimal place subtract decimal where the subtrahend has 2 decimal places E.g. 3.4 – 1.27	2.3 -1.24	**Year 6 Term 1**		
29. Variations of step 28 to include whole number subtract decimal with one or more decimal places. E.g. 45 – 6.341	23 - 5.232	**Year 6 Term 1**		
Assessment of stages 28 - 29 **Children to work from Step appropriate if not met attainment**				

Calverton Primary School Calculation Policy Subtraction

Year Group Objectives for Subtraction

Year 1

Pupils should be taught to:

- read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- Subtract one-digit and two-digit numbers to 20, including zero
- Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.

Year 2

Pupils should be taught to:

- solve problems with 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 subtraction facts to 20 fluently, and derive and use related facts up to 100
- 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
- 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

Pupils should be taught to:

- Subtract numbers mentally, including:
  a three-digit number and ones
  a three-digit number and tens
  a three-digit number and hundreds
- Subtract numbers with up to three digits, using formal written methods of columnar 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 subtraction.

Calverton Primary School Calculation Policy Subtraction

Year 4

Pupils should be taught to:

- Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate
- Estimate and use inverse operations to check answers to a calculation
- Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why.

Year 5

Pupils should be taught to:

- Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)
- 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 subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
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Year 6

- Perform mental calculations, including with mixed operations and large numbers
- Use their knowledge of the order of operations to carry out calculations involving the four operations
- Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why Mathematics – key stages 1 and 2 40 Statutory requirements
- Solve problems involving subtraction
- Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.