✓
ones
is equal to
zero

North Denes Primary School
Calculation Methods

Addition	Subtraction
## Year 1	## Year 1

Addition — Year 1

CPA

3 + 4 = 7

5 + 3 = 8

8 + 1 = 9

15 = 12 + 3

8 + 1 = 9

8 9 10 11 12 13 14 15 16

10

6 + 4 = 10

10

6

4
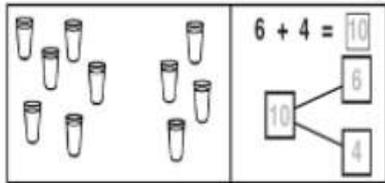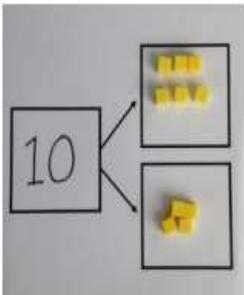
10 = 6 + 4
10 − 6 = 4
10 − 4 = 6
10 = 4 + 6

Subtraction — Year 1

10 − 6 = 4
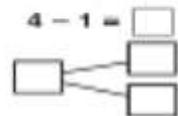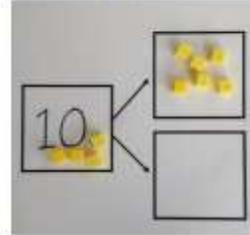
10
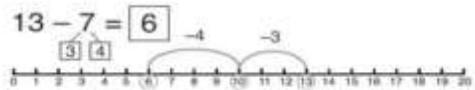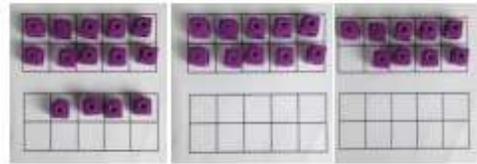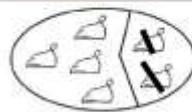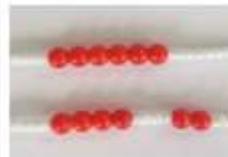
4 − 1 =

14 − 5 = 9

13 − 7 = 6

−4   −3

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

20 − 4 =

4 = 6 − 2

16 − 2 = 14

12 13 14 15 16 17 18

✓
ones
is equal to
zero

North Denes Primary School
Calculation Methods

Year 2

+10   +10   +10
22   32   42   52
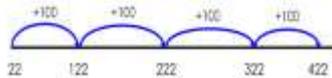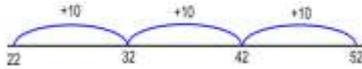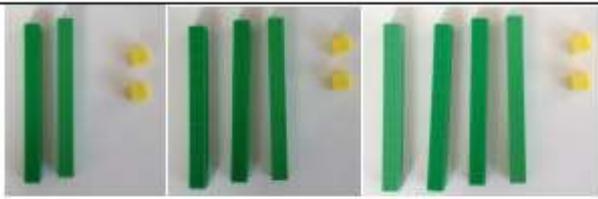
+100   +100   +100   +100
22   122   222   322   422
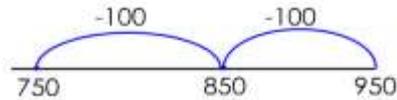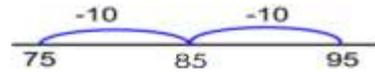
$3 + 4 = 7$

leads to

$30 + 40 = 70$

leads to

$300 + 400 = 700$

+10   +7
22   32   39

$22 + 17 = 39$

hundreds	tens	ones
3	5	8
+	3	7
3	9	5

Last method using base 10

Year 2

−10   −10
75   85   95

−100   −100
750   850   950

$8 − 4 = 4$

leads to

$80 − 40 = 40$

leads to

$800 − 400 = 400$

$53 − 12 = 41$

− 2   −10
41   43   53

hundreds   tens   ones

$1\ {}^{3}\!4\ {}^{1}7$
$-\ \ 1\ 8$
$\overline{1\ 2\ 9}$

Last method using base 10

Year 3
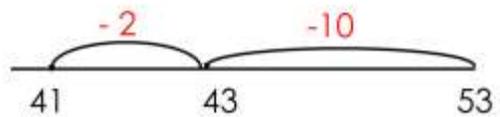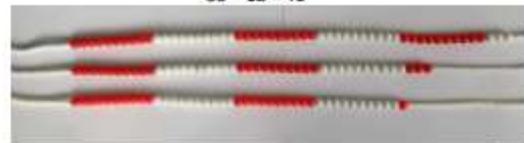
Year 3

hundreds	tens	ones
3	5	8
+	3	7
3	9	5

	hundreds	tens	ones
	□ □ □		⬭
			∴

2	7	5
+3	8	6

142 + 100 = 242

Use the inverse for addition- starting to regroup with manipulatives moving towards a formal method as shown.

hundreds tens ones
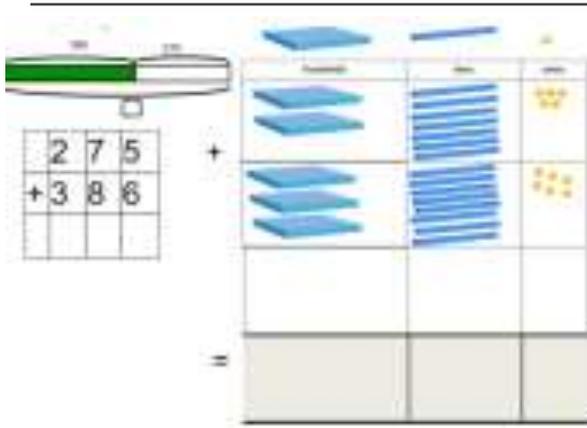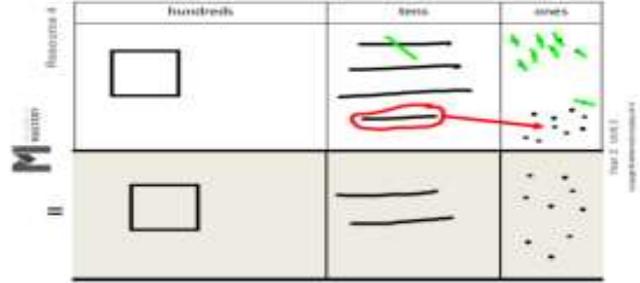
$$1 \overset{3}{4} \overset{1}{7}$$
$$- \quad 1 \ 8$$
$$\overline{1 \ 2 \ 9}$$

	hundreds	tens	ones
M =	▭		
	▭		

North Denes Primary School
Calculation Methods

Year 4	Year 4

Left column:

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

$$
\begin{array}{r}
5\,2\,7\,3 \\
+\ \ 5\,4\,1 \\
\hline
5\,8\,1\,4
\end{array}
$$

= 1   = 0.1   = 0.01

24.2 + 13.4 =

Tens	Ones	•	tenths

Right column:

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

$$
\begin{array}{r}
4\,^2\cancel{3}\,^15\,2 \\
-\ 3\,2\,7\,1 \\
\hline
1\,0\,8\,1
\end{array}
$$

✓
ones
is equal to
zero
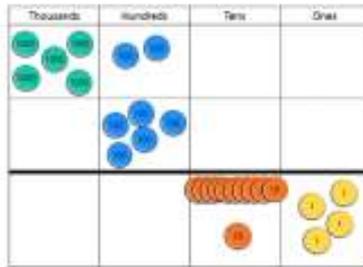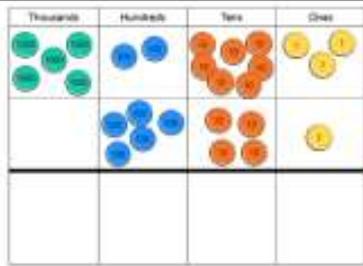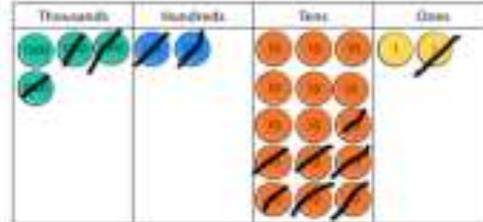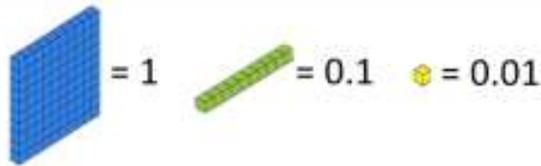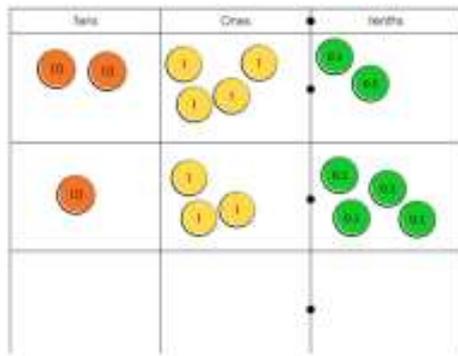
North Denes Primary School
Calculation Methods

Year 5 & 6

For this method start with the digit of least value because if regrouping happens it will affect the digits of greater value.


```
  3 4 6 2 3
+   5 5 4 1
_____
```

Combine the counters in each column and regroup as needed:

```
  3 4 6 2 3
+   5 5 4 1
  1 1
  4 0 1 6 4
```


Decimal numbers:

```
  3 4 . 2 5
  1 5 . 4
+    6 . 3 6 2
  1 1   1
  5 6 . 0 1 2
```


Year 5 & 6

```
  4 1 3 6 2
- 3 2 2 4 3
_____
```



```
  3 1    5 1
  4̸ 1 3 6̸ 2
- 3 2 2 4 3
_____
  9 1 1 9
```


The term regrouping should be the language used. You can use the terms 'exchange' with subtraction but it needs careful consideration.

You can regroup 62 as 50 and 12 (5 tens and 12 ones) instead of 60 and 2 (6 tens and 12 ones).

Or you can 'exchange' one of the tens for 10 ones resulting in 5 tens and 12 ones.

If you have exchanged, then the number has been regrouped.

Year 6
Students consolidate Year 5 learning.

Year 6
Students consolidate Year 5 learning.

North Denes Primary School
Calculation Methods

Multiplication	Division
### Year 1	### Year 1

$10 \div 2 = 5$

$4 \times 5 = 20$

$2 \times 4 = 8$

$\square \times \square = 8$

Draw 🐟 to show 2 x 3 = 6

$3 \times 3 = 3 + 3 + 3$

3 + 3 + 3

How many apples are there altogether?

3 + 3 + 3 = 9

There are 10 sweets.   Ring groups of 2.

There are _____ groups of 2.

Draw an equal number of apples for each basket.

There are five apples in each basket.

North Denes Primary School
Calculation Methods

Year 2
Arrays

$3 \times 5 = \square$

$5 \times 3 = \square$

$12 = 3 \times 4$ $12 = 4 \times 3$

There are three equal parts. Each part has a value of three. What is the whole?

$3 \times 3 = \square$

$9 \div 3 = \square$

Year 2
Sharing and grouping

$10 \div 2 = 5$

$10 \div 2 = 5$

Year 3

$3 \times 3 = 9$ $3 \times 6 = $ double $9 = 18$

Year 3

North Denes Primary School
Calculation Methods

3 x 12
12 = 10 + 2

3 x 10   3 x 2

Now add the total number of tens and ones

×	10	2
3	≡	⋮

×	10	2
3	30	6

×	10	4
3	30	12

×	10	4
3	30	12

14 × 3 = 42

×	40	5
3		

hundreds | tens | ones

3 × 10 = 30

30 ÷ 10 = 3

500 ÷ 100 = ☐

My whole is 500 and the value of the equal parts is 100. How many parts are there?

Year 4

Year 4

North Denes Primary School
Calculation Methods

14 x 6

14

6

14

6
10 x 6   4 x 6

14

6
7 x 6   7 x 6

14

6
12 x 6   2 x 6

34 × 6

34

6

30 × 6 + 4 × 6

30   4

6

Division as sharing

3 | 3 4 8 6

| Th | H | T | O |

Division as grouping

3 2 3 1

3 | 9 6 9 3

| Thousands | Hundreds | Tens | Ones |

24 ÷ 10 = 2.4

| Tens | Ones | • | tenths |

24 ÷ 100 = 0.24

| Tens | Ones | • | tenths | hundredths |

North Denes Primary School
Calculation Methods

To calculate 241 x 3, represent the number 241. Multiply each part by 3, regrouping as needed.

$$
\begin{array}{r}
2\,4\,1 \\
\times\quad\ 3 \\
\hline
7\,2\,3 \\
\end{array}
$$
1

Year 5 & 6	Year 5 & 6
	8528 ÷ 4

$$
\begin{array}{r}
2\,1\,3\,2 \\
4\,\overline{)8\,5\,^12\,8} \\
\end{array}
$$

Sharing

✓
ones
is equal to
zero

241
x 3
723

243
x 12
486
2430

243 x 2

243 x 10

12 × 34

10 × 34 = 340

2 × 34 = 68

3 4
× 1 2
6 8
3 4 0
4 0 8

34
12) 408
36
48
48
0

408 ÷ 12

30 × 12 = 360   4 × 12 = 48

Year 6
Students continue to refine and deepen understanding of written methods including fluency for using long multiplication

34
× 56
204
1700
1904 ✓

Year 6
Students continue to use the bus stop method and divide numbers with up to 2 decimal places. Long multiplication is introduced with a 2 digit divisor.

432 ÷ 15 becomes

2 8
1 5) 4 3 2
3 0 0   15×20
1 3 2
1 2 0   15×8
1 2

$\frac{12}{15} = \frac{4}{5}$

Answer: 28 $\frac{4}{5}$

432 ÷ 15 becomes

2 8 . 8
1 5) 4 3 2 . 0
3 0
1 3 2
1 2 0
1 2 0
1 2 0
0

Answer: 28·8