Hamilton
supporting teachers

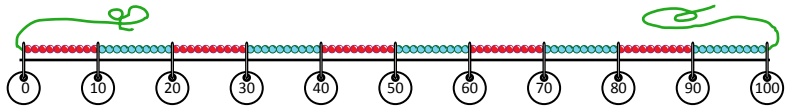
Year 1

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Addition

Using place value

Count on in ones/counting in tens, *e.g. knowing 45 + 1 or 45 + 10 without counting on in ones.*



45 + ☐ = 50 65 + ☐ = 70

85 + ☐ = 90

Bead strings and 1-100 number grid help counting on/back in tens.

Counting on

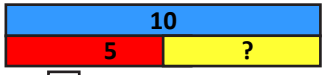
Count on in ones, *e.g. 11 + 2 =* and *7 + 4 =*
Count on in tens, *e.g. 45 + 20 as 45, 55, 65*

Using number facts

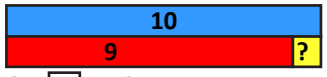
'Story' of 4, 5, 6, 7, 8 and 9, *e.g. 7 = 7 + 0 or 6 + 1 or 5 + 2 or 4 + 3.*
Number bonds to 10, *e.g. 5 + 5 , 6 + 4, 7 + 3, 8 + 2, 9 + 1, 10 + 0.*


6 + ☐ = 10


7 + ☐ = 10



5 + ☐ = 10



9 + ☐ = 10

Missing number sentences, 3 + [] = 7, link addition and subtraction.

Patterns using known facts, e.g. 4 + 3 = 7 so we know 24 + 3, 44 + 3, 74 + 3, etc.

- Subtraction

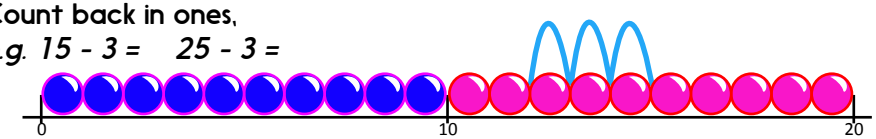
Using place value

Count back in 1s/Count back in 10s.
Say one less than any number to 100.
Say 10 less without counting back in ones.

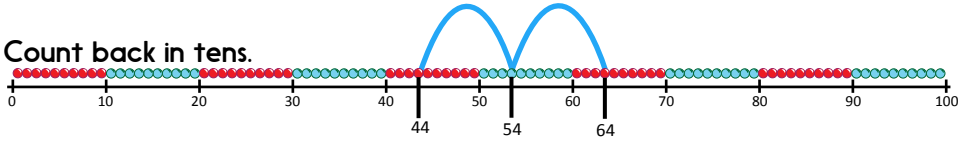
33 - 10 = 23

Subtracting by taking away

Count back in ones,
e.g. 15 - 3 = 25 - 3 =



Count back in tens.



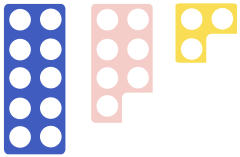
Using number facts

'Story' of 4, 5, 6, 7, 8 and 9, *e.g. 7 - 1 = 6, 7 - 2 = 5, 7 - 3 = 4, etc.*
Number bonds to 10, *e.g. 10 - 1 = 0, 10 - 2 = 8, 10 - 3 = 7, etc.*


10 - ☐ = 7

10 - ☐ = 9

Patterns using known facts,
e.g. 10 - 7 = 3 so we know 30 - 7 = ?



Hamilton
supporting teachers

Year 2

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Addition

Using place value

Know 1 more or 10 more than any number, e.g. 1 more than 67 or 10 more than 85.

Partitioning, e.g. 55 + 37 as 50 + 30 and 5 + 7 finally combining the two totals: 80 + 12.

50 + 30 = 80

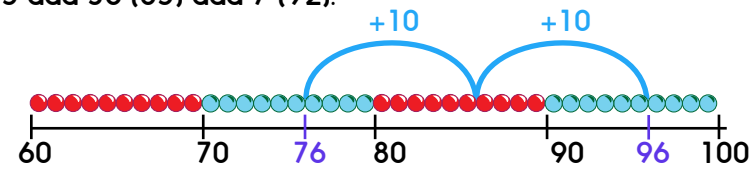
5 + 7 = 12

80 + 12 = 92

Bead strings and 1-100 number grid help counting on/back in tens.

Counting on

Add ten and mupltiples of ten, e.g. 76 + 20 as 76 , 86, 96 or in one hop 76 + 20. Add two 2-digit numbers by counting on in tens and then in ones, e.g. 55 + 37 as 55 add 30 (85) add 7 (92).



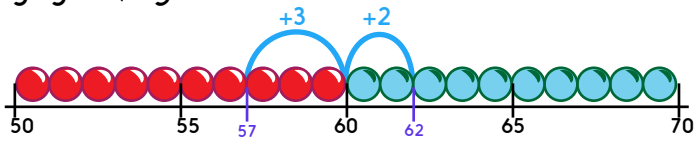
Add near multiples, e.g. 46 + 19 or 63 + 21.

Using number facts

Know pairs of numbers which make the numbers up to and including 10, e.g. *8 = 4&4, 3&5, 2&6, 1&7 and 10 = 5&5, 4&6, 3&7, 2&8, 1&9, 0&10.*

Patterns of known facts, *e.g. 6 + 3 = 9, so we know 36 + 3 = 39, 66 + 3 = 69, 53 + 6 = 59.*

Bridging ten, *e.g. 57 + 5 as 57 add 3 then add 2 more.*



Missing number sentences, 3 + [] = 7, link addition and subtraction.

Adding three or more single-digit numbers, spotting bonds to 10 or doubles, *e.g. 6 + 7 + 4 + 2 as 10 + 7 + 2.*

- Subtraction

Using place value

Know 1 less or 10 less than any number, e.g. 1 less than 74 or 10 less than 82.

Partitioning, e.g. 55 - 32 as 50 - 30 and 5 - 2 combining the answers: 20 + 3.

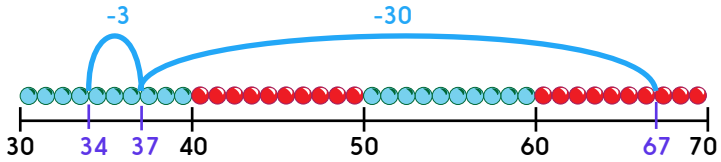
50 - 30 = 20

5 - 2 = 3

55 - 32 = 23

Taking away

Subtract ten and multiples of ten, *e.g. 76 - 20 as 76, 66, 56 or in one hop 76 - 20 = 56.* Subtract two 2-digit numbers by counting back in tens then in ones, *e.g. 67 - 33 as 67 subtract 30 (37) then count back 3 (34).*



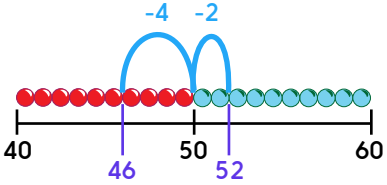
Subtracting near multiples, *e.g. 74 - 21 or 57 - 19.*

Using number facts

Know pairs of numbers which make the numbers up to and including 10, *e.g. 10 - 6 = 4, 8 - 3 = 5, 5 - 2 = 3, etc.*

Patterns of known facts, *e.g. 9 - 6 = 3, so we know 39 - 6 = 33, 69 - 6 = 63, 89 - 6 = 83.*

Bridge ten, *e.g. 52 - 6 as 52 subtract 2 then subtract 4 more.*



Counting up

Find a difference between two numbers on a line, *e.g. 51 - 47.*

Hamilton
supporting teachers

Year 3

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Addition

Using place value

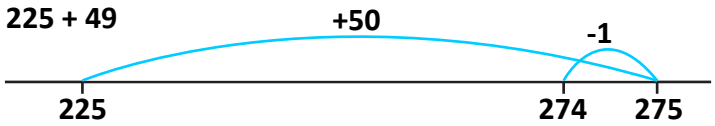
Count in hundreds, e.g. knowing 475 + 200 as 475, 575, 675.

Add multiples of 10, 100 and £1,
e.g. 746 + 200 or 746 + 40 or
£6.34 + £5 as £6 + £5 and 34p.

Partitioning, e.g. 68 + 74 as 60 + 70 and 8 + 4 and combine the totals: 130 + 12 = 142
Or £8.50 + £3.70 as £8 + £3 and 50p + 70p and combine: £11 + £1.20.

Counting on

Add 2-digit numbers by adding the multiple of ten then the ones, e.g. 67 + 55 as 67 add 50 (117) add 5 (122).
Add near multiples of 10 and 100, e.g. 67 + 39 or 364 + 199.



Count on from 3-digit nos, e.g. 247 + 34 as 247 + 30 (277) then 277 + 4 = 281.

Using number facts

Number bonds to 100, e.g. 35 + 65, 46 + 54, 73 + 27, etc.

100	
65	35

Add to next ten and next hundred, e.g. 176 + 4 = 180, 435 + 65 = 500, etc.

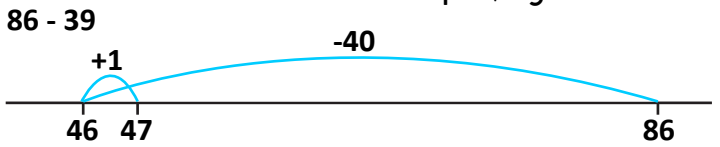
We no longer count in 1s but use PV and number facts.

- Subtraction

Taking away

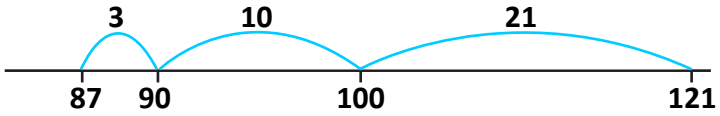
Use place value to subtract, e.g. 358 – 300 or 348 – 40 or 348 – 8.
Taking away multiples of 10, 100 and £1, e.g. 476 – 40 = 436, 476 – 300 = 176, £4.76 - £2 = £2.76.
Partitioning, e.g. 68 – 42 as 60 – 40 and 8 – 2 or £6.84 - £2.40 as £6 - £2 and 80p – 40p.
Count back in hundreds, tens and then ones, e.g. 763 – 121 as 763 – 100 (663) then subtract 20 (643) then subtract 1 (642).
Subtract near multiples, e.g. 648 – 199 or 86 – 39.

Subtraction is both taking away and - importantly - difference.



Counting up

Find a difference between two numbers by counting up from the smaller to the larger, e.g. 121 – 87.



Using number facts

Number bonds to 100, e.g. 100 – 35 = 65, 100 – 48 = 52, etc.

100	
48	?

Hamilton
supporting teachers

Year 3

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Written Addition

Written methods

Build on partitioning to develop expanded column addition with two 3-digit numbers.

	400	60	6
+	300	50	8
	700	110	14

Expanded column addition with 'carrying'.

	400	60	6
+	300	50	8
	100	10	
	800	20	4

Compact column addition with two or more 3-digit numbers or towers of 2-digit numbers.

	3	4	7
	2	8	6
+	4	9	5
	2	1	
1	1	2	8

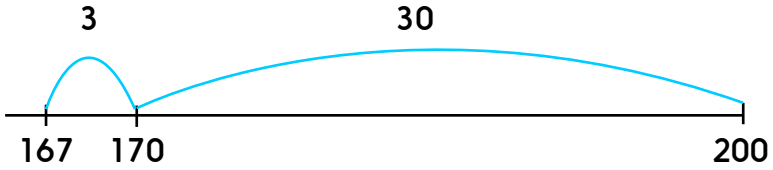
Compact column addition with 3-digit numbers

Recognise fractions which add to 1, e.g. ¼ + ¾ or ⅖ + ⅗.

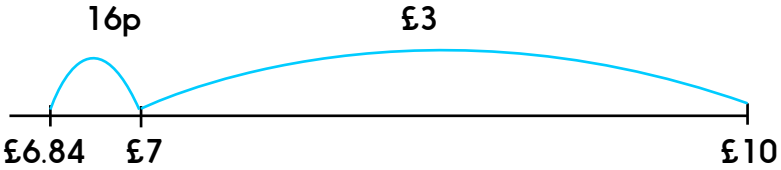
Counting up subtraction is a crucial mental strategy.

- Written Subtraction

Develop counting up subtraction.



Use counting up subtraction to find change from £1 and £10.



£3 + 16p = £3.16

Recognise complements of any fraction to 1, e.g. 1 – ¼ = ¾ or 1 - ⅔ = ⅓.

Important to see the visual image of fractions totalling one whole.

Hamilton
supporting teachers

Year 4

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Addition

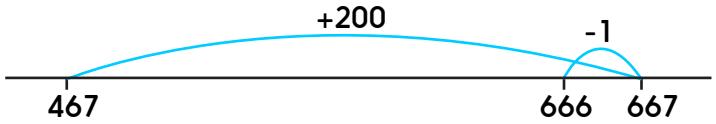
Using place value

Count in thousands, e.g. knowing 475 + 200 as 475, 575, 675.
Partitioning, e.g. 746 + 203 as 700 + 200 and 46 + 3
or 134 + 707 as 130 + 700 and 4 + 7.

PV and number facts are central to mental strategies.

Counting on

Add 2-digit numbers by adding the multiple of ten then the ones, e.g. 67 + 55 as 67 add 50 (117) add 5 (122).
Add near multiples of 10, 100 and 1000, e.g. 467 + 199 or 3462 + 2999.



Count on to add 3-digit numbers and money, e.g. 463 + 124 as 463 + 100 (563) + 20 (583) + 4 = 587 or £4.67 + £5.30 as £9.67 add 30p.

Using number facts

Number bonds to 100 and to next multiple of 100, e.g. 463 + 37, 1353 + 47.

Number bonds to £1 and to the next whole pound, e.g. £3.45 + 55p.
Add to the next whole number, e.g. 4.6 + 0.4 or 7.2 + 0.8.

Counting up is essential for money calculations and, later, decimals.

- Subtraction

Taking away

Use place value to subtract, e.g. 4748 - 4000 or 4748 - 8, etc.

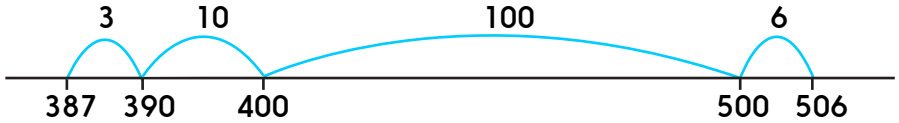
Take away multiples of 10, 100, 1000, £1, 10p or 0.1, e.g. 8392 - 50 or 6723 - 3000 or £3.74 - 30p or 5.6 - 0.2.

Partioning, e.g. £5.87 - £3.04 as £5 - £3 and 7p - 4p or 7493 - 2020 as 7000 - 2000 and 90 - 20.

Count back, e.g. 6482 - 1301 as 6482 - 1000, then - 300, then -1 (5181).
Subtract near multiples, e.g. 3522 - 1999 or £34.86 - £19.99.

Counting up

Find a difference between two numbers by counting up from the smaller to the larger, e.g. 506 - 387.



100 + 10 + 6 + 3 = **119**

Using number facts

Number bonds to 10, 100 and derived facts, e.g. 100 - 76 = 24, 1.0 - 0.6 = 0.4.

100	
76	24

Number bonds to £1 and £10, e.g. £1.00 - 86p = 14p or £10 - £3.40 = £6.60.

Hamilton
supporting teachers

Year 4

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Written Addition

Build on expanded column addition to develop compact column addition with larger numbers.

	1000	400	60	8
+	4000	800	60	6
	1000	100	10	
	6000	300	30	4

Expanded methods firm up a robust understanding of place value.

Compact column addition with larger numbers.

```
  5347
  2286
+ 1495
  121
  9128
```

Use expanded and compact column addition to add amounts of money, e.g. £3.24 + £2.58.

£3	20p	4p	
£2	50p	8p	
£5	70p	12p	£5.82

	£3.24
+	£2.58
	1
	£5.82

Stress that decimals and fractions are parts of a whole.

Add like fractions, e.g. ⅜ + ⅛ + ⅛.

- Written Subtraction

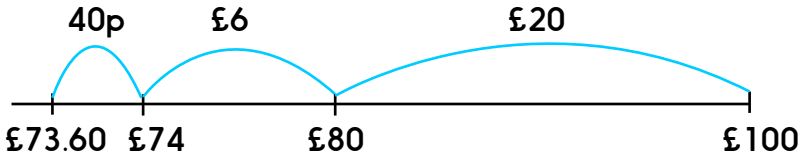
Expanded column subtraction.

	600	110	16
	~~700~~	~~20~~	~~6~~
-	300	50	8
	300	60	8

Begin to use column subtraction.

	6	11	16
	~~7~~	~~2~~	~~6~~
-	3	5	8
	3	6	8

Use counting up subtraction to find change from £10, £20, £50 and £100, e.g. £100 - £73.60.



£20 + £6 + 40p = £26.40

Subtract like fractions, e.g. ⅜ - ⅛ = ⅜.

Hamilton
supporting teachers

Year 5

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

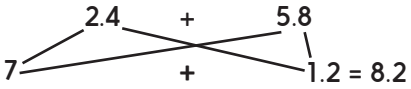
+ Addition

Using place value

Count in 0.1s, 0.01s, e.g. knowing what 0.1 more than 0.51 is.

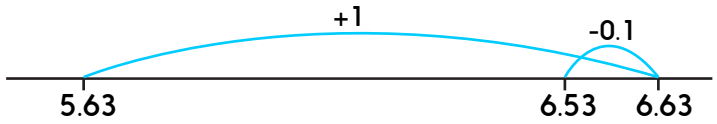
Partitioning, e.g. 2.4 + 5.8 as 2 + 5 and 0.4 + 0.8 and combine the totals: 7 + 1.2 = 8.2.

Subtracting by counting up is much less error prone.



Counting on

Add two decimal numbers by adding the ones then the tenths/hundredths, e.g. 5.72 + 3.05 as 5.72 add 3 (8.72) then add 0.05 (8.77).
Add near multiples of 1, e.g. 6.34 + 0.99 or 5.63 + 0.9.



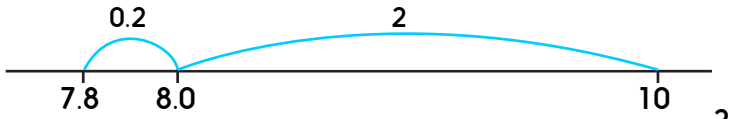
Count on from large numbers, e.g. 6834 + 3005 as 9834 + 5.

Using number facts

Number bonds to 1 and to the next whole number, e.g. 0.4 + 0.6 or 5.7 + 0.3.

Add to the next ten from a decimal number, e.g. 7.8 + 2.2 = 10.

Knowledge of number bonds underpins mental stratgegies.



2 + 0.2 = 2.2.

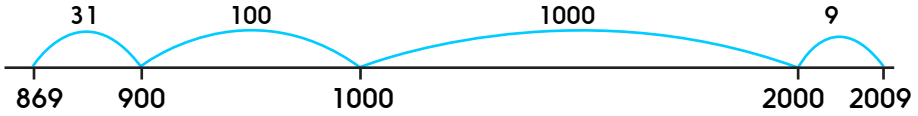
- Subtraction

Taking away

Using place value to subtract decimals, e.g. 4.58 - 0.08 or 6.26 - 0.2, etc.
Take away multiples of powers of 10, e.g. 15, 672 - 300 or 4.82 - 2 or 2.71 - 0.5 or 4.68 - 0.02.
Partition or count back, e.g. 3964 – 1051 or 5.72 – 2.01.
Subtract near multiples, e.g. 86,456 – 9999 or 3.58 – 1.99.

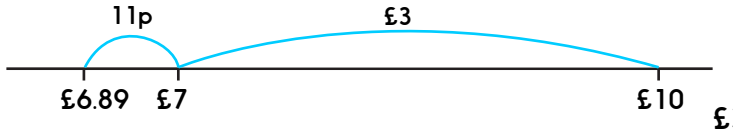
Counting up

Find a difference between two numbers by counting up from the smaller to the larger, e.g. 2009 - 869.



1000 + 100 + 31 + 9 = 1140

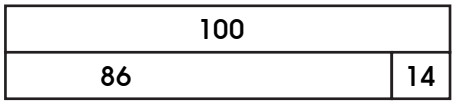
Find change using shopkeepers' addition, e.g. buy toy for £6.89 using £10.



£3 + 11p = £3.11

Using number facts

Derived facts from number bonds to 10 and 100, e.g. 2 – 0.45 using 45 + 55 = or 100 or 3.00 – 0.86 using 86 + 14 = 100.



Number bonds to £1, £10 and £100, e.g. £4.00 - £3.86p = 14p or £100 - £66 using 66 + 34 = £100.

Hamilton
supporting teachers

Year 5

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Written Addition

Expanded column addition for money leading to compact column addition for adding several amounts of money.

	£14	60p	4p	
	£28	70p	8p	
+	£12	20p	6p	
	£1	10p		
	£55	60p	8p	£55.68

Expanded version first embeds understanding of place value.

Compact column addition to add pairs of 5-digit numbers.

Continue to use column addition to add towers of several larger numbers.

Use compact addition to add decimal numbers with up to two places.

	15.68
+	27.86
	11.1
	43.54

Adding fractions with related denominators, e.g. ¼ + ⅜ = ⅝.

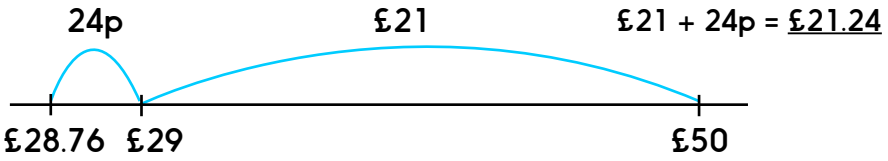
Equivalent fractions are the basis for + and - fractions.

- Written Subtraction

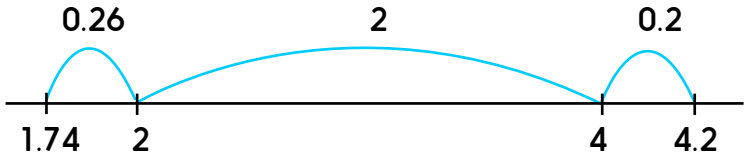
Compact column subtraction for numbers with up to 5 digits, e.g. 16,324 - 8516.

	0	15	13	1	14
-	~~1~~	~~6~~	~~3~~	~~2~~	~~4~~
	8	5	1	6	
	7	8	0	8	

Continue to use counting up subtraction for subtractions involving money, including finding change or, e.g. £50 - £28.76.



Use counting up subtraction to subtract decimal numbers, e.g. 4.2 – 1.74.



2 + 0.26 + 0.2 = 2.46

Subtracting fractions with related denominators, e.g. 1¼ - ⅜ as 1⅛ - ⅜ or ⅛ - ⅜ = ⅞.

Hamilton
supporting teachers

Year 6

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Addition

Using place value

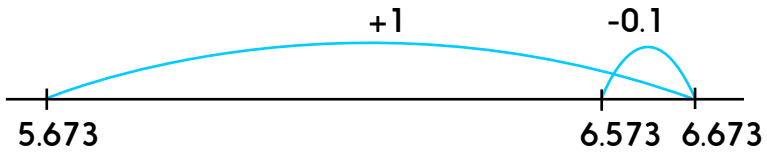
Count in 0.1s, 0.01s, 0.001s, e.g. knowing what 0.001 more than 6.725 is.
Partitioning, e.g. 9.54 + 3.25 as 9 + 3 and 0.5 + 0.2 and 0.04 + 0.05 to get 12.79.

10s	1s	•	0.1s ⅒s	0.01s ⅒₀s
	9	•	5	4
	3	•	2	5
1	2	•	7	9

Subtracting by counting up is much less error prone.

Counting on

Add two decimal numbers by adding the ones then the tenths/hundredths or thousandths, e.g. 6.314 + 3.006 as 6.314 add 3 (9.314) then add 0.006 (9.32).
Add near multiples of 1, e.g. 6.345 + 0.999 or 5.673 + 0.9.



Count on from large numbers, e.g. 16,375 + 12,003.

Using number facts

Number bonds to 1 and to the next multiple of 1, e.g. 0.63 + 0.37 or 2.355 + 0.645.
Add to next ten, e.g. 4.62 + 0.38.

5	
4.62	?

Knowledge of number bonds underppins mental strategies.

- Subtraction

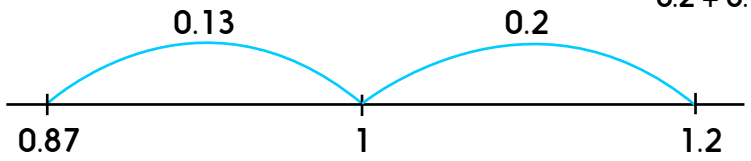
Taking away

Use place value to subtract decimals, e.g. 7.782 - 0.08 or 16.263 - 0.2, etc.
Take away multiples of powers of 10, e.g. 132,956 - 400 or 686,109 - 40,000 or 7.823 - 0.5.
Parition or count back, e.g. 3964 - 1051 or 5.72 - 2.01.
Subtract near multiples, e.g. 360,078 - 99,998 or 12.831 - 0.99.

Counting up

Count up to subtract numbers from multiples of 10, 100, 1000, 10,000
Find a difference between two decimal numbers by counting up from the smaller to the larger, e.g. 1.2 - 0.87.

0.2 + 0.13 = 0.33



Using number facts

Derived facts from number bonds to 10 and 100, e.g. 0.1 - 0.075 using 75 + 25 = 100 or 5 - 0.65 using 65 + 35 = 100.

Number bonds to £1, £10 and £100, e.g. £7.00 - £4.37 or £100 - £66.20 using 20p + 80p = £1 and £67 + £33 = £100.

£100	
£67	£33

Hamilton
supporting teachers

Year 6

Addition and subtraction are inverse operations. Right from the start children should be taught these as related operations. There are four number sentences (two using + and two using -) which can be written to express the relationship between 4 and 6 and 10. It is key to a good understanding of addition and subtraction that 6 + [] = 10 and 10 - 6 = [] are seen as ways of expressing the same question.

+ Written Addition

Compact column addition for adding several large numbers and decimals with up to two places.

Compact column addition with money.

Children must be able to do expanded as well as compact to show understanding.

	£14.64	£14	60p	4p
	£28.78	£28	70p	8p
+	£12.26	+ £12	20p	6p
	11.1	£1	10p	
	£55.68	£55	60p	8p

£55.68

Adding fractions with unlike denominators,

e.g. ¾ + ⅓ = 1 1/12 or 2 ¼ + 1 ⅓ = 3 7/12

¾ + ⅓

= 9/12 + 4/12

= 13/12

= 1 1/12

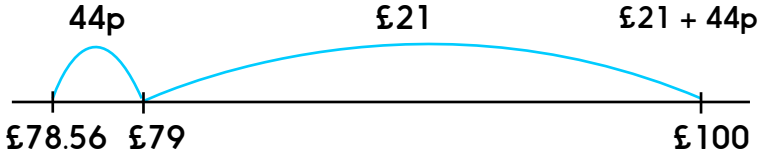
Understanding equivalent fractions is absolutely key here.

- Written Subtraction

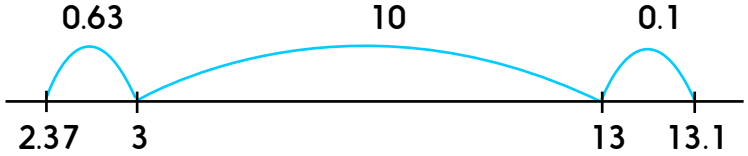
Compact column subtraction for large numbers.

	2	14	7	15	
-	~~3~~	~~4~~	6	~~8~~	~~5~~
	1	6	4	5	8
	1	8	2	2	7

Use counting up subtraction when dealing with money, e.g. £100 – £78.56 or £45.23 - £27.57.



Use counting up subtraction to subtract decimal numbers, e.g. 13.1 – 2.37.



10 + 0.63 + 0.1 = 10.73

Subtracting fractions with unlike denominators,

e.g. 1¼ - ⅔

= 5/4 - ⅔

= 15/12 - 8/12

= 7/12