Year 1
Addition and Subtraction

Objectives

- 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.

Key Skills

Addition

- Read and write numbers to 100 in numerals, incl. 1—20 in words.
- Recall bonds to 10 and 20, and addition facts within 20.
- Count to and across 100.
- Count in multiples of 1, 2, 5 and 10.
- Solve simple one-step problems involving addition, using objects, number lines and pictorial representations.

Subtraction

- Given a number, say **one more or one less.**
- Count to and over 100, **forward and back**, from any number.
- Represent and use **subtraction facts to 20 and within 20**.
- Subtract with **one-digit and two-digit** numbers to 20, including zero.
- Solve one-step problems that involve addition and subtraction, using concrete objects (i.e. bead string, objects, cubes) and pictures, and missing number problems.
- Read and write numbers from 0 to 20 in numerals and words.

Vocabulary

Addition
add, more, plus, and, put together, make, altogether, total, equal to, equals, double, most, count on, number line
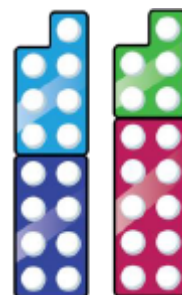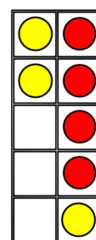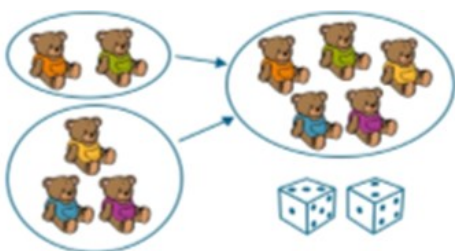
Subtraction
equal to, take, take away, less, subtract, leaves, difference, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_?
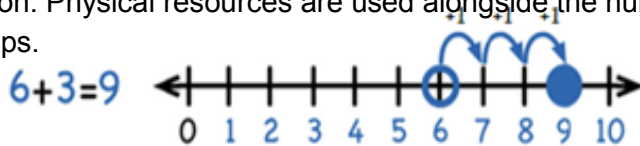
Year 1 Addition

Immerse children in practical opportunities to develop understanding of addition. Link practical representations on a number track and on a beadstring to then recording on a filled number line.

Add one-digit and two-digit numbers to 20 including 0

Use numbered number lines to add, by counting on in ones. Encourage children to start with the **larger** number and count on. Physical resources are used alongside the number line to support their understanding of the jumps.
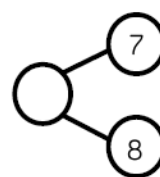
$$6+3=9$$

Beadstrings can be used to illustrate addition including bridging through 10 by counting

on 2 and then counting on 3.

$$8+5=$$

Children should:

- Have access to a wide range of counting equipment, everyday objects, number tracks and number lines, and be shown numbers in different contexts.
- Read and write the addition (+) and equals (=) signs within number sentences.
- Interpret addition number sentences and solve missing box problems, using concrete objects and number line addition to solve them: 8 + 3 = ☐; 15 + 4 = ☐; 5 + 3 + 1 = ☐; ☐ + ☐ = 6; 15 = ☐ + ☐

Number Family
By the end of Year 1 children should be able to recall and use facts within and up to 20

If we know 4 + 5 = 9
We also know:
5 + 4 = 9
9 - 5 = 4
9 - 4 = 5
14 + 5 = 19
19 - 14 = 5, etc.
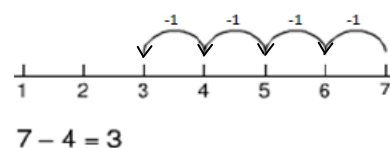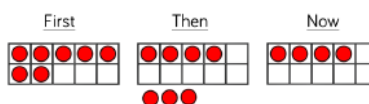
Year 1 Subtraction

Subtract from numbers up to 20

Immerse children in practical opportunities to develop understanding of subtraction. Link practical representations to a number track and on a beadstring, to then recording on a filled number line.

Subtracting by taking away

Consolidate understanding of subtraction practically before moving on to using number tracks then numbered number lines and hundred squares to subtract by counting back in ones and tens.

$7 - 4 = 3$

Beadstrings can be used to illustrate subtraction including bridging through 10 by counting back 3 and then back another 2.
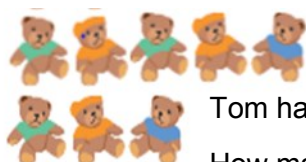
$13 - 5 = 8$

Find the 'difference between'

This should be introduced practically first with an emphasis on the language 'find the difference between' and 'how many more'.

Tom has 5 bears. Sara has 3 bears.

How many more bears does Tom have?

$17 - 12 = 5$

7 is 3 more than 4. I am 3 years older than my sister.

Number Families

By the end of Year 1 children should be able to recall and use facts within and to 20

If we know 4 + 5 = 9

We also know:

5 + 4 = 9

9 - 5 = 4

9 - 4 = 5

14 + 5 = 19

19 - 14 = 5, etc.

$10 - 6 = 4$

Subtract using patterns of known facts

Year 2
Addition and Subtraction

Objectives
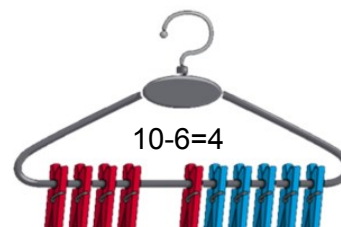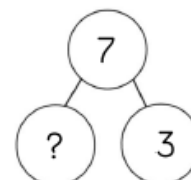- solve problems with addition and subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts 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.

Key Skills
Addition
- Add a 2-digit number and ones (e.g. 27 + 6).
- Add a 2-digit number and tens (e.g. 23 + 40).
- Add pairs of 2-digit numbers (e.g. 35 + 47) and add three single-digit numbers (e.g. 5 + 9 + 7).
- Show that adding can be done in any order (the commutative law).
- Recall bonds to 20 and bonds of tens to 100 (30 + 70 etc.).
- Count in steps of 2, 3 and 5 and count in tens from any number.
- Understand the place value of 2-digit numbers (tens and ones).
- Compare and order numbers to 100 using < > and = signs.
- Read and write numbers to at least 100 in numerals and words.
- Solve problems with addition, using concrete objects, pictorial representations, involving numbers, quantities and measures, and applying mental and written methods.

Subtraction
- Recognise the place value of each digit in a two-digit number.
- Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100.
- Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two-digit number and ones, a two-digit number and tens, and two two-digit numbers.
- Show that subtraction of one number from another cannot be done in any order.
- Recognise and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems.
- Solve simple addition and subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written methods.
- Read and write numbers to at least 100 in numerals and in words.

Vocabulary
Addition
add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary

Subtraction
equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back, how many left, how much less is_? difference, count on, strategy, partition, tens, units
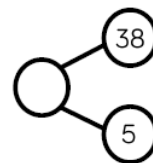
Year 2 Addition

Mental Strategies

Develop mental fluency with addition and place value involving 2-digit numbers, then establish more formal methods.

Use empty number lines and concrete equipment (Base 10, beadstrings, Numicon, hundred squares etc.) to build confidence and fluency in mental addition skills.
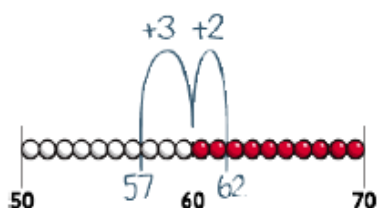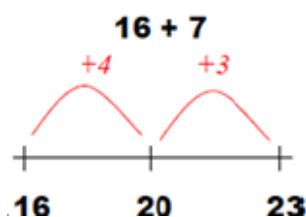
Bridge through 10 using known number facts
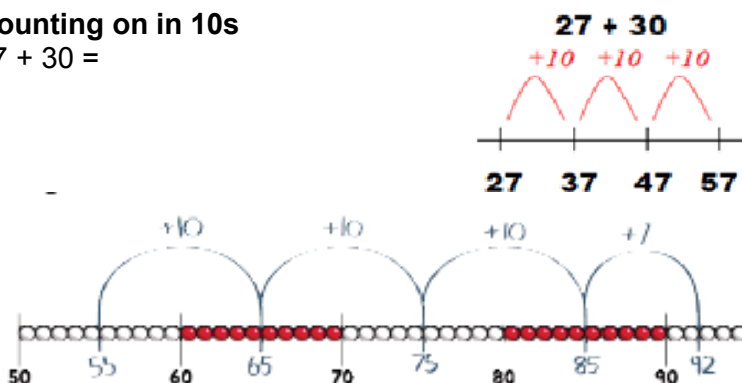
16 + 7 = 16 + 4 + 3
16 + 4 = 20
20 + 3 = 23

16 + 7
+4   +3
16   20   23

+3 +2
50   57   60 62   70

Counting on in 10s

27 + 30 =

27 + 30
+10 +10 +10
27   37   47   57

+10   +10   +10   +1
50   55   60   65   70   75   80   85   90 92

Number Family

If I know:
2+3 = 5
I also know:
3+2 = 5
20 + 30 = 50
30 + 20 = 50

Special Strategy
Rounding and adjusting

35 + 9 =

+10
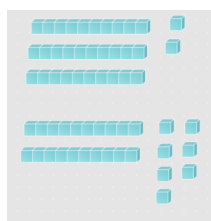35   44   45
                        -1

Written Strategies

Method 1: pictorial column method with and without regrouping (this is a pictorial method to develop the children's place value understanding).

Introduce method with answers that do not cross the tens or hundreds boundary. Dienes should be used alongside the pictorial representations with the support of a place value grid. The emphasis of this method is to develop a strong understanding of place value. Children are to use lines and dots to represent tens and ones.

Children are to draw a grid to represent the tens and ones and then transfer both numbers of the addition onto the grid, starting with the largest number first.

Example: 32 + 27 = 59

T	O
|||	. . .
||	. . . . .
5	9

If they are secure adding tens and ones, the teacher may choose to move individuals onto the extended column method.

Method 2: extended column method

Step 1: only provide examples that do NOT cross the tens boundary until they are secure with the method itself.

Step 2: once children can add a multiple of ten to a 2-digit number mentally (e.g. 80+11), they are ready for adding pairs of 2-digit numbers that DO cross the tens boundary (e.g. 58 + 43).

```
      5  8
  +   4  3
      1  1
      9  0
  1   0  1
```

Year 2 Subtraction

Mental Strategies

Develop mental fluency with subtraction and place value involving 2-digit numbers, then establish more formal methods.

Use empty number lines and concrete equipment (Base 10, beadstrings, Numicon, hundred squares etc.) to build confidence and fluency in mental subtraction skills.

Using Place Value

Know 1 less or 10 less than any number

E.g. 1 less than 74, 10 less than 82

Bridging through 10

52 - 6 as 52 - 2 then – 4 =46

Number Family
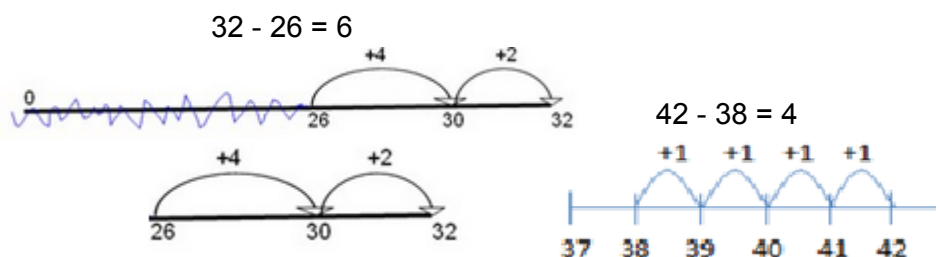
If I know: 5-3=2

I also know:

35-2=3

50 - 30 = 20

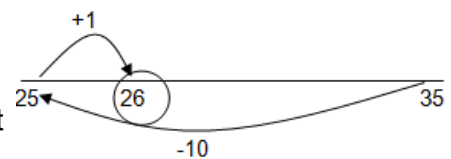50 - 20 = 30

Special Strategy - Counting on

Children are taught to recognise when numbers are close together it is more efficient to count on and find the difference.

32 - 26 = 6

42 - 38 = 4

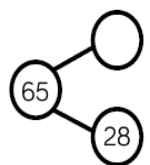### Special Strategy

Rounding and adjusting

- 9, - 11 35 - 9 = 26 model thought process as:

Written Strategies

Subtract pairs of 2-digit numbers using a pictorial column method with exchanging

Children should start by physically making and carrying out the calculation using Base 10, Numicon, hundred squares or other apparatus. When they are confident with the practical methods, they move onto a written, pictorial method for subtraction. Base 10 materials and place value grids should be used alongside the recorded method to ensure the children have a secure understanding of place value.

49 - 23 = 26

Step 1: Introduce the method with no need for exchanging

1. Draw a tens and ones column, and 'draw' the largest number into the correct columns using lines and dots.

2. Subtract the correct amount of ones by crossing them out and then subtract the tens.

3. Count the remaining tens and ones to find the answer.

47 - 29 = 18

For this method they must:

- Subtract the ones first and then the tens.

- Record their workings out in an organised way, with lines to represent the tens and dots to represent the ones.

Step 2—introduce the concept of exchanging

When children are confident, move onto calculations that involve exchanging. They are to see that they cannot take 9 ones from 7 ones, so they have to 'exchange' one ten for ten ones. They cross out the ten and draw ten ones in the ones column instead. For this method, they are to understand that one ten

Year 3
Addition and Subtraction

Objectives
- Add and subtract numbers mentally
- 3 digit number and 1s
- 3 digit number and 10s
- 3 digit number and 100s
- Add and subtract numbers with up to 3 digits using formal written methods of columnar addition and subtraction.
- Estimate the answer to a calculation and use inverse operations to check the answers
- Solve problems including, missing number problems, using number facts, place value, and more complex addition and subtraction

Key Skills

Addition
- Read and write numbers to 1000 in numerals and words.
- Add 2-digit numbers mentally, incl. those exceeding 100.
- Add a three-digit number and ones mentally (175 + 8).
- Add a three-digit number and tens mentally (249 + 50).
- Add a three-digit number and hundreds mentally (381 + 400).
- Estimate answers to calculations, using inverse to check answers.
- Solve problems, including missing number problems, using number facts, place value, and more complex addition.
- Recognise place value of each digit in 3-digit numbers (hundreds, tens, ones).
- Continue to practise a wide range of mental addition strategies, i.e. number bonds, adding the nearest multiple of 10, 100, 100 and adjusting, using near doubles, partitioning and recombining.

Subtraction
- Subtract mentally a: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds.
- Estimate answers and use inverse operations to check.
- Solve problems, including missing number problems.
- Find 10 or 100 more or less than a given number.
- Recognise the place value of each digit in a 3-digit number.
- Counting up differences as a mental strategy when numbers are close together or near multiples of 10 (see examples above).
- Read and write numbers up to 1000 in numerals and words.
- Practise mental subtraction strategies, such as subtracting near multiples of 10 and adjusting.

Vocabulary

Addition
add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact

Subtraction
equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit
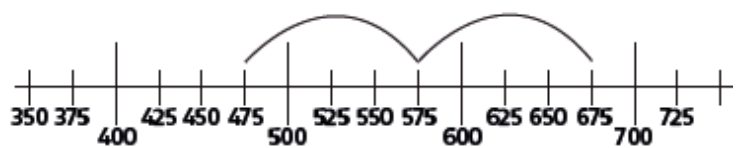
Year 3 Addition

Mental Strategies

Developing mental fluency with addition and place value involving 3-digit numbers, then establish more formal methods.

Use empty number lines and concrete equipment (Base 10, beadstrings etc.) to build confidence and fluency in mental addition skills.

Bridge through 10 using known number facts

425 + 8 = 425 + 5 + 3
          = 430 + 3
          = 433

Counting on in 100s

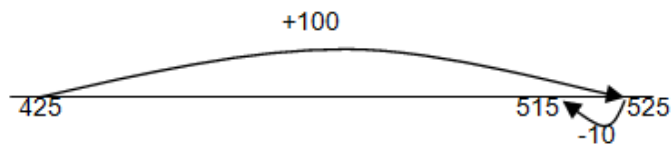
Number Family
If I know:
2+3 = 5
I also know:
3+2 = 5
200+ 300 = 500
300+ 200 = 500

**Special Strategy
Rounding and adjusting**

425 + 90 =

Written Strategies
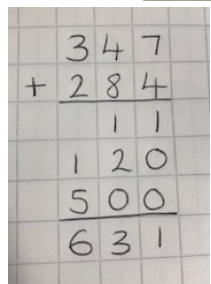
Method 1: Expanded column addition method

Children to be introduced to the expanded column addition method. They are to make comparisons to the Year 2 method, discussing what is similar and what is different.

To support understanding, children should physically make and carry out the calculation using base 10, Numicon or other apparatus and then compare their practical version to the written form to develop conceptual understanding.

In order to carry out this method, children need to:
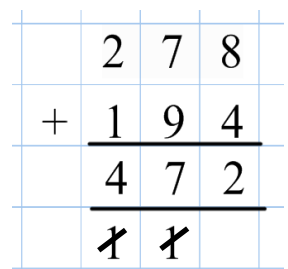- Recognise the value of the hundreds, tens and ones without recording the partitioning
- Be able to add in columns
- Start by adding the ones

Method 2: Compact column addition method

Children may be able to move onto the compact column method of addition if the teacher feels the child has a strong and secure understanding of the place

**Estimate
Calculate
Check it!**

Year 3 Subtraction

Mental Strategies

Develop mental fluency with subtraction and place value involving 3-digit numbers, then establish more formal methods.

Use empty number lines and concrete equipment (Base 10, beadstrings, Numicon, hundred squares etc.) to build confidence and fluency in mental subtraction skills.
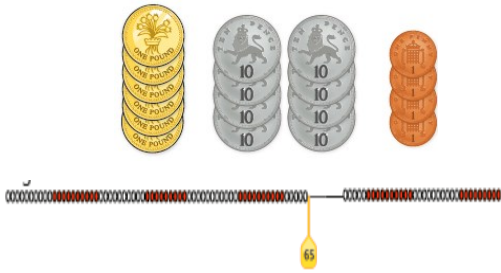
Using Place Value

348 - 300 = 48

456 - 50 = 406

Partitioning

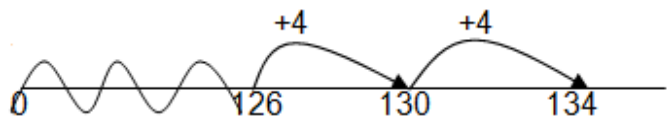Use of practical to consolidate learning

E.g. £6.84 - £2.40 as

£6 - £2 and 80p - 40p

Special Strategy - Counting on

Children taught to recognise that when numbers are close together it is more efficient to count on and find the difference.

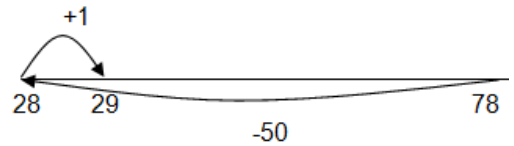134 - 126 = 8

Bridging through 10

136 - 8 =

136 - 6 = 130

130 - 2 =128

Special Strategy - Rounding and adjusting, e.g. with near multiples of 10

78-49 = 29

Written Strategies

Subtract with 2 and 3-digit numbers.

Method 1: Introduction of partitioned column subtraction.

Continue with counting on for close-together numbers, numbers that are near multiples of 10, 100, 100 or money e.g. calculating change.

Estimate Calculate Check it!

Step 1: introduce this method with examples where 'exchanging' is not required

$$\begin{array}{r} {}^{60}7\cancel{0} + {}^{1}2 \\ - 40 + 7 \\ \hline 20 + 5 = \underline{\textbf{25}} \end{array}$$

Step 2: introduce 'exchanging' through **practical** subtraction. Make the larger number, 72 with Base 10 or Numicon, then subtract 47 from it. Then move onto the written method .

When learning to 'exchange', explore partitioning in different ways so that children understand that when you exchange, the value is the same i.e. 72 = 70 + 2 and 72 = 60 + 12 etc. Emphasise that the value hasn't changed, we have just partitioned it in a different way.

Step 3: once children are secure conceptually with 'exchanging', they can use the partitioned column method to subtract any 2 and 3-digit numbers.

238 - 146 = 92

Method 2: Compact column subtraction
Children may be able to move onto the compact column method of subtraction if the teacher feels the child has a strong and secure understanding of the place value when subtracting 2-digit and 3-digit

Year 4
Addition and Subtraction

Objectives

- 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.

Key Skills

Addition

- Select most appropriate method: mental, jottings or written and explain why.
- Recognise the place value of each digit in a four-digit number.
- Round any number to the nearest 10, 100 or 1000.
- Estimate and use inverse operations to check answers.
- Solve 2-step problems in context, deciding which operations and methods to use and why.
- Find 1000 more or less than a given number.
- Continue to practise a wide range of mental addition strategies, ie. number bonds, add the nearest multiple of 10, 100, 1000 and adjust, use near doubles, partitioning and recombining.
- Add numbers with up to 4 digits using the formal written method of column addition.
- Solve 2-step problems in contexts, deciding which operations and methods to use and why.
- Estimate and use inverse operations to check answers to a calculation.

Subtraction

- Subtract by counting on where numbers are close together or they are near to multiples of 10, 100 etc.
- Children select the most appropriate and efficient methods for given subtraction calculations.
- Estimate and use inverse operations to check answers.
- Solve addition and subtraction 2-step problems, choosing which operations and methods to use and why.
- Solve simple measure and money problems involving fractions and decimals to two decimal places.
- Find 1000 more or less than a given number.
- Count backwards through zero, including negative numbers.
- Recognise place value of each digit in a 4-digit number Round any number to the nearest 10, 100 or 1000.
- Solve number and practical problems that involve the above, with increasingly large positive numbers.

Vocabulary

Addition

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, vertical, carry, expanded, compact, thousands, hundreds, digits, inverse

Subtraction

equal to, take, take away, less, minus, subtract, leaves, distance be-tween, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse

Year 4 Addition

Mental Strategies

Develop confidence at calculating mentally with larger numbers. Using the full range of strategies:

Using known facts
Number Family
If I know:
63+37=100
I also know:
463+37=500

Partitioning
167+55 as 167 + 50=217
217+5=222

Counting on in 1000s, 100s, 10s,1s
3375+2000 as 3375, 4375, 5375

- **Bridging through 60 when calculating with time**
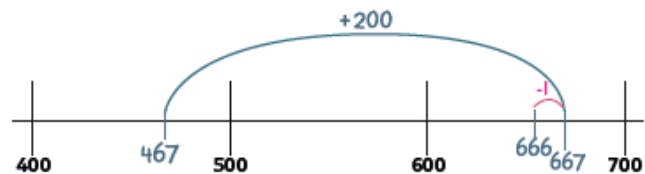- **Bridging through multiples of 10**
  425 + 8 = 425 + 5 + 3
      = 430 + 3
      = 433

Special Strategy
Rounding and adjusting
467 + 199 =

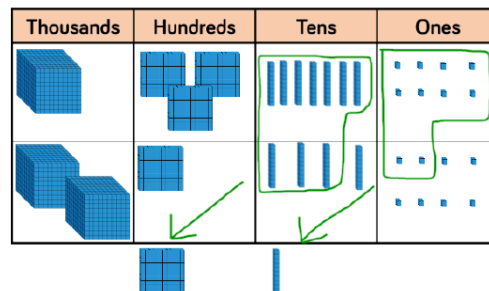## Written Strategies

Add numbers with up to 4-digits using the compact column addition method involving 'carrying'

Estimate Calculate Check it!

To support understanding, children should physically make and carry out the calculation using base 10 or other apparatus then compare their practical version with the written form to develop conceptual understanding.

In order to carry out this method of addition:
- Children need to recognise the value of the hundreds, tens and ones without recording the partitioning.
- Understand what the 1 underneath a column represents (e.g. a ten or hundred) without the need to write its true value (e.g. 100, 1000).

When using this method, children should always start with the ones column. Once they have included the 'carried' value (the exchanged value) in the calculation, they put a cross through the number to show that this step has been done.

Children should be confident using this method when solving problems involving different contexts, including money, measures and decimals.

When solving problems involving decimals and money (e.g. £3.85 + £4.69), children are to put the decimal place within their calculations.

Year 4 Subtraction

Mental Strategies

Develop mental fluency with subtraction using a range of strategies. Children are encouraged to think about the best method for the numbers involved.

Use empty number lines and concrete equipment (Base 10, beadstrings, Numicon, hundred squares etc.) to build confidence and fluency in mental subtraction skills.

Using Place Value

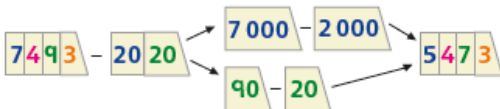4748 - 4000 = 748

Partitioning

Use of practical to consolidate learning

E.g. £5.87 - £3.04 as
£5 - £3 and 7p - 4p
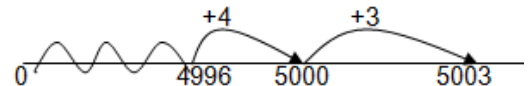
7493 - 2020 as
7000 - 2000 and 90 - 20

Number Facts

Number bonds to 10 and 100 and derived facts e.g. 100 - 76 = 24 and 1 - 0.6 = 0.4

Special Strategy - Counting on

Children are taught to recognise that when numbers are close together it is more efficient to count on and find the difference.
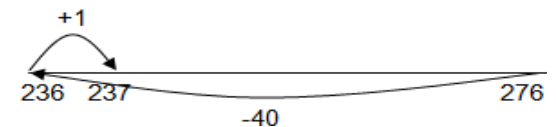
5003 - 4996 = 7

Bridging through 1, 10, 100, 1000

2004 - 9 =

2004 - 4 = 2000

2000 - 5 = 1995

8.6 - 0.9 =

8.6 - 0.6 = 8

8 - 0.3 = 7.7

Special Strategy - Rounding and adjusting

Near multiples of 10, 100, 1000 or £1

276 - 39 =

Written Strategies

Subtract with up to 4-digit numbers using the compact column subtraction

Year 4 main method—compact column subtraction

Children are to use the compact column method (if they have a secure understanding of exchanging from Year 3). When introducing the method, compare the partitioned column method to the compact one. Discuss what is the same, what is different and the benefits of the compact method.

Ensure this method is applied to varies contexts, including money and measures.

> **Estimate
> Calculate
> Check it!**

Year 4 additional method—partitioned column subtraction

Where needed, children are to use this method to support their place value understanding. Base 10 and other place value apparatus are to be used alongside this method. They then move onto the main Year 4 method when their place value understanding is secure.

Year 5
Addition and Subtraction

Objectives

- 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.

Key Skills

Addition

- Add numbers mentally with increasingly large numbers, using and practising a range of mental strategies i.e. add the nearest multiple of 10, 100, 100 and adjust; use near doubles, inverse, partitioning and re-combining; using number bonds.
- Use rounding to check answers and accuracy.
- Solve multi-step problems in contexts, deciding which operations and methods to use and why.
- Read, write, order and compare numbers to at least 1 million and determine the value of each digit.
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.
- Add numbers with more than 4 digits using formal written method of columnar addition.

Subtraction

- Subtract numbers mentally with increasingly large numbers.
- Use rounding and estimation to check answers to calculations and determine, in a range of contexts, levels of accuracy.
- Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.
- Read, write, order and compare numbers to at least 1 million and determine the value of each digit.
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 million.
- Interpret negative numbers in context, counting forwards and backwards with positive and negative integers through 0.
- Round any number up to 1 million to the nearest 10, 100, 1000, 10 000 and 100 000.

Vocabulary

Addition

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, carry, expanded, compact, vertical, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

Subtraction

equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

Year 5 Addition

Mental Strategies

Develop confidence at calculating mentally with larger numbers and decimal numbers. Using the full range of strategies such as:

- **Bridging through 60 when calculating with time**
- **Bridging through multiples of 10**
  $425 + 8 = 425 + 5 + 3$
  $\qquad\quad = 430 + 3$
  $\qquad\quad = 433$

Partitioning
$2·4 + 5·8$
as $2 + 5$ and $0·4 + 0·8$
and combine the
totals: $7 + 1·2 = 8·2$
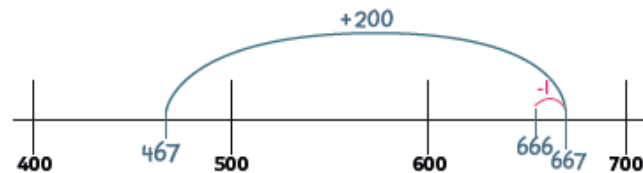
Using known facts
Number Family

If I know:
$4+3=7$
I also know:
$0.4+0.3=0.7$

Special Strategy
Rounding and adjusting
$467 + 199$

+200

-1
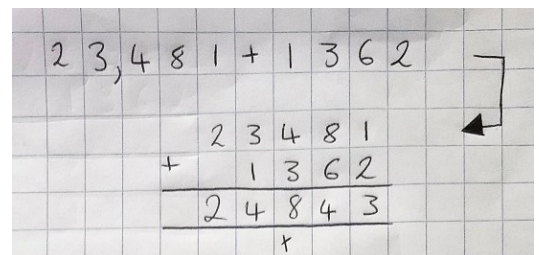
400   467   500   600   666 667   700

Written Strategies

Add numbers with more than 4 digits including in the contexts of money, measures and decimals with different numbers of decimal places.
To support understanding children should physically make and carry out the calculation using base 10 or other apparatus such as place value counters then compare their practical version with the written form to develop conceptual understanding.
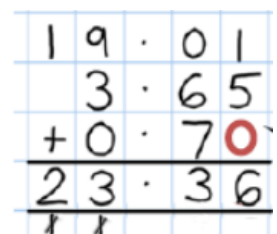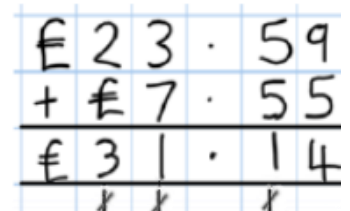
Estimate
Calculate
Check it!

- Numbers should exceed 4 digits.

- Commas should not be used within the calculation.

- The 'carried' value (the exchanged value) should be crossed out once it has been included in the calculation.

- Pupils should be able to add more than two values, carefully aligning place value columns.

In the context of decimals:

- The decimal point should be aligned in the same way as the other place value columns, and must be in the same column in the answer.

- Empty decimal places should be filled with zero to show the place value in each column.

- Children should understand the place value of tenths and hundredths and use this to align numbers with different numbers of decimal places.

Year 5 Subtraction

Mental Strategies

Develop mental fluency with subtraction using a range of strategies. Children are encouraged to think about the best method for the numbers involved.

Partitioning and counting back

3964 - 1051=

3964 - 1000 = 2964

2964 - 50 = 2914

2914 - 1 = 2913

5.72 - 2.01 =

5.72 - 2 = 3.72

3.72 - 0.01 = 3.71

Using Place Value

4.58 - 0.08 = 4.5

6.26 - 0.2 = 6.06

Bridging through 1, 10, 100, 1000

2004 - 9 =

2004 - 4 = 2000

2000 - 5 = 1995

8.6 - 0.9 =

8.6 - 0.6 = 8

8 - 0.3 = 7.7

Written Strategies

Subtract with at least 4-digit numbers including in the contexts of money, measures and decimals.

Compact column method

<div style="float:right">

Estimate

Calculate

Check it!

</div>

Children should become confident and fluent using this method when solving problems in a range of contexts, including measures, money and decimals.

When subtracting with decimals, these include mixtures of integers and decimals. When subtracting with decimals, they must align the decimal point accurately. Model using a 'zero' in any empty decimal places to aid layout.

Children should be exposed to number problems involving exchanging across numerous place value positions, e.g. 40700—31987 (see example on the right). They are to record the exchanging in the method shown below.

Where necessary, place value resources such as place value counters are to be used to support children to recognise the place value of the digits and to understand exchanging.

Year 6
Addition and Subtraction

Objectives

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

Key Skills

Addition

- Perform mental calculations, including with mixed operations and large numbers, using and practising a range of mental strategies.
- Solve multi-step problems in context, deciding which operations and methods to use and why.
- Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Read, write, order and compare numbers up to 10 million and determine the value of each digit.
- Round any whole number to a required degree of accuracy.
- Pupils understand how to add mentally with larger numbers and calculations of increasing complexity.

Subtraction

- Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why.
- Read, write, order and compare numbers up to 10 million and determine the value of each digit.
- Round any whole number to a required degree of accuracy.
- Use negative numbers in context, and calculate intervals across zero.
- Children need to utilise and consider a range of mental subtraction strategies, jottings and written methods before choosing how to calculate.

Vocabulary

Addition

add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, plus, addition, column, tens boundary, hundreds boundary, increase, carry, expanded, compact, vertical, thousands, hundreds, digits, inverse, decimal places, decimal point, tenths, hundredths, thousandths

Subtraction

equal to, take, take away, less, minus, subtract, leaves, distance between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units exchange, decrease, hundreds, value, digit, inverse, tenths, hundredths, decimal point, decimal

Year 6 Addition

Mental Strategies

Develop confidence at calculating mentally with larger numbers and decimal numbers. Using the full range of strategies:

- **Bridging through 60 when calculating with time**
  E.g. It is 11:45. How many hours and minutes is it to 15:20?

- **Bridging through multiples of 1,10,100**

Using known facts
$63 + 37 = 100$
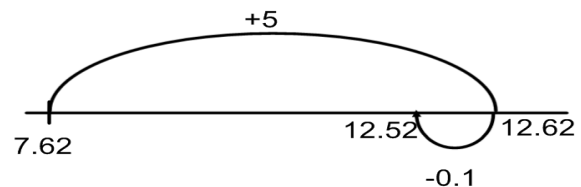$0.63 + 0.37 = 1$

Using place value
Count in 0·1s, 0·01s, 0·001s
e.g. Know what 0·001 more than 6·725 is

Partitioning
e.g. 9·54 + 3·23 as 9 + 3, 0·5 + 0·2 and 0·04 + 0·03, to give 12·77

Rounding and adjusting

$7.62+4.9$

+5

7.62   12.52   12.62

-0.1

Written Strategies

Where appropriate, alternative test techniques will be taught.

Add several numbers of increasing complexity including in the contexts of money, measures and decimals with different numbers of decimal places.
To support understanding children should physically make and carry out the calculation using base 10 or other apparatus then compare their practical version with the written form to develop conceptual understanding.

- Pupils should be able to add several numbers with more than 4 digits.

- Commas should not be used within the calculation.

- The 'carried' value (the exchanged value) should be crossed out once it has been included in the calculation.

Estimate Calculate Check it!

$81,059 + 3,668 + 15,301 =$

Adding several numbers with different numbers of decimal places (including money and measures):

- Tenths, hundredths and thousandths should be correctly aligned, with the decimal point lined up vertically including in the answer row.

- Zeros should be used in any empty decimal places, to show there is no value to add.

Year 6 Subtraction

Mental Strategies

Develop mental fluency with subtraction using a wide range of strategies when calculating including decimal and increasingly larger numbers. Children are encouraged to think about the best method for the numbers involved.

Using Place Value

7.782 - 0.08 = 7.702

16.263 - 0.2 = 16.063

Partitioning and counting back

3964 - 1051=

3964 - 1000 = 2964

2964 - 50 = 2914

2914 - 1 = 2913

5.72 - 2.01 =

5.72 - 2 = 3.72

3.72 - 0.01 = 3.71

Written Strategies

Where appropriate, alternative test techniques will be taught.

Estimate Calculate Check it!

Subtract with increasingly large and more complex numbers and decimal values using the compact column method

Subtracting with more complex integers.

Subtracting money and measures, including decimals with different numbers of decimal places. Empty decimal places can be filled with zero to show the place value in each column.

Children should be exposed to number problems involving exchanging across numerous place value positions, e.g. 40700 - 31987 (see example). They are to record the exchanging in the method shown below.