# Year 3

## Mental addition

In Year Three, the main mental addition strategies taught are:

Add multiples of 10, 100 and £1
  e.g. *746 + 200*
  e.g. *746 + 40*
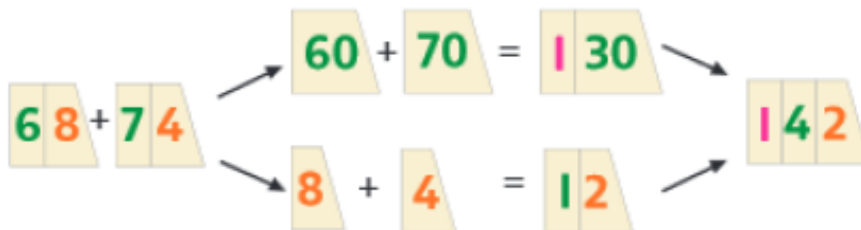  e.g. *£6·34 + £5 as £6 + £5 and 34p*
Partitioning
  e.g. *£8·50 + £3·70 as £8 + £3 and 50p + 70p and combine the totals: £11 + £1·20*
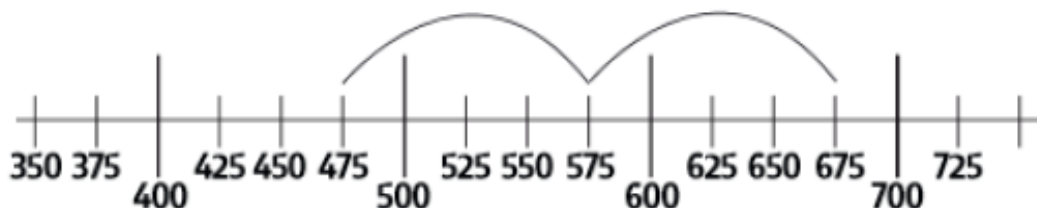  e.g. *347 + 36 as 300 and 40 + 30 and 7 + 6 and combine the totals: 370 + 13 = 383*
  e.g. *68 + 74 as 60 + 70 and 8 + 4 and combine the totals: 130 + 12 = 142*



**Using place value**
Count in 100s
  e.g. *Know 475 + 200 as 475, 575, 675*

## Counting on

Add two 2-digit numbers by adding the multiple of 10, then the 1s
  e.g. *67 + 55 as 67 + 50 (117) + 5 = 122*
Add near multiples of 10 and 100
  e.g. *67 + 39*
  e.g. *364 + 199*
Add pairs of 'friendly' 3-digit numbers
  e.g. *548 + 120*
Count on from 3-digit numbers
  e.g. *247 + 34 as 247 + 30 (277) + 4 = 281*

## Using number facts

Know pairs which total each number to 20
  e.g. *7 + 8 = 15*
  e.g. *12 + 6 = 18*
Number bonds to 100
  e.g. *35 + 65*
  e.g. *46 + 54*
  e.g. *73 + 27*

Add to the next 10 and the next 100
  e.g. *176 + 4 = 180*
  e.g. *435 + 65 = 500*

# Written addition

In Year Three, children are introduced to formal written methods of addition. These will include:

Use expanded column addition where digits in a column add to more than the column value

e.g. 466 + 358

```
      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

e.g. 347 + 286 + 495

```
      347
      286
   +  495
       21
     1128
```

Compact column addition with 3- and 4-digit numbers
Recognise like fractions that add to 1

e.g. $\frac{1}{4} + \frac{3}{4}$

e.g. $\frac{3}{5} + \frac{2}{5}$

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

e.g. 466 + 358

```
      400   60   6
   +  300   50   8
      700  110  14   = 824
```

# Mental subtraction

In Year Three, the main mental subtraction methods taught are:

**Taking away**

Use place value to subtract

e.g. *348 – 300*

e.g. *348 – 40*

e.g. *348 – 8*

Take away multiples of 10, 100 and £1

e.g. *476 – 40 = 436*

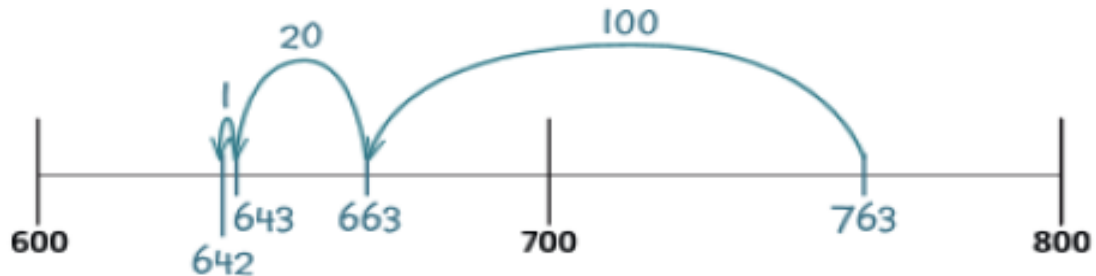e.g. *476 – 300 = 176*

e.g *£4·76 – £2 = £2·76*

Partitioning

e.g. *68 – 42 as 60 – 40 and 8 – 2*

e.g. *£6·84 – £2·40 as £6 – £2 and 80p – 40p*

Count back in 100s, 10s then 1s

e.g. *763 – 121 as 763 – 100 (663) – 20 (643) – 1 = 642*
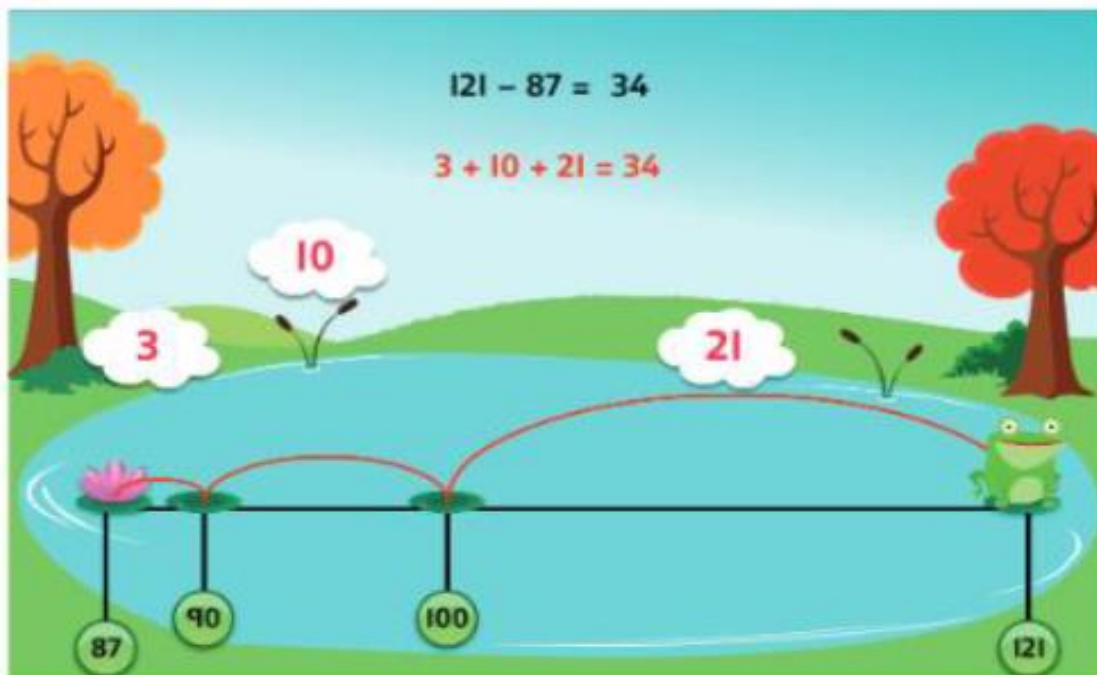


Subtract near multiples of 10 and 100

e.g. **648 – 199**

e.g. **86 – 39**

## Counting up

Find a difference between two numbers by counting up from the smaller to the larger

e.g. *121 – 87*

## Using number facts

Know pairs which total each number to 20

e.g. $20 - 14 = 6$

Number bonds to 100

e.g. $100 - 48 = 52$

e.g. $100 - 35 = 65$



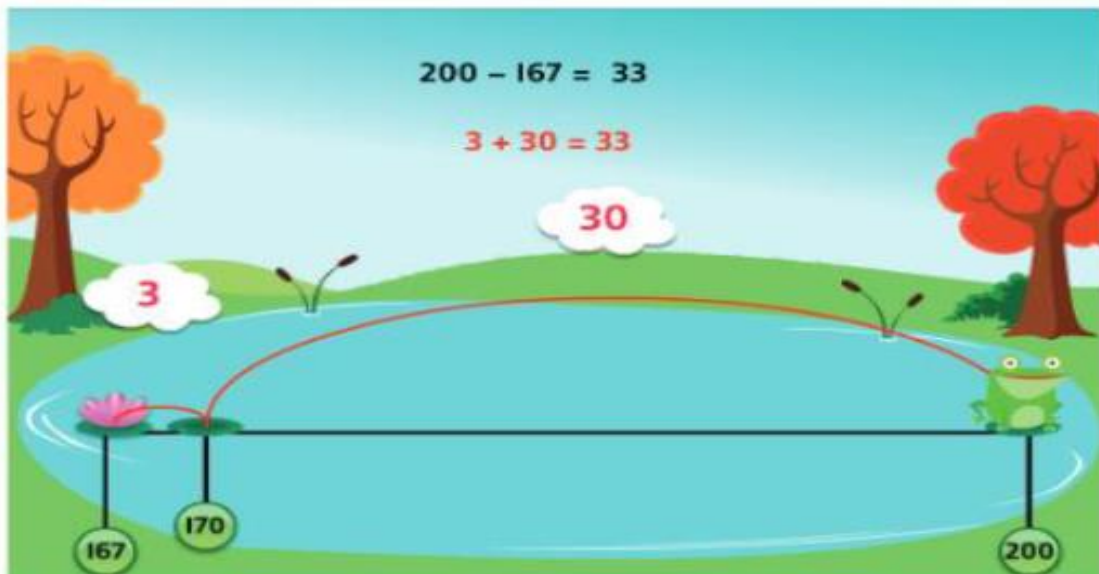Subtract using number facts to bridge back through a 10

e.g. $42 - 5 = 42 - 2 (40) - 3 = 37$

# Written Subtraction

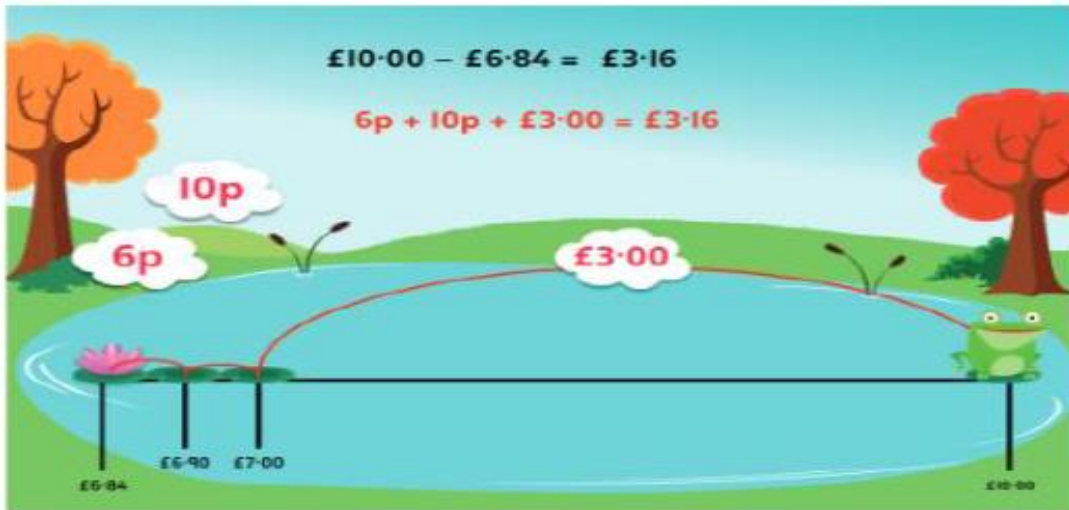The early, written formal methods of subtraction are:

Develop counting up subtraction

e.g. $200 - 167$

Use counting up subtraction to find change from £1, £5 and £10
e.g. £10·00 – £6·84



£10·00 – £6·84 = £3·16

6p + 10p + £3·00 = £3·16
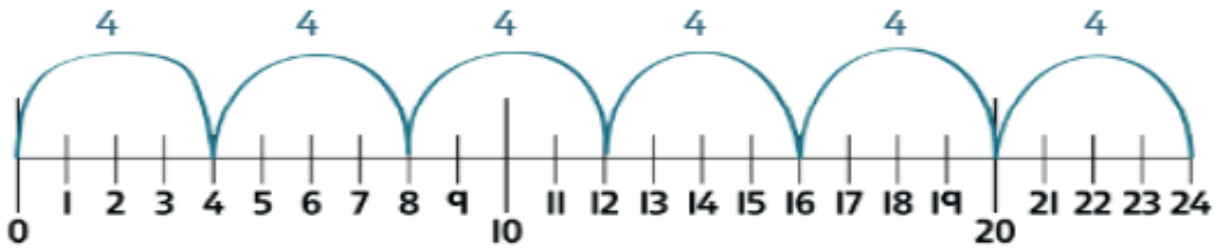
10p

6p

£3·00

£6·84    £6·90    £7·00    £10·00

Recognise complements of any fraction to 1

e.g. $1 - \frac{1}{4} = \frac{3}{4}$

e.g. $1 - \frac{3}{5} = \frac{2}{5}$

# Mental multiplication

The mental mulitiplication methods taught are:



## Counting in steps ('clever' counting)
Count in 2s, 3s, 4s, 5s, 8s and 10s

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

## Doubling and halving

Find doubles of numbers to 50 using partitioning
  e.g. *double 48*

```
        48
       ╱  ╲
     80    16
       ╲  ╱
        96
```
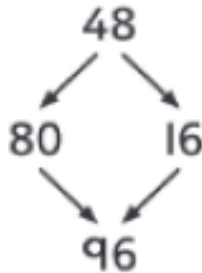
Use doubling as a strategy in multiplying by 2
  e.g. *18 × 2 is double 18 = 36*

## Grouping

Recognise that multiplication is commutative
  e.g. *4 × 8 = 8 × 4*
Multiply multiples of 10 by 1-digit numbers
  e.g. *30 × 8 = 240*
Multiply 'friendly' 2-digit numbers by 1-digit numbers
  e.g. *13 × 4*

## Using number facts

Know doubles to double 20
  e.g. *double 15 is 30*
Know doubles of multiples of 5 to 100
  e.g. *double 85 is 170*
Know ×2, ×3, ×4, ×5, ×8, ×10 tables facts

# Written multiplication

The grid method for multiplication is introduced in Year Three.

Build on partitioning to develop grid multiplication
e.g. 23 x 4

| ×  | 20 | 3  |         |
|----|----|----|---------|
| 4  | 80 | 12 | = 92    |

# Mental Division

In Year Three, children are taught to divide mentally by:

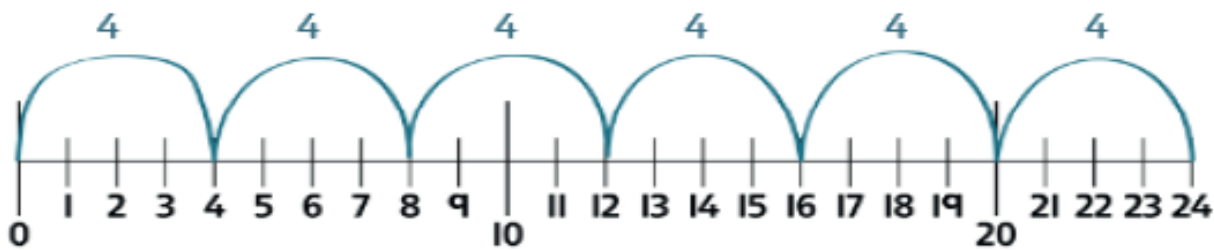**Counting in steps ('clever' counting)**
Count in 2s, 3s, 4s, 5s, 8s and 10s

| 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10  |
|----|----|----|----|----|----|----|----|----|-----|
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20  |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30  |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40  |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50  |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60  |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70  |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

## Using number facts

Know half of even numbers to 40

Know half of multiples of 10 to 200

 e.g. *half of 170 is 85*

Know x2, x3, x4, x5, x8, x10 division facts

## Doubling and halving

Find half of even numbers to 100 using partitioning

 e.g. *find half of 48*
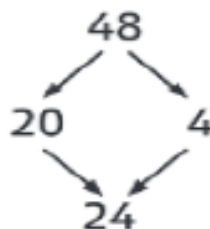


Use halving as a strategy in dividing by 2

 e.g. *36 ÷ 2 is half of 36 = 18*

Find half of odd numbers

## Grouping

Recognise that division is not commutative

e.g. $16 \div 8$ does not equal $8 \div 16$

Relate division to multiplications 'with holes in'

e.g. $\_ \times 5 = 30$ is the same calculation as $30 \div 5 = \_$ thus we can count in 5s to find the answer



$\_ \times £5 = £30$

Divide multiples of 10 by 1-digit numbers

e.g. $240 \div 8 = 30$

Begin to use subtraction of multiples of 10 of the divisor to divide numbers above the 10th multiple

e.g. $52 \div 4$ is $10 \times 4 \ (40)$ and $3 \times 4 \ (12) = 13$

# Written Division

Written methods of division in Year 3 are still quite informal. Children are encouraged to:

Perform divisions just above the 10th multiple using written jottings, understanding how to give a remainder as a whole number

Use division facts to find unit and simple non-unit fractions of amounts within the times-tables

e.g. $\frac{3}{4}$ of 48 is $3 \times (48 \div 8) = 36$