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| Year 3 | Year 4 |
|---|---|

**Mental Addition**

## Year 3

**Using place value**

Count in 100s

  e.g. *Know 475 + 200 as 475, 575, 675*

350 375 400 425 450 475 500 525 550 575 600 625 650 675 700 725

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*

6 8 + 7 4

60 + 70 = 1 30

8 + 4 = 12

1 4 2

## Year 4

**Using place value**

Count in 1000s

  e.g. *Know 3475 + 2000 as 3475, 4475, 5475*

Partitioning

  e.g. *746 + 40*

  e.g. *746 + 203 as 700 + 200 and 40 and 6 + 3*

  e.g. *134 + 707 as 100 + 700 and 30 and 4 + 7*

**Counting on**

Add 2-digit numbers to 2-, 3- and 4-digit numbers by adding the multiple of 10 then the 1s

  e.g. *167 + 55 as 167 + 50 (217) + 5 = 222*

Add near multiples of 10, 100 and 1000

  e.g. *467 + 199*

  e.g. *3462 + 2999*

+200

400 467 500 600 666 667 700  -1

Count on to add 3-digit numbers and money

  e.g. *463 + 124 as 463 + 100 (563) + 20 (583) + 4 = 587*

  e.g. *£4·67 + £5·30 as £9·67 + 30p*

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| Year 3 | Year 4 |
|---|---|
| **Counting on** <br> Add two 2-digit numbers by adding the multiple of 10, then the 1s <br>   e.g. *67 + 55 as 67 + 50 (117) + 5 = 122* <br> Add near multiples of 10 and 100 <br>   e.g. *67 + 39* <br>   e.g. *364 + 199* <br> Add pairs of 'friendly' 3-digit numbers <br>   e.g. *548 + 120* <br> Count on from 3-digit numbers <br>   e.g. *247 + 34 as 247 + 30 (277) + 4 = 281* <br><br> **Using number facts** <br> Know pairs which total each number to 20 <br>   e.g. *7 + 8 = 15* <br>   e.g. *12 + 6 = 18* <br> Number bonds to 100 <br>   e.g. *35 + 65* <br>   e.g. *46 + 54* <br>   e.g. *73 + 27* <br><br> Add to the next 10 and the next 100 <br>   e.g. *176 + 4 = 180* <br>   e.g. *435 + 65 = 500* | **Using number facts** <br> Number bonds to 100 and to the next multiple of 100 <br>   e.g. *288 + 12 = 300* <br>   e.g. *1353 + 47 = 1400* <br>   e.g. *463 + 37 = 500* <br><br>  <br><br> Number bonds to £1 and to the next whole pound <br>   e.g. *63p + 37p = £1* <br>   e.g. *£3·45 + 55p = £4* <br> Add to the next whole number <br>   e.g. *4·6 + 0·4* <br>   e.g. *7·2 + 0·8* |

**Mental Addition**

abacus

| Year 3 | Year 4 |
|---|---|
| Build on partitioning to develop expanded column addition with two 3-digit numbers<br><br>e.g. *466 + 358*<br><br>$$\begin{array}{rrr} 400 & 60 & 6 \\ + \quad 300 & 50 & 8 \\ \hline 700 & 110 & 14 \end{array} = 824$$<br><br>Use expanded column addition where digits in a column add to more than the column value<br><br>e.g. *466 + 358*<br><br>$$\begin{array}{rrr} 400 & 60 & 6 \\ 300 & 50 & 8 \\ + \quad 100 & 10 & \\ \hline 800 & 20 & 4 \end{array}$$<br><br>Compact column addition with two or more 3-digit numbers or towers of 2-digit numbers<br><br>e.g. *347 + 286 + 495*<br><br>$$\begin{array}{r} 347 \\ 286 \\ + \quad 495 \\ \hline 21 \\ \hline 1128 \end{array}$$<br><br>Compact column addition with 3- and 4-digit numbers<br>Recognise like fractions that add to 1<br><br>e.g. *1/4 + 3/4*<br><br>e.g. *3/5 + 2/5* | Build on expanded column addition to develop compact column addition with larger numbers<br><br>e.g. *1466 + 4868*<br><br>$$\begin{array}{rrrr} 1000 & 400 & 60 & 6 \\ 4000 & 800 & 60 & 8 \\ + \quad 1000 & 100 & 10 & \\ \hline 6000 & 300 & 30 & 4 \end{array}$$<br><br>Compact column addition with larger numbers<br><br>e.g. *5347 + 2286 + 1495*<br><br>$$\begin{array}{r} 5347 \\ 2286 \\ + \quad 1495 \\ \hline 121 \\ \hline 9128 \end{array}$$<br><br>Use expanded and compact column addition to add amounts of money<br>Add like fractions<br><br>e.g. *3/8 + 1/8 + 1/8* |

*Written Addition*

abacus

| Year 5 | Year 6 |
|---|---|

**Mental Addition**

### Year 5

**Using place value**

Count in 0·1s, 0·01s

  e.g. *Know what 0·1 more than 0·51 is*

| 10s | 1s | 0·1s | 0·01s |
|---|---|---|---|
|  | 0 | 5 | 1 |

Partitioning

  e.g. *2·4 + 5·8 as 2 + 5 and 0·4 + 0·8 and combine the totals: 7 + 1·2 = 8·2*

| 0·1 | 0·2 | 0·3 | 0·4 | 0·5 | 0·6 | 0·7 | 0·8 | 0·9 | 1 |
|---|---|---|---|---|---|---|---|---|---|
| 1·1 | 1·2 | 1·3 | 1·4 | 1·5 | 1·6 | 1·7 | 1·8 | 1·9 | 2 |
| 2·1 | 2·2 | 2·3 | 2·4 | 2·5 | 2·6 | 2·7 | 2·8 | 2·9 | 3 |
| 3·1 | 3·2 | 3·3 | 3·4 | 3·5 | 3·6 | 3·7 | 3·8 | 3·9 | 4 |
| 4·1 | 4·2 | 4·3 | 4·4 | 4·5 | 4·6 | 4·7 | 4·8 | 4·9 | 5 |
| 5·1 | 5·2 | 5·3 | 5·4 | 5·5 | 5·6 | 5·7 | 5·8 | 5·9 | 6 |
| 6·1 | 6·2 | 6·3 | 6·4 | 6·5 | 6·6 | 6·7 | 6·8 | 6·9 | 7 |
| 7·1 | 7·2 | 7·3 | 7·4 | 7·5 | 7·6 | 7·7 | 7·8 | 7·9 | 8 |
| 8·1 | 8·2 | 8·3 | 8·4 | 8·5 | 8·6 | 8·7 | 8·8 | 8·9 | 9 |
| 9·1 | 9·2 | 9·3 | 9·4 | 9·5 | 9·6 | 9·7 | 9·8 | 9·9 | 10 |

### Year 6

**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*

**Counting on**

Add two decimal numbers by adding the 1s, then the 0·1s/0·01s/0·001s

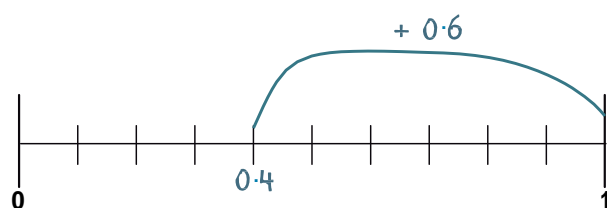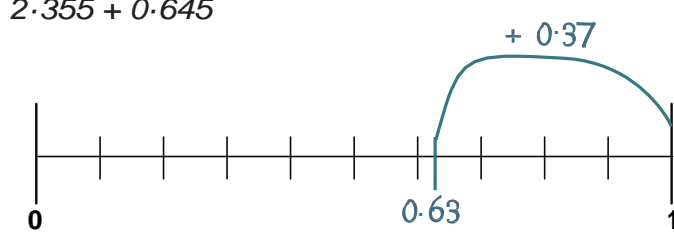  e.g. *6·314 + 3·006 as 6·314 + 3 (9·314) + 0·006 = 9·32*

Add near multiples of 1

  e.g. *6·345 + 0·999*

  e.g. *5·673 + 0·9*

Count on from large numbers e.g.

  *16 375 + 12 003 as 28 375 + 3*

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| Year 5 | Year 6 |
|---|---|

**Mental Addition**

**Year 5**

**Counting on**

Add two decimal numbers by adding the 1s, then the 0·1s/0·01s

  e.g. *5·72 + 3·05 as 5·72 + 3 (8·72) + 0·05 = 8·77*

Add near multiples of 1

  e.g. *6·34 + 0·99*

  e.g. *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. *5·7 + 0·3*

 e.g. *0·4 + 0·6*

+ 0·6

0    0·4    1

Add to the next 10 from a decimal number

  e.g. *7·8 + 2·2 = 10*

**Year 6**

**Using number facts**

Number bonds to 1 and to the next multiple of 1

  e.g. *0·63 + 0·37*

  e.g. *2·355 + 0·645*

+ 0·37

0    0·63    1

Add to the next 10

  e.g. *4·62 + 5·38*

**PEARSON**

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| Year 5 | Year 6 |
|---|---|
| Expanded column addition for money leading to compact column addition for adding several amounts of money<br><br>  e.g. *£14·64 + £28·78 + £12·26*<br><br>$$\begin{array}{r} £14 \quad 60p \quad 4p \\ £28 \quad 70p \quad 8p \\ + \quad £12 \quad 20p \quad 6p \\ £1 \quad 10p \\ \hline £55 \quad 60p \quad 8p \end{array}$$<br><br>Compact column addition to add pairs of 5-digit numbers<br>Continue to use column addition to add towers of several larger numbers<br>Use compact addition to add decimal numbers with up to 2 decimal places<br><br>  e.g.  *15·68 + 27·86*<br><br>$$\begin{array}{r} 15·68 \\ + \quad 27·86 \\ 11·1 \\ \hline 43·54 \end{array}$$<br><br>Add related fractions<br><br> – – –        e.g. *3/4 + 1/8 = 7/8* | Compact column addition for adding several large numbers and decimal numbers with up to 2 decimal places<br>Compact column addition with money<br><br>  e.g. *£14·64 + £28·78 + £12·26*<br><br>$$\begin{array}{r} £14·64 \\ + \quad £28·78 \\ £12·26 \\ 11·1 \\ \hline £55·68 \end{array}$$<br><br>Add unlike fractions, including mixed numbers<br><br> –  –             e.g. *1/4 + 2/3= 11/12*<br> –  –  –           e.g. *2 1/4  + 1 1/3 = 3 7/12* |

*Written Addition*

abacus

| Year 3 | Year 4 |
|---|---|

**Mental Subtraction**

### Year 3

**Taking away**

Use place value to subtract

e.g. *348 – 300*

e.g. *348 – 40*

e.g. *348 – 8*

**3 4 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*

### Year 4

**Taking away**

Use place value to subtract

e.g. *4748 – 4000*

**4 7 4 8**

Take away multiples of 10, 100, 1000, £1, 10p or 0·1

e.g. *8392 – 50*

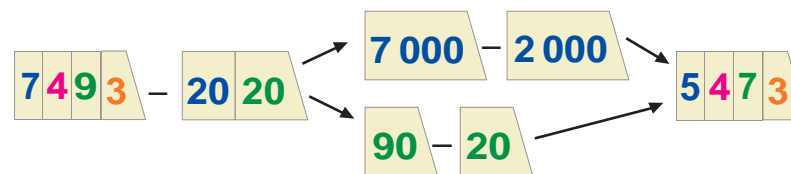e.g. *6723 – 3000*

e.g. *£3·74 – 30p*

e.g. *5·6 – 0·2*

Partitioning

e.g. *£5·87 – £3·04 as £5 – £3 and 7p – 4p*

e.g. *7493 – 2020 as 7000 – 2000 and 90 – 20*

**7 4 9 3** – **20 20**    **7 000** – **2 000**    **5 4 7 3**

**90** – **20**

Count back

e.g. *6482 – 1301 as 6482 – 1000 (5482) – 300 (5182) – 1 = 5181*

Subtract near multiples of 10, 100, 1000 or £1

e.g. *3522 – 1999*
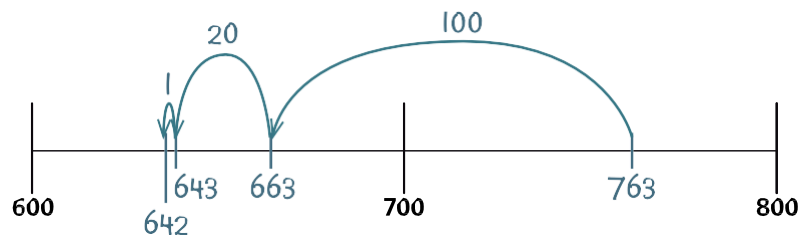
e.g. *£34·86 – £19·99*

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| Year 3 | Year 4 |
|---|---|

**Mental Subtraction**

### Year 3

Count back in 100s, 10s then 1s

e.g. *763 – 121 as 763 – 100 (663) – 20 (643) – 1 = 642*
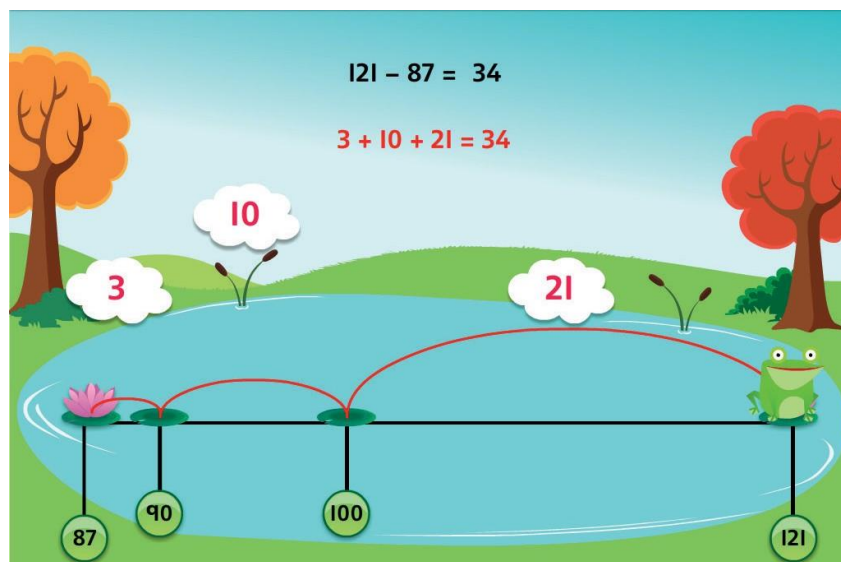
Subtract near multiples of 10 and 100
e.g. *648 – 199*
e.g. *86 – 39*

#### Counting up

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

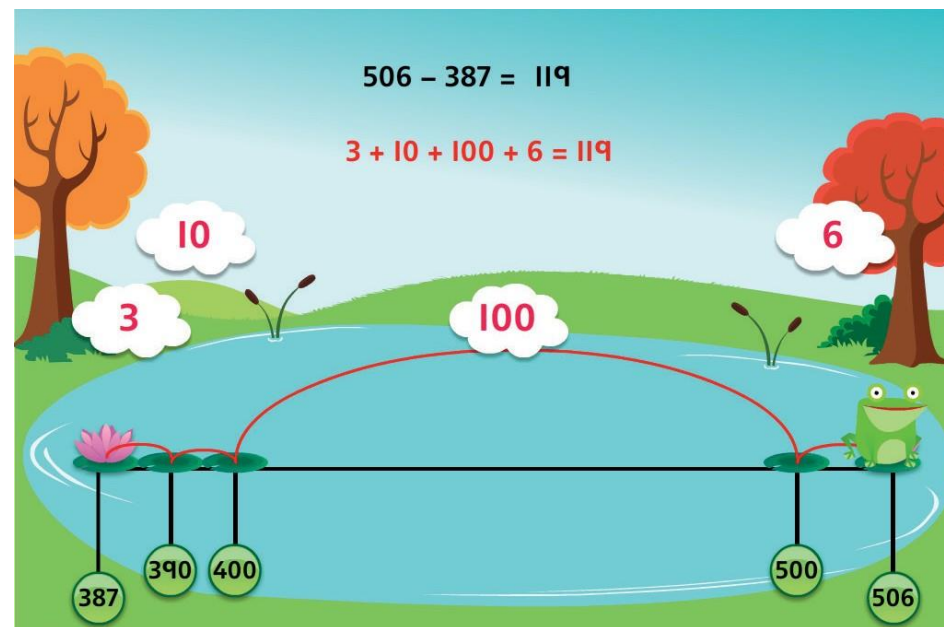e.g. *121 – 87*
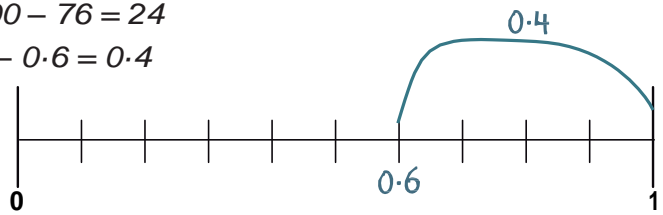
121 – 87 = 34

3 + 10 + 21 = 34

### Year 4

#### Counting up

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

e.g. *506 – 387*
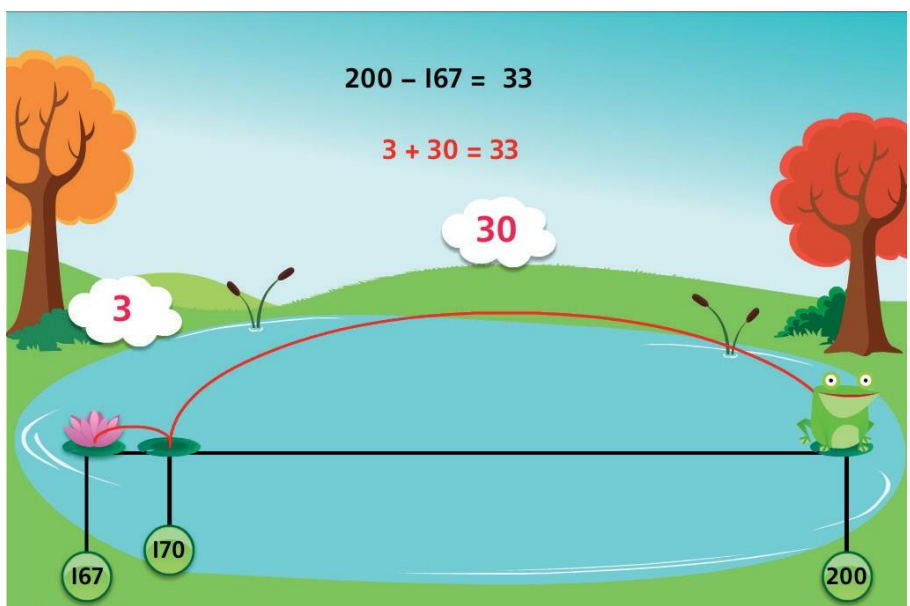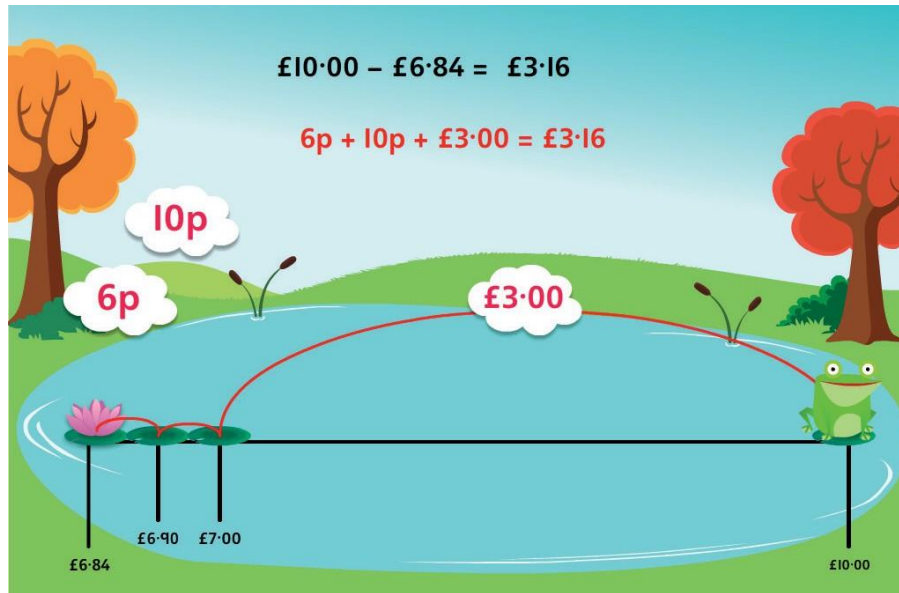e.g. *4000 − 2693*

506 – 387 = 119

3 + 10 + 100 + 6 = 119

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| Year 3 | Year 4 |
|---|---|
| **Mental Subtraction** | |

**Year 3 — Mental Subtraction**

**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*

65

Subtract using number facts to bridge back through a 10
  e.g. *42 – 5 = 42 – 2 (40) – 3 = 37*

**Year 4 — Mental Subtraction**

**Using number facts**
Number bonds to 10 and 100 and derived facts
  e.g. *100 – 76 = 24*
  e.g. *1 – 0·6 = 0·4*

0·4

0·6                     0                     1

Number bonds to £1 and £10
  e.g. *£1·00 – 86p = 14p*
  e.g. *£10·00 – £3·40 = £6·60*

**Year 3 — Written Subtraction**

Develop counting up subtraction
  e.g. *200 – 167*

200 – 167 = 33

3 + 30 = 33

30

3

167    170    200

**Year 4 — Written Subtraction**

Expanded column subtraction with 3- and 4-digit numbers
  e.g. *726 – 358*

```
  600   110   16
  700    20    0
-  300    50    8
  300    60    8
```

Begin to develop compact column subtraction
  e.g. *726 – 358*

```
  6   11   16
  7    2    0
-  3    5    8
  3    6    8
```

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| Year 3 | Year 4 |
|---|---|

**Written Subtraction**

### Year 3

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

£6·90  £7·00

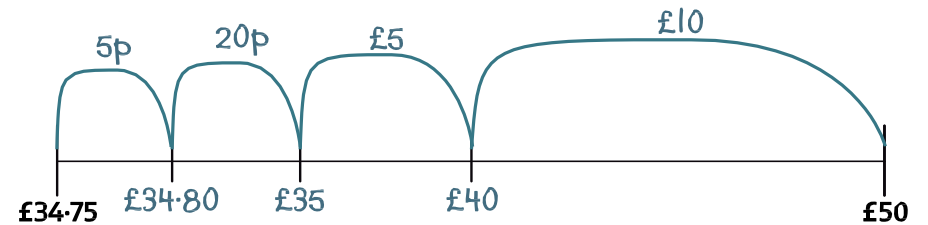£6·84                                    £10·00

Recognise complements of any fraction to 1

 e.g. *1 – 1/4 = 3/4*

 e.g. *1 – 3/5 = 2/5*

### Year 4

Use counting up subtraction to find change from £10, £20, £50 and £100

 e.g. *Buy a computer game for £34·75 using £50*

5p      20p      £5      £10

£34·75   £34·80   £35      £40                        £50

Subtract like fractions

 e.g. *3/8 – 1/8 = 2/8*

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| Year 5 | Year 6 |
|---|---|
| **Taking away** | **Taking away** |
| Use place value to subtract decimals | Use place value to subtract decimals |
| e.g. *4·58 – 0·08* | e.g. *7·782 – 0·08* |
| e.g. *6·26 – 0·2* | e.g. *16·263 – 0·2* |
| Take away multiples of powers of 10 | Take away multiples of powers of 10 |
| e.g. *15 672 – 300* | e.g. *132 956 – 400* |
| e.g. *4·82 – 2* e.g. *2·71 – 0·5* | e.g. *686 109 – 40 000* |
| e.g. *4·68 – 0·02* | e.g. *7·823 – 0·5* |
| Partitioning or counting back | Partitioning or counting back |
| e.g. *3964 – 1051* | e.g. *3964 – 1051* |
| e.g. *5·72 – 2·01* | e.g. *5·72 – 2·01* |
| Subtract near multiples of 1, 10, 100, 1000, 10 000 or £1 | Subtract near multiples of powers of 10 |
| e.g. *86 456 – 9999* | e.g. *360 078 – 99 998* |
| e.g. *3·58 – 1·99* | e.g. *12·831 – 0·99* |
| **Counting up** | |
| Find a difference between two numbers by counting up from the smaller to the larger | |
| e.g. *£12·05 − £9·59* | |
| e.g. *2009 – 869* | |

*Mental Subtraction*



2009 – 869 = 1140

1 + 30 + 100 + 1000 + 9 = 1140

30    1000

1    100    9

870  900  1000    2000  2009

869

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| Year 5 | Year 6 |
|---|---|

**Mental Subtraction**

### Year 5

Find change using shopkeepers' addition

e.g. *Buy a toy for £6·89 using £10·00*

£10·00 – £6·89 = £3·11

Ip + 10p + £3·00 = £3·11

10p

Ip

£3·00

£6·90 £7·00

£6·89

£10·00
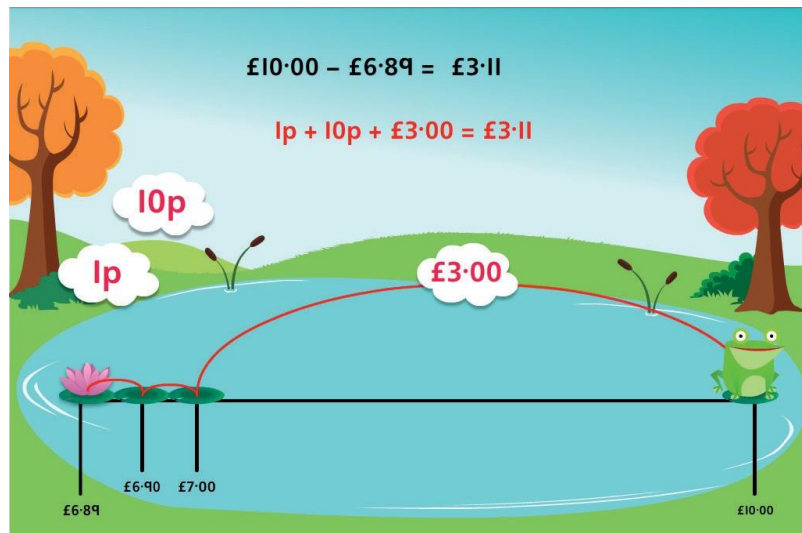
Find a difference between two amounts of money by counting up

#### Using number facts

Derived facts from number bonds to 10 and 100

e.g. *2 – 0·45 using 45 + 55 = 100*

e.g. *3 – 0·86 using 86 + 14 = 100*

0.14

2

0·86    I    3

Number bonds to £1, £10 and £100

e.g. *£4·00 – £3·86*

e.g. *£100 – £66 using 66 + 34 = 100*

### Year 6

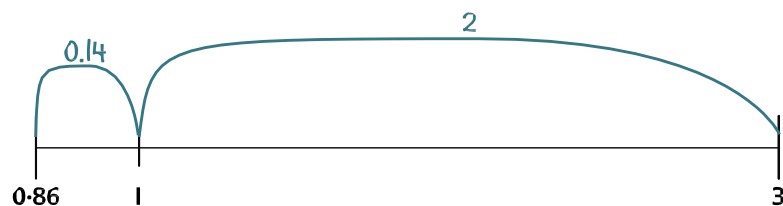#### Counting up

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

e.g. *1·2 – 0·87*

1·2 – 0·87 = 0·33

0·03 + 0·1 + 0·2 = 0·33

0·1

0·03

0·2

0·87    0·9    I    1·2
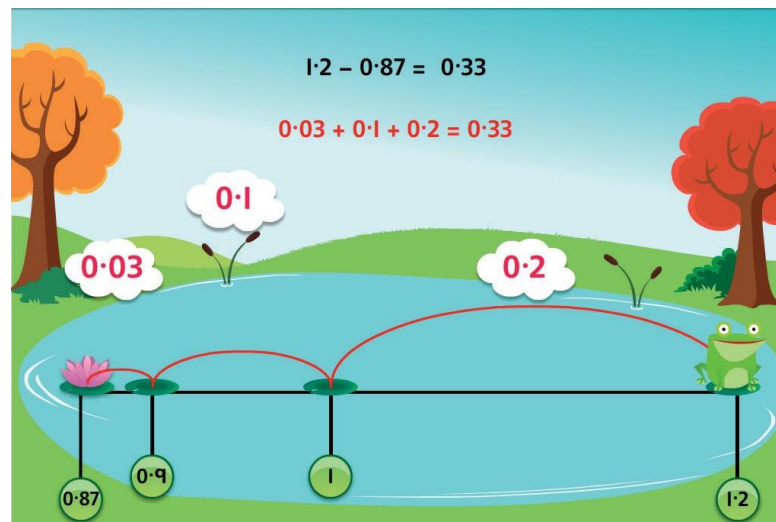
#### Using number facts

Derived facts from number bonds to 10 and 100

e.g. *0·1 – 0·075 using 75 + 25 = 100*

e.g. *5 – 0·65 using 65 + 35 = 100*

0·35

4

0·65    I    5

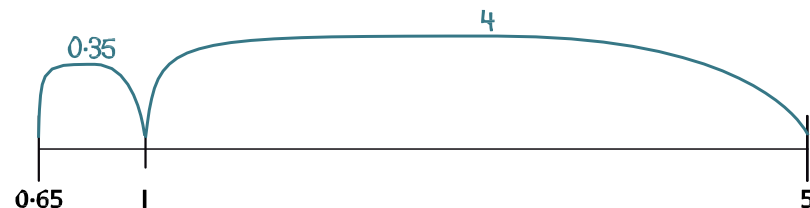Number bonds to £1, £10 and £100

e.g. *£7·00 – £4·37*

e.g. *£100 – £66·20 using 20p + 80p = £1 and £67 + £33 = £100*

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| Year 5 | Year 6 |
|---|---|

**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
  e.g. *£50 − £28·76*

£28·76  £28·80  £29     £30              £50
  4p      20p     £1            £20

Use counting up subtraction to subtract decimal numbers

4·2 − 1·74 = 2·46

0·06 + 0·2 + 2 + 0·2 = 2·46
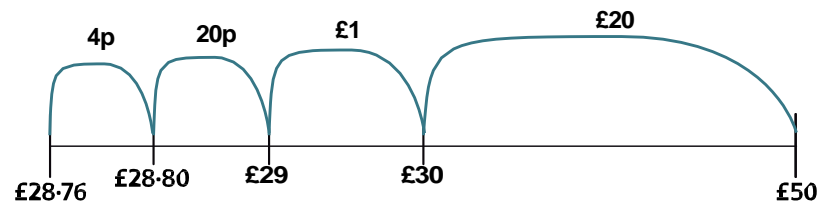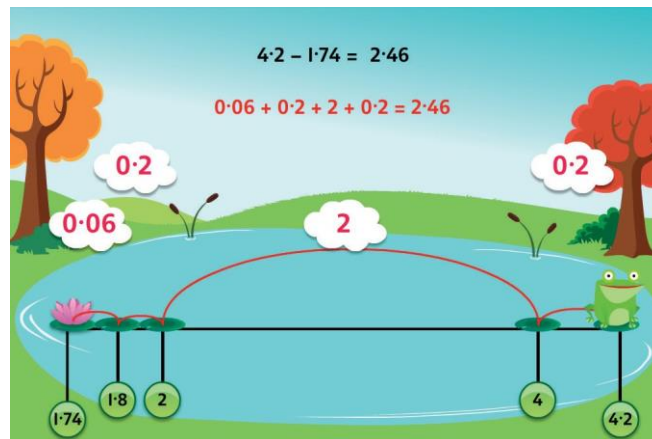
  e.g. *4·2 − 1·74*

Subtract related fractions
  e.g. *3/4 − 1/8  = 5/8*

**NB Counting up subtraction provides a default method for ALL children**

---

Compact column subtraction for large numbers
  e.g. *34 685 – 16 458*

```
  2  14       7  15
  3   4   6   8   5
- 1   6   4   5   8
  ─────────────────
  1   8   2   2   7
```

Use counting up for subtractions where the larger number is a multiple or near multiple of 1000 or 10 000
Use counting up subtraction when dealing with money
  e.g. *£100 – £78·56*
  e.g. *£45·23 – £27·57*

£27·57  £27·60  £28    £30      £40  £45  £45·23
  3p      40p    £2       £10      £5   23p
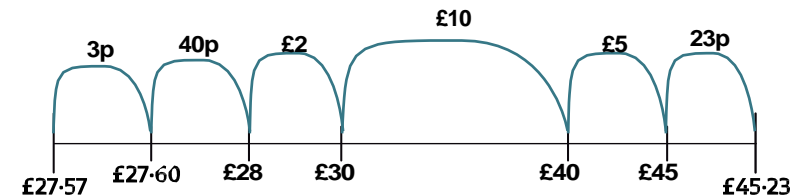
Use counting up subtraction to subtract decimal numbers
  e.g. *13·1 – 2·37*

2·37  2·4    3                          13    13·1
 0·03  0·6          10                    0·1
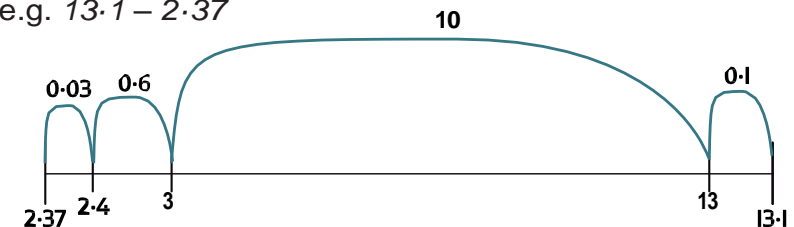
Subtract unlike fractions, including mixed numbers
  e.g. *3/4 − 1/3 = 5/12*
  e.g. *2 3/4 − 1 1/3 = 1 5/12*

**NB Counting up subtraction provides a default method for ALL children**

**abacus**

**Mental Multiplication**

| Year 3 | Year 4 |
|---|---|

### Year 3

**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 |

### Year 4

**Counting in steps (sequences)**

Count in 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 25s, 50s, 100s and 1000s
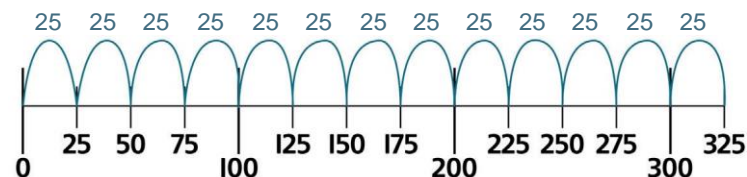
**Doubling and halving**

Find doubles to double 100 and beyond using partitioning

e.g. *double 126*

126
200    52
252
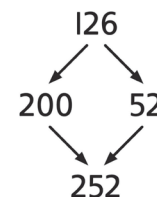
Begin to double amounts of money

e.g. *£3·50 doubled is £7*

Use doubling as a strategy in multiplying by 2, 4 and 8

e.g. *34 × 4 is double 34 (68) doubled again = 136*

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**abacus**

| Year 3 | Year 4 |
|---|---|

**Mental Multiplication**

### Year 3

**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

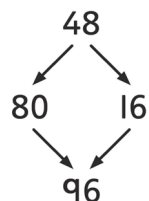e.g. *double 85 is 170*

Know ×2, ×3, ×4, ×5, ×8, ×10 tables facts

### Year 4

**Grouping**

Use partitioning to multiply 2-digit numbers by 1-digit numbers

e.g. *24 × 5*

```
         24
     ×5 ↙  ↘ ×5
   100      20
       ↘  ↙
        120
```
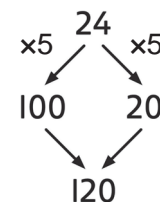
Multiply multiples of 100 and 1000 by 1-digit numbers using tables facts

e.g. *400 × 8 = 3200*

Multiply near multiples by rounding e.g.

*24 × 19 as (24 × 20) – 24 = 456*

**Using number facts**

Know times-tables up to 12 × 12

| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 11 | 24 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 22 | 36 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 33 | 48 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 44 | 60 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 55 | 72 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 66 | 84 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 77 | 96 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 88 | 108 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 99 | 120 |
| 11 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 |
| 12 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

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| Year 3 | Year 4 |
|---|---|

**Written Multiplication**

### Year 3

Build on partitioning to develop grid multiplication

e.g. *23 × 4*

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

### Year 4

Use grid multiplication to multiply 3-digit numbers by 1-digit numbers

e.g. *253 × 6*

| × | 200 | 50 | 3 | |
|---|---|---|---|---|
| 6 | 1200 | 300 | 18 | = 1518 |

Use a vertical written algorithm (ladder) to multiply 3-digit numbers by 1-digit numbers

e.g. *253 × 6*
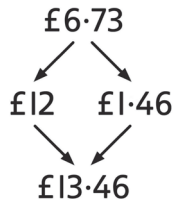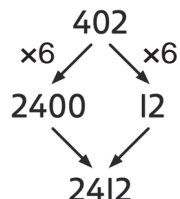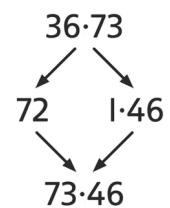
```
      2 5 3
    ×     6
    1 2 0 0  ← 6 × 200
      3 0 0  ← 6 × 50
  +     1 8  ← 6 × 3
    ─────────
    1 5 1 8
```
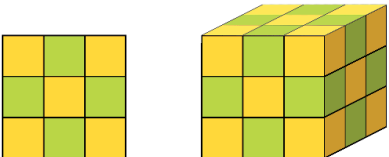
Use grid multiplication to multiply 2-digit numbers by 2-digit numbers

e.g. *16 × 48*

| × | 10 | 6 | |
|---|---|---|---|
| 40 | 400 | 240 | = 640 |
| 8 | 80 | 48 | = 128 |
| | | | 768 |

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| Year 5 | Year 6 |
|---|---|

**Mental Multiplication**

**Year 5**

**Doubling and halving**

Double amounts of money using partitioning

e.g. *double £6·73*

£6·73

£12    £1·46

£13·46

Use doubling and halving as a strategy in multiplying by 2, 4, 8, 5 and 20

e.g. *58 × 5 is half of 58 × 10 (580) = 290*

**Grouping**

Multiply whole numbers and decimals by 10, 100, 1000

e.g. *3·4 × 100 = 340*

Use partitioning to multiply 'friendly' 2- and 3-digit numbers by 1-digit numbers

e.g. *402 × 6 as 400 × 6 (2400) and 2 × 6 (12) = 2412*

402

×6    ×6

2400    12

2412

Use partitioning to multiply decimal numbers by 1-digit numbers

e.g. *4·5 × 3 as 4 × 3 (12) and 0·5 × 3 (1·5) = 13·5*

Multiply near multiples by rounding e.g.

*32 × 29 as (32 × 30) − 32 = 928*

**Year 6**

**Doubling and halving**

Double decimal numbers with up to 2 places using partitioning

e.g. *double 36·73*

36·73

72    1·46

73·46

Use doubling and halving as strategies in mental multiplication

**Grouping**

Use partitioning as a strategy in mental multiplication, as appropriate

e.g. *3060 × 4 as 3000 × 4 (12 000) and 60 × 4 (240) = 12 240*

e.g. *8·4 × 8 as 8 × 8 (64) and 0·4 × 8 (3·2) = 67·2*

Use factors in mental multiplication

e.g. *421 × 6 as 421 × 3 (1263) doubled = 2526*

e.g. *3·42 × 5 as half of 3·42 × 10 = 17·1*

Multiply decimal numbers using near multiples by rounding

e.g. *4·3 × 19 as (4·3 × 20) − 4·3 = 81·7*

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| Year 5 | Year 6 |
|---|---|
| **Using number facts** | **Using number facts** |
| Use times-tables facts up to 12 × 12 to multiply multiples of 10/100 of the multiplier | Use times-tables facts up to 12 × 12 in mental multiplication of large numbers or numbers with up to 2 decimal places |
| e.g. *4 × 6 = 24 so 40 × 6 = 240 and 400 × 6 = 2400* | e.g. *6 × 4 = 24 and 0·06 × 4 = 0·24* |
| Use knowledge of factors and multiples in multiplication | |
| e.g. *43 × 6 is double 43 × 3* | |
| e.g. *28 × 50 is half of 28 × 100 (2800) = 1400* | |
| Know square numbers and cube numbers | |

**Mental Multiplication**

**Written Multiplication**

Year 5:

Short multiplication of 2-, 3- and 4-digit numbers by 1-digit numbers
  e.g. *435 × 8*

$$
\begin{array}{r}
4\ 3\ 5 \\
\times\quad\ 8 \\
\hline
2\ 4 \\
\hline
3\ 4\ 8\ 0 \\
\hline
\end{array}
$$

Long multiplication of 2-, 3-and 4-digit numbers by 'teen' numbers
  e.g. *48 × 16*

$$
\begin{array}{r}
4\ 8 \\
\times\ 1\ 6 \\
\hline
4\ 8\ 0 \\
2\ 8\ 8 \\
1 \\
\hline
7\ 6\ 8 \\
\end{array}
$$

Year 6:

Short multiplication of 2-, 3- and 4-digit numbers by 1-digit numbers
  e.g. *3743 × 6*

$$
\begin{array}{r}
3\ 7\ 4\ 3 \\
\times\qquad 6 \\
\hline
4\ 2\ 1 \\
\hline
2\ 2\ 4\ 5\ 8 \\
\end{array}
$$

Long multiplication of 2-, 3- and 4-digit numbers by 2-digit numbers

$$
\begin{array}{r}
4\ 5\ 6 \\
\times\qquad 3\ 8 \\
\hline
1\ 3\ 6\ 8\ 0 \\
3\ 6\ 4\ 8 \\
1\ 1 \\
\hline
1\ 7\ 3\ 2\ 8 \\
\end{array}
$$

e.g. *456 × 38*

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| Year 5 | Year 6 |
|---|---|

**Written Multiplication**

**Year 5**

Grid multiplication of numbers with up to 2 decimal places by 1-digit numbers

  e.g. *1·34 × 6*

| × | I | 0·3 | 0·04 |
|---|---|---|---|
| 6 | 6 | I·8 | 0·24 | = 8·04

Multiply fractions by 1-digit numbers
e.g. *3/4 × 6 = 18/4 = 4 2/4 = 4 1/2*
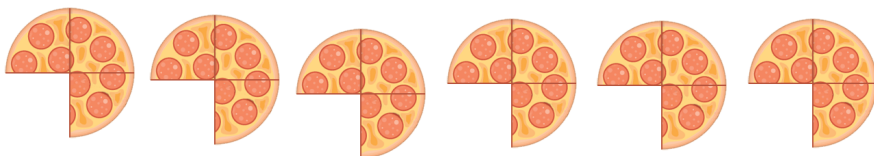
**NB Grid multiplication provides a default method for ALL children**

**Year 6**

Short multiplication of decimal numbers using × 100 and ÷ 100
  e.g. *13·72 × 6 as (1372 × 6) ÷ 100 = 82·32*
Short multiplication of money
  e.g. *£13·72 × 6*

```
    £ 1 3.7 2
  ×         6
      2 4 1
  £ 8 2.3 2
  _____
```

Grid multiplication of numbers with up to 2 decimal places by 1-digit numbers

  e.g. *6·76 × 4*

| × | 6 | 0·7 | 0·06 |
|---|---|---|---|
| 4 | 24 | 2·8 | 0·24 | = 27·04

Multiply simple pairs of proper fractions
e.g. *1/2 × 1/4 = 1/8*

**NB Grid multiplication provides a default method for ALL children**

## Year 3

## Year 4

**Mental Division**

### 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 |

### Counting in steps (sequences)

Count in 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s, 11s, 12s, 25s, 50s, 100s and 1000s

**abacus**

| Year 3 | Year 4 |
|---|---|
| **Doubling and halving**<br>Find half of even numbers to 100 using partitioning<br> e.g. *find half of 48*<br><br>48<br>20   4<br>24<br><br>Use halving as a strategy in dividing by 2<br> e.g. *36 ÷ 2 is half of 36 = 18*<br>Find half of odd numbers | **Doubling and halving**<br>Find half of even numbers to 200 and beyond using partitioning<br> e.g. *find half of 258*<br><br>258<br>100   29<br>129<br><br>Begin to halve amounts of money<br> e.g. *£9 halved is £4·50*<br><br>Use halving as a strategy in dividing by 2, 4 and 8<br> e.g. *164 ÷ 4 is half of 164 (82) halved again = 41* |

**Mental Division**

| Year 3 | Year 4 |
|---|---|
| **Grouping** | **Grouping** |

**Mental Division**

### Year 3

**Grouping**

Recognise that division is not commutative

e.g. *16 ÷ 8 does not equal 8 ÷ 16*

Relate division to multiplications 'with holes in'

e.g. *_ × 5 = 30 is the same calculation as 30 ÷ 5 = _ thus we can count in 5s to find the answer*



_ × £5 = £30

Divide multiples of 10 by 1-digit numbers

e.g. *240 ÷ 8 = 30*

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

e.g. *52 ÷ 4 is 10 × 4 (40) and 3 × 4 (12) = 13*

### Year 4

**Grouping**

Use multiples of 10 times the divisor to divide by 1-digit numbers above the tables facts

e.g. *45 ÷ 3 as 10 × 3 (30) and 5 × 3 (15)*

$$4\,5 \div 3 = \square$$

$$\square \times 3 = 4\,5 \qquad 4\,5 \div 3 = 1\,5$$
$$1\,0 \times 3 = 3\,0$$
$$\underline{\phantom{00}1\,5}$$
$$5 \times 3 = 1\,5$$
$$\underline{\phantom{000}0}$$
$$1\,5$$

Divide multiples of 100 by 1-digit numbers using division facts

e.g. *3200 ÷ 8 = 400*

## abacus

|  | **Year 3** | **Year 4** |
|---|---|---|
| **Mental Division** | **Using number facts**<br>Know half of even numbers to 40<br>Know half of multiples of 10 to 200<br> e.g. *half of 170 is 85*<br>Know ×2, ×3, ×4, ×5, ×8, ×10 division facts | **Using number facts**<br>Know times-tables up to 12 × 12 and all related division facts |

**Year 4 – times-tables grid:**

| × | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|----|----|----|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 11 | 24 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 22 | 36 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 33 | 48 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 44 | 60 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 55 | 72 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 66 | 84 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 77 | 96 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 88 | 108 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 99 | 120 |
| 11 | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 |
| 12 | 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

**Written Division**

**Year 3:**
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. *3/4 of 48 is 3 × (48 ÷ 4) = 36*

**Year 4:**
Use a written version of a mental method to divide 2- and 3-digit numbers by 1-digit numbers
 e.g. *86 ÷ 3 as 20 × 3 (60) and 8 × 3 (24), remainder 2*

$$86 ÷ 3 = \boxed{\phantom{00}}$$

$$\boxed{\phantom{0}} × 3 = 8\,6 \qquad 86 ÷ 3 = \mathbf{2\,8\ r2}$$
$$2\,0 × 3 = 6\,0$$
$$2\,6$$
$$8 × 3 = 2\,4$$
$$2$$
$$2\,8$$

Use division facts to find unit and non-unit fractions of amounts within the times-tables
- e.g. *7/8 of 56 is 7 × (56 ÷ 8) = 48*

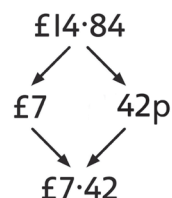PEARSON

**abacus**

| Year 5 | Year 6 |
|---|---|

**Mental Division**

### Year 5

**Doubling and halving**

Halve amounts of money using partitioning

 e.g. *half of £14·84 is half of £14 (£7) plus half of 84p (42p)*

$$£14·84$$
$$£7 \quad 42p$$
$$£7·42$$

Use doubling and halving as a strategy in dividing by 2, 4, 8, 5 and 20

 e.g. *115 ÷ 5 as double 115 (230) ÷ 10 = 23*

**Grouping**

Divide numbers by 10, 100, 1000 to obtain decimal answers with up to 3 decimal places

 e.g. *340 ÷ 100 = 3·4*

Use the 10th, 20th, 30th … multiple of the divisor to divide 'friendly' 2- and 3-digit numbers by 1-digit numbers

 e.g. *186 ÷ 6 as 30 × 6 (180) and 1 × 6 (6)*

$$1\ 8\ 6 ÷ 6 = \boxed{\phantom{0}}$$
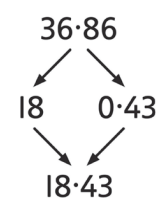
$$\boxed{\phantom{0}} × 6 = 1\ 8\ 6 \qquad 1\ 8\ 6 ÷ 6 = \mathbf{3\ 1}$$
$$\mathbf{3\ 0} × 6 = 1\ 8\ 0$$
$$\phantom{3\ 0 × 6 = 1\ 8}6$$
$$\mathbf{1} × 6 = \phantom{18}6$$
$$\phantom{1 × 6 = 18}0$$
$$\mathbf{3\ 1}$$

### Year 6

**Doubling and halving**

Halve decimal numbers with up to 2 places using partitioning

 e.g. *half of 36·86 is half of 36 (18) plus half of 0·86 (0·43)*

$$36·86$$
$$18 \quad 0·43$$
$$18·43$$

Use doubling and halving as strategies in mental division

**Grouping**

Use the 10th, 20th, 30th, … or 100th, 200th, 300th … multiples of the divisor to divide large numbers
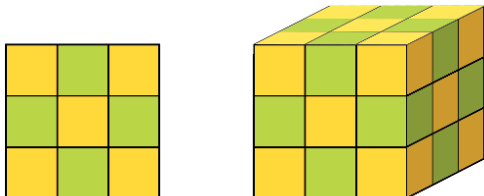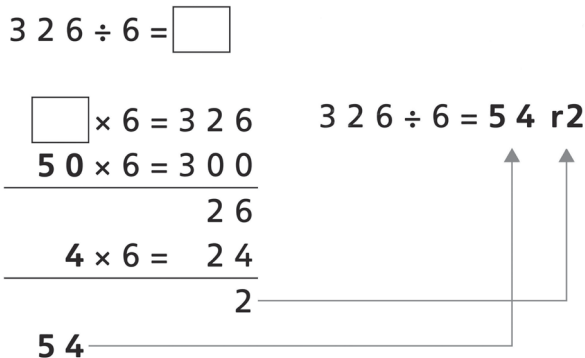
 e.g. *378 ÷ 9 as 40 × 9 (360) and 2 × 9 (18), remainder 2*

$$3\ 7\ 8 ÷ 9 = \boxed{\phantom{0}}$$

$$\boxed{\phantom{0}} × 9 = 3\ 7\ 8 \qquad 3\ 7\ 8 ÷ 9 = \mathbf{42\ r2}$$
$$\mathbf{4\ 0} × 9 = 3\ 6\ 0$$
$$\phantom{4\ 0 × 9 = 3\ }1\ 8$$
$$\mathbf{2} × 9 = \phantom{3\ }1\ 8$$
$$\phantom{2 × 9 = 3\ 1}\mathbf{2}$$
$$\mathbf{4\ 2}$$

Use tests for divisibility

 e.g. *135 divides by 3, as 1 + 3 + 5 = 9 and 9 is in the ×3 table*

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| Year 5 | Year 6 |
|---|---|
| **Mental Division** | |
| **Using number facts**<br><br>Use division facts from the times-tables up to 12 × 12 to divide multiples of powers of 10 of the divisor<br><br>  e.g. *3600 ÷ 9 using 36 ÷ 9*<br><br>Know square numbers and cube numbers | **Using number facts**<br><br>Use division facts from the times-tables up to 12 × 12 to divide decimal numbers by 1-digit numbers<br><br>  e.g. *1·17 ÷ 3 is 1/100 of 117 ÷ 3 (39)*<br><br>Know tests of divisibility for numbers divisible by 2, 3, 4, 5, 9, 10 and 25 |

Year 5:

Use a written version of a mental strategy to divide 3-digit numbers by 1-digit numbers

  e.g. *326 ÷ 6 as 50 × 6 (300) and 4 × 6 (24), remainder 2*

$$3\ 2\ 6 \div 6 = \boxed{\phantom{00}}$$

$$\boxed{\phantom{0}} \times 6 = 3\ 2\ 6 \qquad 3\ 2\ 6 \div 6 = \mathbf{5\ 4\ r2}$$
$$\underline{5\ 0 \times 6 = 3\ 0\ 0}$$
$$2\ 6$$
$$\underline{4 \times 6 = \quad 2\ 4}$$
$$2$$
$$5\ 4$$

Year 6:

Short division of 3- and 4-digit numbers by 1-digit numbers

  e.g. *139 ÷ 3*

$$\begin{array}{r} 4\ 6\ \text{r}\,1 \\ \hline 3\ \big|\ 1\ 3\ {}^1 9 \end{array}$$

Long division of 3- and 4-digit numbers by 2-digit numbers

  e.g. *4176 ÷ 13*

$$300 + 20 + 1,\ \text{r}\,3 \qquad 4176 \div 13 = 321\ \text{r}\,3$$

$$\begin{array}{r} 13\ \big|\ 4176 \\ -3900 \\ \hline 276 \\ -260 \\ \hline 16 \\ -13 \\ \hline 3 \end{array}$$

**abacus**

| | Year 5 | Year 6 |
|---|---|---|
| **Written Division** | Short division of 3- and 4-digit numbers by 1-digit numbers<br>e.g. *139 ÷ 3*<br><br>4 6 r 1<br>3 │ 1 3 ¹9<br><br>Give remainders as whole numbers or as fractions<br>Find unit and non-unit fractions of large amounts<br>　– 　e.g. *3/5 of 265 is 3 × (265 ÷ 5) = 159*<br>Turn improper fractions into mixed numbers and vice versa | Give remainders as whole numbers, fractions or decimals<br>Use place value to divide 1- and 2-place decimals by numbers ≤ 12<br>e.g. *3.65 ÷ 5 as (365 ÷ 5) ÷ 100 = 0·73*<br>Divide proper fractions by whole numbers |