

Subtraction Year 1

CPA Approach
(Concrete, pictorial, Abstract)

Understand subtraction as crossing out (take-away) (within 20):

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.

Partitioning to subtract

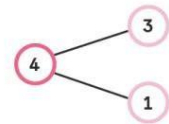
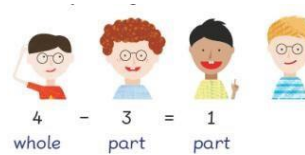
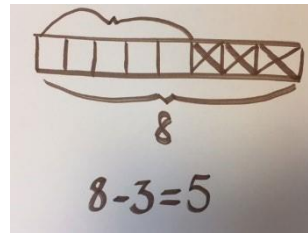
Children should be able to separate 2 digit numbers to subtract from the tens then add the leftover ones.

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

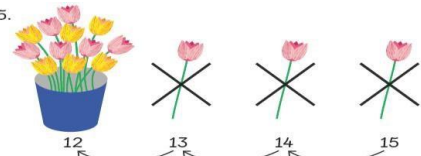
Vocabulary

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

$7 - 2 = 5$

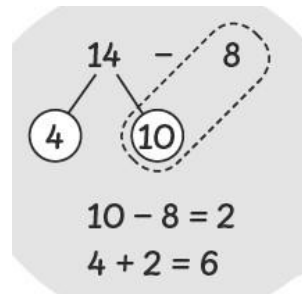
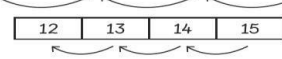


Subtract 3 from 15.



$15 - 3 = 12$

There are 12 flowers left.



Missing number problems e.g.

- $7 = \square - 9$
- $20 - \square = 9$
- $15 - 9 = \square$
- $\square - \square = 11$

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.

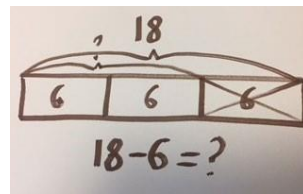
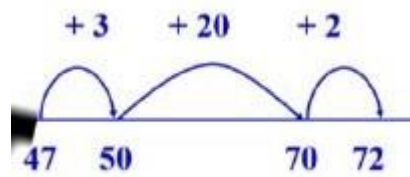
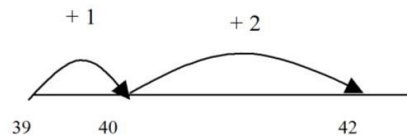
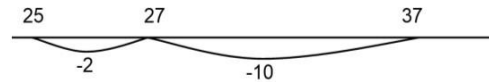
Using number lines that do not need to go to 0

Bar Modelling by crossing out from the total

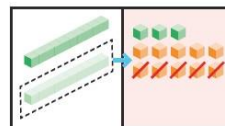
Towards written methods within 100

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



Regroup 1 ten into 10 ones.
Subtract the ones.
 $13 \text{ ones} - 5 \text{ ones} = 8 \text{ ones}$



	tens	ones
1	1	13
-		5
		8

$52 - 8 = \square$
 $\square - 20 = 25$
 $22 = \square - 21$
 $6 + \square + 3 = 11$

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

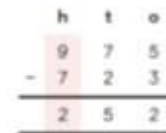
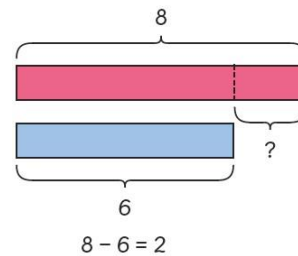
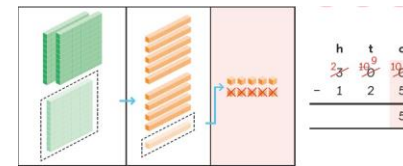
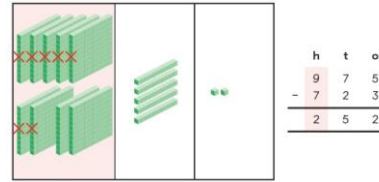
To show visualisation of subtraction problem

Written methods (progressing to 3digits)

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.



$$\begin{array}{r} 334 \\ - 153 \\ \hline \end{array}$$

- = 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

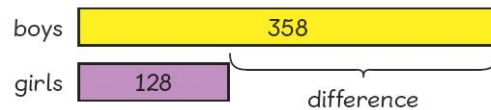
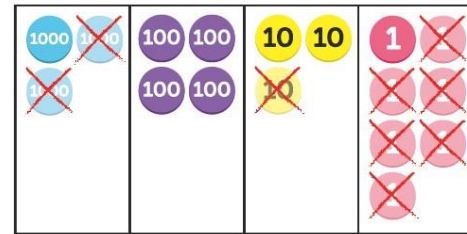
CPA Approach
(Concrete, pictorial, Abstract)

Mental methods (within 10,000)

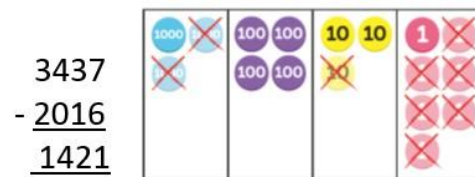
Children should continue to develop, supported by a range of models and images, including partitioning.

Bar Model

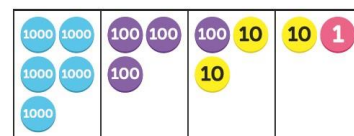
To support the visualisation of subtraction. The missing element as a question mark



?



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



$$\begin{array}{r}
 5 \quad 3 \quad \overset{12}{\cancel{2}} \quad \overset{11}{\cancel{1}} \\
 - 1 \quad \overset{2}{\cancel{2}} \quad \overset{4}{\cancel{4}} \quad 8 \\
 \hline
 \hline
 \end{array}$$

$$\begin{array}{l}
 200 - 90 - 80 = \square \\
 225 - \square = 150 \\
 \square - 25 = 67 \\
 \square - 2000 = 900
 \end{array}$$

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)

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

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:

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.

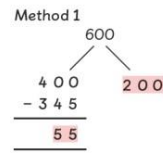
Bar Model to support problem solving

Use of bar model for missing number problems; questions with more than one answer; Numbers involving negatives.

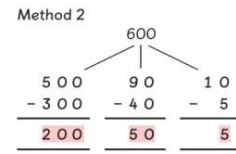
Missing number/digit problems:

$6.45 = 6 + 0.4 + \square;$
 $119 - \square = 86; 1\ 000\ 000 - \square = 999\ 000;$
 $600\ 000 + \square + 1000 = 671\ 000; 12\ 462 - 2\ 300 =$

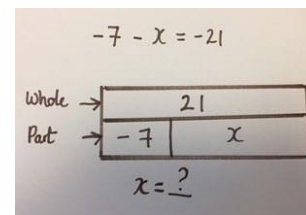
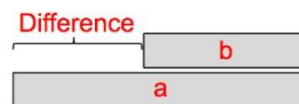
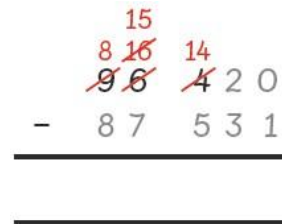
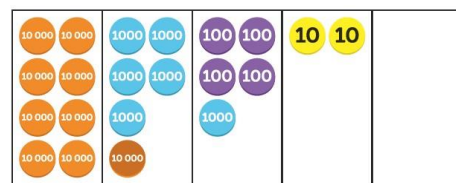
$600\ 000 - 345\ 000 =$



$600 - 345 = 200 + 55$



$600 - 345 = 200 + 50 + 5$



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

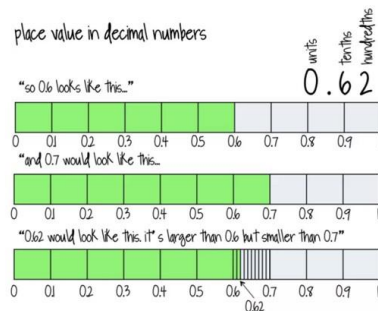
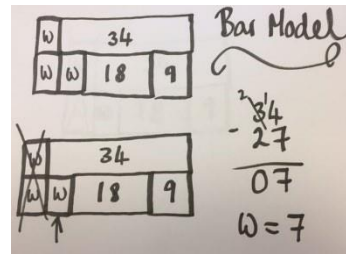
As in Year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with columnar method to be secured. Continue to model with place value counters, objects, pictorial representations and the Bar Method.

Continue calculating with decimals, including those with different numbers of decimal places, and develop procedural fluency with decomposition (Regrouping) to be secured.

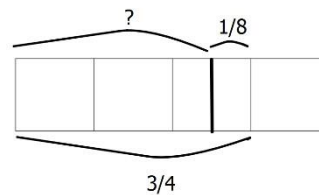
Problem Solving

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

$$\begin{array}{r}
 \text{£ } 1 \overset{14}{\cancel{5}} . \overset{9}{\cancel{0}} \overset{10}{\cancel{0}} \\
 - \text{£ } 1 \quad 3 \quad . \quad 4 \quad 5 \\
 \hline
 \text{£ } \quad \square . \quad \square \quad \square
 \end{array}$$



$$3/4 \text{ of } 64 - 1/8 \text{ of } 64 =$$



Micro Steps

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



<p>1. 2 digit - 2 digit Where no exchange required</p> <p>E.g. 67-32</p>	$\begin{array}{r} 35 \\ - 24 \\ \hline 11 \end{array} \quad \begin{array}{r} 24 \\ + 11 \\ \hline 35 \end{array}$	<u>Year 3 Term 1</u>	
<p>2. 3 digit - 3 digit Again no exchange required</p> <p>E.g. 476 - 354</p>	$\begin{array}{r} 926 \\ - 815 \\ \hline 111 \end{array} \quad \begin{array}{r} 815 \\ + 111 \\ \hline 926 \end{array}$	<u>Year 3 Term 1</u>	
<p>3. As above for pairs of numbers with 4 or more digits (each number same number of digits). No exchange</p> <p>E.g. 87567 – 26312</p>	$\begin{array}{r} 58964 \\ - 34552 \\ \hline 24412 \end{array} \quad \begin{array}{r} 24412 \\ + 34552 \\ \hline 58964 \end{array}$	<u>Year 3 Term 1</u>	<u>Year 3 Term 3 Greater depth</u>
<p>4. 3 digit - 2 digit (checking place value alignment only). No exchange</p> <p>E.g. 459 – 27</p>	$\begin{array}{r} 587 \\ - 24 \\ \hline 563 \end{array} \quad \begin{array}{r} 563 \\ + 24 \\ \hline 587 \end{array}$	<u>Year 3 Term 3</u>	
<p>5. As above involving pairs of numbers where the subtrahend is one digit shorter in place value. No exchange</p> <p>E.g. 8392 - 211</p>	$\begin{array}{r} 5853 \\ - 422 \\ \hline 5431 \end{array} \quad \begin{array}{r} 5431 \\ + 422 \\ \hline 5853 \end{array}$	<u>Year 3 Term 3</u>	<u>Year 3 Term 5 Recap on Learning</u>
<p>6. As above involving pairs of numbers where the subtrahend is two digit shorter in place value. No exchange</p> <p>E.g. 85673 - 421</p>	$\begin{array}{r} 32245 \\ - 112 \\ \hline \end{array}$	<u>Year 3 Term 3</u>	<u>Year 3 Term 5 Greater Depth</u>
<p>7. Repeat steps above including decimal numbers with no exchanging</p> <p>E.g. 7.8 – 1.5</p>	$\begin{array}{r} 7.9 \\ - 2.8 \\ \hline 5.1 \end{array} \quad \begin{array}{r} 2.8 \\ + 5.1 \\ \hline 7.9 \end{array}$	<u>Year 3 Term 5</u>	
<p>Assessment of stages 1-7</p> <p>Children to work from Step appropriate if not met attainment</p>			
<p>8. 2 digit - 2 digit with unit value in subtrahend being greater – exchange from tens. (no zero place values)</p>	$\begin{array}{r} 84 \\ - 65 \\ \hline 19 \end{array} \quad \begin{array}{r} 65 \\ + 19 \\ \hline 84 \end{array}$	<u>Year 3 Term 5</u>	



E.g. 47 - 19			
<p>9. 3 digit - 3 digit with unit value in subtrahend being greater – exchange from tens. (no zero place values)</p> <p>E.g. 456 - 139</p>	$\begin{array}{r} 234 \\ -115 \\ \hline \end{array}$	<u>Year 3 Term 5</u>	
<p>10. 3 digit - 3 digit with tens value in subtrahend being greater – exchange from hundreds (no zero place values)</p> <p>E.g. 348 - 153</p>	$\begin{array}{r} 334 \\ -153 \\ \hline \end{array}$	<u>Year 3 Term 5</u>	<u>Year 4 Term 1</u> <u>Recap on Learning</u>
<p>11. 3 digit - 3 digit with units and tens value in subtrahend being greater – exchange from tens and hundreds. (no zero place values)</p> <p>E.g. 877 - 498</p>	$\begin{array}{r} 334 \\ -155 \\ \hline \end{array}$	<u>Year 4 Term 1</u>	
<p>12. As above but when solution results in 0 being in hundreds column (no zero place values).</p> <p>E.g. 453 - 367</p>	$\begin{array}{r} 334 \\ -255 \\ \hline 079 \end{array}$	<u>Year 4 Term 1</u>	<u>Year 4 Term 3</u> <u>Recap on Learning</u>
<p>13. 3 digit - 2 digits with value unit in subtrahend being greater (no zero place values).</p> <p>E.g. 456 - 38</p>	$\begin{array}{r} 334 \\ -15 \\ \hline \end{array}$	<u>Year 4 Term 1</u>	<u>Year Four Term 3</u> <u>Greater Depth</u>
<p>14. 3 digit – 2 digits with tens value in subtrahend being greater (no zero place values)</p> <p>E.g. 764 - 83</p>	$\begin{array}{r} 334 \\ -43 \\ \hline \end{array}$	<u>Year Four Term 3</u>	<u>Year 4 Term 5</u> <u>Recap on Learning</u>
<p>15. 3 digit – 2 digits with units and tens value in subtrahend being greater (no zero place values)</p> <p>E.g. 234 - 58</p>	$\begin{array}{r} 334 \\ -55 \\ \hline \end{array}$	<u>Year Four Term 3</u>	<u>Year 4 Term 5</u> <u>Greater Depth</u>



<p>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).</p>	$\begin{array}{r} 4334 \\ - \quad 15 \\ \hline \end{array}$	<p><u>Year 4 Term 5</u></p>	
<p>E.g. 4532 - 85</p>			
<p>17. Repeat steps 8 – 16 but to include decimal numbers (no zero place values)</p> <p>E.g. 15.76 – 3.88</p>	$\begin{array}{r} 15.34 \\ - \quad 3.15 \\ \hline \end{array}$	<p><u>Year 4 Term 5</u></p>	
<p>Assessment of stages 8 – 17 Children to work from Step appropriate if not met attainment</p>			
<p>18. 3 digit – 3 digit where unit place value in both numbers are zero</p> <p>E.g. 760 - 450</p>	$\begin{array}{r} 0s \\ 340 \\ - 210 \\ \hline \end{array}$	<p><u>Year 4 Term 5</u></p>	<p><u>Year 5 Term 1</u> <u>Recap on Learning</u></p>
<p>19. 3 digit – 3 digit where tens place value in both numbers are zero</p> <p>E.g. 506 - 203</p>	$\begin{array}{r} T \\ 304 \\ - 201 \\ \hline \end{array}$	<p><u>Year 5 Term 1</u></p>	
<p>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)</p> <p>E.g. 14.06 – 1.03</p>	$\begin{array}{r} 3.04 \\ - 2.01 \\ \hline \end{array}$	<p><u>Year 5 Term 1</u></p>	<p><u>Year 5 Term 3</u> <u>Recap on Learning</u></p>
<p>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</p> <p>E.g. 340 - 26</p>	$\begin{array}{r} U \\ 350 \\ - 24 \\ \hline \end{array}$	<p><u>Year 5 Term 3</u></p>	



<p>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</p> <p>E.g. 207 - 32</p>	<p>T</p> $\begin{array}{r} 305 \\ - 24 \\ \hline \end{array}$	<p><u>Year 5 Term 3</u></p>	
<p>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</p> <p>E.g. 201 - 32</p>	<p>TU</p> $\begin{array}{r} 302 \\ - 34 \\ \hline \end{array}$	<p><u>Year 5 Term 3</u></p>	
<p>24. 3 digit – 2 digit where the units and tens digit in the subtrahend are both aligned with zeros above.</p> <p>E.g. 300 - 57</p>	$\begin{array}{r} 00 \\ 5 \ 34 \\ - \\ \hline \end{array}$	<p><u>Year 5 Term 5</u></p>	
<p>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</p> <p>E.g. 4007 - 652</p>	<p>TU</p> $\begin{array}{r} 3007 \\ - 415 \\ \hline \end{array}$	<p><u>Year 5 Term 5</u></p>	
<p>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</p> <p>E.g. 1004 - 457</p>	$\begin{array}{r} 007 \\ 3 \ 9 \\ - \\ \hline 4 \end{array}$	<p><u>Year 5 Term 5</u></p>	
<p>27. Repeat steps 18 – 26 using calculating change money contexts (forced two decimal places)</p> <p>E.g. £10.00 - £1.23</p>	$\begin{array}{r} £ 30.07 \\ - 4.15 \\ \hline \end{array}$	<p><u>Year 5 Term 5</u></p>	<p><u>Year 6 Term 1</u> <u>Recap On Learning</u></p>

Assessment of stages 18 – 27
Children to work from Step appropriate if not met attainment



<p>28. Decimal with one decimal place subtract decimal where the subtrahend has 2 decimal places</p> <p>E.g. 3.4 – 1.27</p>	$\begin{array}{r} 2.3 \\ - 1.24 \\ \hline \end{array}$	<p><u>Year 6 Term 1</u></p>
<p>29. Variations of step 28 to include whole number subtract decimal with one or more decimal places.</p> <p>E.g. 45 – 6.341</p>	$\begin{array}{r} 23 \\ - 5.232 \\ \hline \end{array}$	<p><u>Year 6 Term 1</u></p>
<p style="text-align: center;">Assessment of stages 28 - 29</p> <p style="text-align: center;">Children to work from Step appropriate if not met attainment</p>		

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.

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.
-



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.