

Year 4

Mental addition

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

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 $6 + 3$

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

Counting on

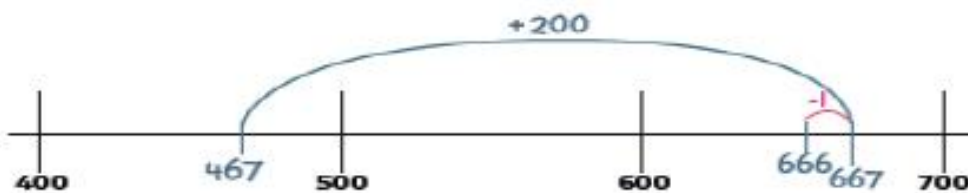
Add 2-digit numbers to 2-, 3- and 4-digit numbers by adding the multiple of 10 then the 1s

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

Add near multiples of 10, 100 and 1000

e.g. $467 + 199$

e.g. $3462 + 2999$



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 $£9.67 + 30p$

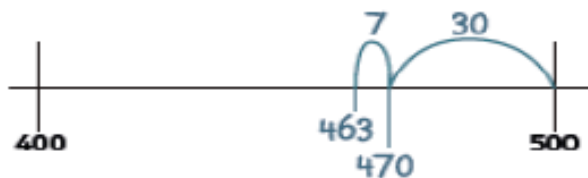
Using number facts

Number bonds to 100 and to the next multiple of 100

e.g. $288 + 12 = 300$

e.g. $1353 + 47 = 1400$

e.g. $463 + 37 = 500$



Number bonds to £1 and to the next whole pound

e.g. $63p + 37p = £1$

e.g. $£3.45 + 55p = £4$

Add to the next whole number

e.g. $4.6 + 0.4$

e.g. $7.2 + 0.8$

Written addition

In Year Four, the children consolidate the written methods taught in Year Three and develop new methods:

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

e.g. $1466 + 4868$

$$\begin{array}{r} 1000 \quad 400 \quad 60 \quad 6 \\ 4000 \quad 800 \quad 60 \quad 8 \\ + 1000 \quad 100 \quad 10 \\ \hline 6000 \quad 300 \quad 30 \quad 4 \end{array}$$

Compact column addition with larger numbers

e.g. $5347 + 2286 + 1495$

$$\begin{array}{r} 5347 \\ 2286 \\ + 1495 \\ \hline 121 \\ \hline 9128 \end{array}$$

Use expanded and compact column addition to add amounts of money

Add like fractions

e.g. $\frac{3}{8} + \frac{1}{8} + \frac{1}{8}$

Compact column addition for adding several large numbers and decimal numbers with up to 2 decimal places

Compact column addition with money

e.g. $£14.64 + £28.78 + £12.26$

$$\begin{array}{r} £14.64 \\ + £28.78 \\ £12.26 \\ \hline 11.1 \\ \hline £55.68 \end{array}$$

Add unlike fractions, including mixed numbers

e.g. $\frac{1}{4} + \frac{2}{3} = \frac{11}{12}$

e.g. $2\frac{1}{4} + 1\frac{1}{3} = 3\frac{7}{12}$

Mental subtraction

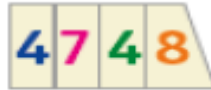
In Year Four, the mental subtraction methods taught are:

Taking away

Use place value to subtract

e.g. $4748 - 4000$

e.g. $4748 - 8$



Take away multiples of 10, 100, 1000, £1, 10p or 0.1

e.g. $8392 - 50$

e.g. $6723 - 3000$

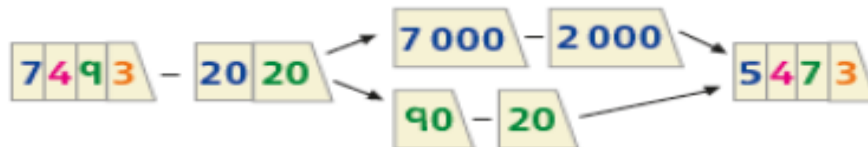
e.g. $£3.74 - 30p$

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 $90 - 20$



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. $3522 - 1999$

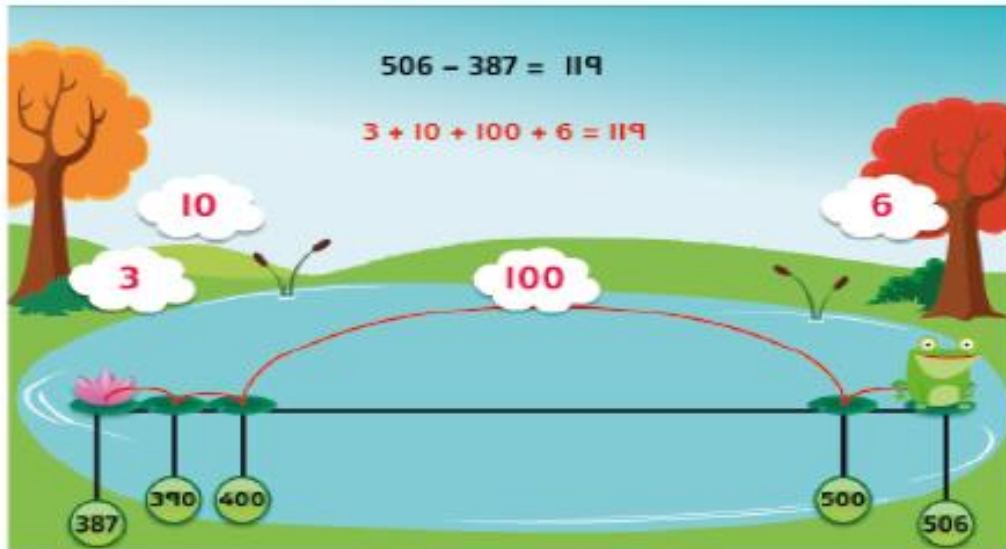
e.g. $£34.86 - £19.99$

Counting up

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

e.g. $506 - 387$

e.g. $4000 - 2693$

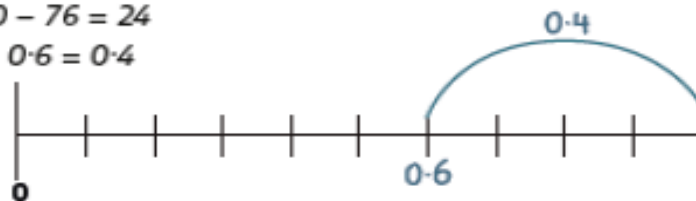


Using number facts

Number bonds to 10 and 100 and derived facts

e.g. $100 - 76 = 24$

e.g. $1 - 0.6 = 0.4$



Number bonds to £1 and £10

e.g. $£1.00 - 86p = 14p$

e.g. $£10.00 - £3.40 = £6.60$

Written Subtraction

In Year Four, the written method of column subtraction is introduced, although in some occasions the children are encouraged to use a number line.

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

$$\begin{array}{r}
 600 \quad 110 \quad 16 \\
 \cancel{700} \quad \cancel{20} \quad \cancel{8} \\
 - 300 \quad 50 \quad 8 \\
 \hline
 300 \quad 60 \quad 8
 \end{array}$$

Begin to develop compact column subtraction
 e.g. $726 - 358$

$$\begin{array}{r}
 6 \quad 11 \quad 16 \\
 \cancel{7} \quad \cancel{2} \quad \cancel{8} \\
 - 3 \quad 5 \quad 8 \\
 \hline
 3 \quad 6 \quad 8
 \end{array}$$

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

e.g. Buy a computer game for £34.75 using £50



Subtract like fractions

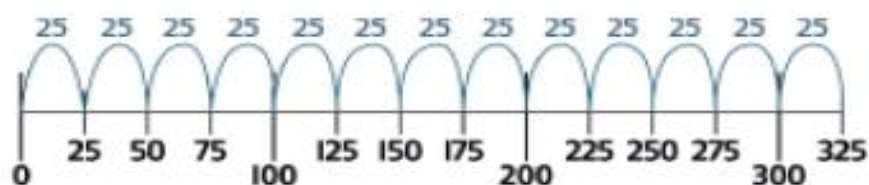
e.g. $\frac{3}{8} - \frac{1}{8} = \frac{2}{8}$

Mental multiplication

The mental methods taught in Year Four are:

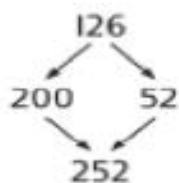
Counting in steps (sequences)

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



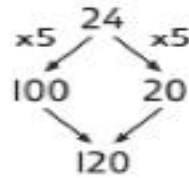
Begin to double amounts of money
e.g. £3.50 doubled is £7



Use doubling as a strategy in multiplying by 2, 4 and 8
e.g. 34×4 is double 34 (68) doubled again = 136

Grouping

Use partitioning to multiply 2-digit numbers by 1-digit numbers
e.g. 24×5



Multiply multiples of 100 and 1000 by 1-digit numbers using tables facts

e.g. $400 \times 8 = 3200$

Multiply near multiples by rounding

e.g. 24×19 as $(24 \times 20) - 24 = 456$

Using number facts

Know times-tables up to 12 x 12

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

Year Four sees the consolidation of the grid method and the ladder method is introduced for written multiplication:

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

e.g. 253×6

x	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

$$\begin{array}{r} \\ \\ \\ + \\ \hline 1 \end{array}$$

← 6×200
← 6×50
← 6×3

Use grid multiplication to multiply 2-digit numbers by 2-digit numbers

e.g. 16×48

x	10	6
40	400	240
8	80	48

 = 640
= 128

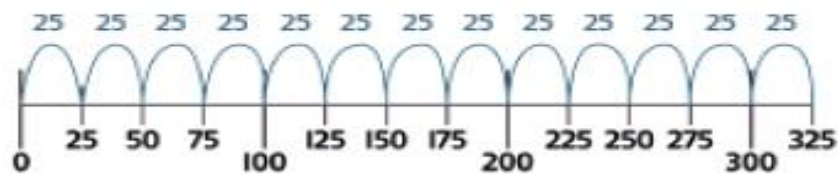
768

Mental division

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

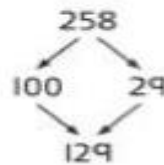
Counting in steps (sequences)

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



Doubling and halving

Find half of even numbers to 200 and beyond using partitioning
e.g. find half of 258



Begin to halve amounts of money

e.g. £9 halved is £4.50



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

e.g. $164 \div 4$ is half of 164 (82) halved again = 41

Grouping

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

e.g. $45 \div 3$ as 10×3 (30) and 5×3 (15)

$$45 \div 3 = \square$$
$$\begin{array}{r} \square \times 3 = 45 \\ 10 \times 3 = 30 \\ \hline 15 \\ 5 \times 3 = 15 \\ \hline 0 \\ 15 \end{array} \quad 45 \div 3 = 15$$

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

e.g. $3200 \div 8 = 400$

Using number facts

Know times-tables up to 12×12

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

In Year Four, division consists mainly of written versions of mental division methods:

Use a written version of a mental method to divide 2- and 3-digit numbers by 1-digit numbers

e.g. $86 \div 3$ as 20×3 (60) and 8×3 (24), remainder 2

$$86 \div 3 = \square$$

$\square \times 3 = 86$	$86 \div 3 = 28 \text{ r}2$
$20 \times 3 = 60$	↑ ↑
26	
$8 \times 3 = 24$	
2	
28	

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

e.g. $\frac{7}{8}$ of 56 is $7 \times (56 \div 8) = 48$