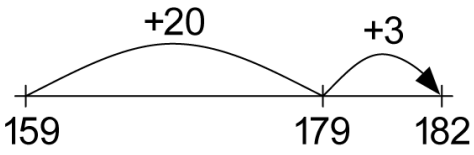
Addition

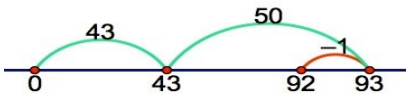
Year 3

Number line, bridging through tens, then hundreds.



Compensating on a number line

43 + 49 = ?



Expanded partitioning method

43 + 24

40 + 20 = 60
3 + 4 = 7

*43 + 24 = **67***

Column addition up to 3 digits

```
  367
+  85
 452
 1 1
```

Year 4

Column addition up to 4 digits

```
 4324
+4256
 8580
   1
```

Year 5

Column addition (decimals)

H	T	O	.	1/10	1/100
		4	.	2	3
		3	.	1	4
		7	.	3	7

Year 6

Column addition up to any digits

```
 432438
+ 25653
 458091
   1 1
```

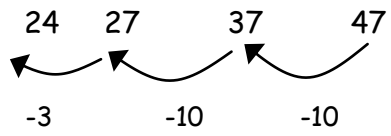
Add decimals with different decimal places (e.g. 4 . 3 8 4 + 2 . 6 6)

```
 4.384
+2.660
 7.044
   1 1
```

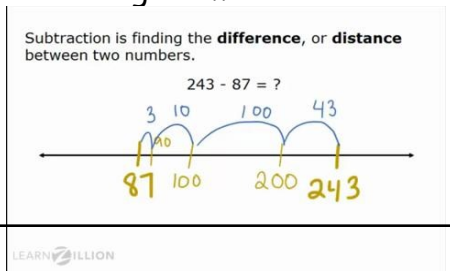
Subtraction

Year 3

Counting back on a number line



Counting on method



Partitioning and decomposition

89 - 57

89 = 80 + 9

- 57 50 + 7

*30 + 2 = **32***

Formal column method

$$\begin{array}{r} {}^{6}\cancel{7}\,{}^{14}\cancel{5}\,{}^{1}4 \\ -\ 8\,6 \\ \hline 6\,6\,8 \end{array}$$

Year 4

Formal column method up to 4 digits

$$\begin{array}{r} {}^{6}\cancel{7}\,{}^{14}\cancel{5}\,{}^{1}4\,5 \\ -\ 8\,6\,2 \\ \hline 6\,6\,8\,3 \end{array}$$

Year 5

Formal column method with 4 digits **or more**

$$\begin{array}{r} {}^{6}\cancel{7}\,{}^{14}\cancel{5}\,{}^{1}4\,5 \\ -\ 8\,6\,2 \\ \hline 6\,6\,8\,3 \end{array}$$

Year 6

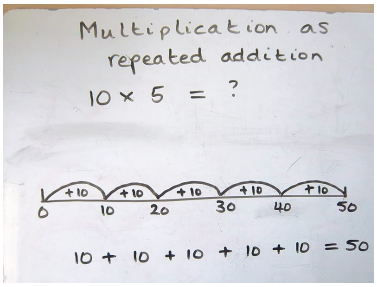
Formal column method - decomposition (including decimals)

$$\begin{array}{r} {}^{1}\cancel{2}\,{}^{10}\cancel{1}\,{}^{1}.1\,8 \\ -\ 8.4\,3 \\ \hline 1\,2.7\,5 \end{array}$$

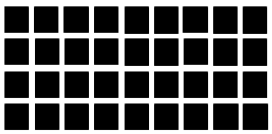
Multiplication

Year 3

Repeated addition



Arrays



4 x 9 = 36

9 x 4 = 36

Grid Method TO x Ones 23 x 8

x	20	3
8	160	24

160
+ 24
184

Progress to Short multiplication

$$\begin{array}{r} 24 \\ \times\ 6 \\ \hline 144 \\ \hline {\scriptstyle 2} \end{array} \qquad \begin{array}{r} 342 \\ \times\ 7 \\ \hline 2394 \\ \hline {\scriptstyle 2\ 1} \end{array}$$

Year 4

Grid Method HTO x O , TO x TO

x	70	2
30	2100	60
8	560	16

Short multiplication to 4 digits

$$\begin{array}{r} 24 \\ \times\ 6 \\ \hline 144 \\ \hline {\scriptstyle 2} \end{array} \qquad \begin{array}{r} 342 \\ \times\ 7 \\ \hline 2394 \\ \hline {\scriptstyle 2\ 1} \end{array}$$

Year 5

Grid method ThHTO x O

x	1000	300	40	6
9	9000	2700	360	54

9000
2700
+ 360
+ 54
12114
1 1

Grid method O th x O

x	4	0.9
3	12	2.7

12
+ 2.7
14.7

Long multiplication of 2 digit numbers TO X TO

$$\begin{array}{r} 24 \\ \times\ 16 \\ \hline 24 \quad (6\times4) \\ 120 \quad (6\times20) \\ 40 \quad (10\times4) \\ 200 \quad (10\times20) \\ \hline 384 \end{array} \qquad \begin{array}{r} 24 \\ \times\ 16 \\ \hline {\scriptstyle 2} \\ 144 \quad (6\times24) \\ 240 \quad (10\times24) \\ \hline 384 \end{array}$$

Year 6

Long multiplication to 4 digit numbers

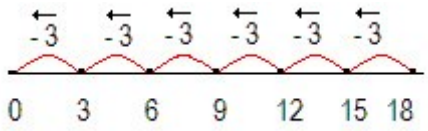
$$\begin{array}{r} 124 \\ \times\ 56 \\ \hline {\scriptstyle 1\ 2} \\ 744 \\ {\scriptstyle 1\ 2} \\ 7440 \\ \hline 8184 \\ {\scriptstyle 1} \end{array}$$

DE Nov17

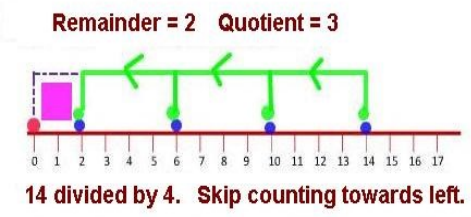
Division

Year 3

Repeated subtraction using a number line

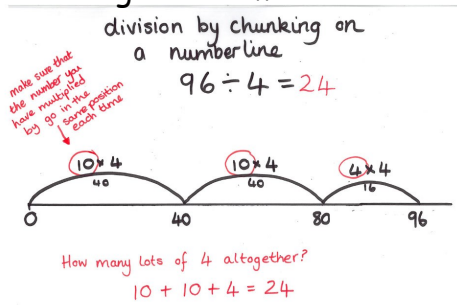


....with remainders



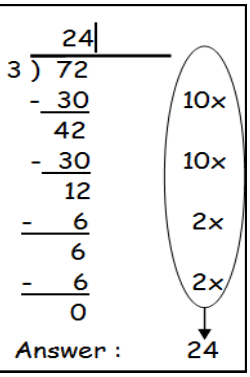
Year 4

Chunking on a number line

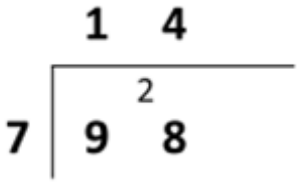


Vertical chunking method

72 ÷ 3



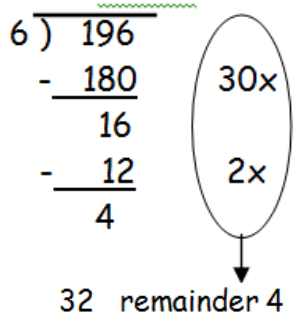
Formal short division



Year 5

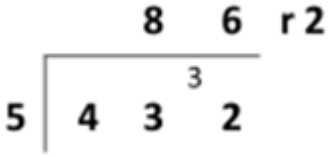
Chunking with remainders

196 ÷ 6



Year 5

Formal short division including remainders



Year 6

Long Division