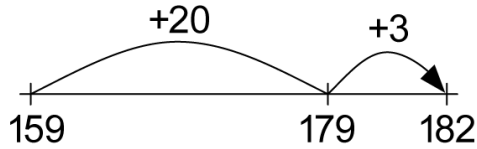


Addition

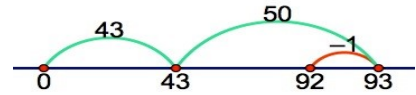
Year 3

Number line, bridging through tens, then hundreds.



Compensating on a number line

$$43 + 49 = ?$$



Expanded partitioning method

$$\begin{aligned} 43 + 24 \\ 40 + 20 &= 60 \\ 3 + 4 &= 7 \\ \hline 43 + 24 &= 67 \end{aligned}$$

Column addition up to 3 digits

$$\begin{array}{r} 367 \\ + 85 \\ \hline 452 \\ 11 \end{array}$$

Year 4

Column addition up to 4 digits

$$\begin{array}{r} 4324 \\ +4256 \\ \hline 8580 \\ 1 \end{array}$$

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

$$\begin{array}{r} 432438 \\ + 25653 \\ \hline 458091 \\ 11 \end{array}$$

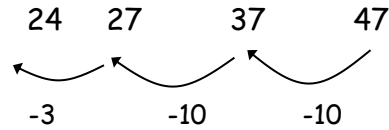
Add decimals with different decimal places (e.g. $4.384 + 2.66$)

$$\begin{array}{r} 4.384 \\ +2.660 \\ \hline 7.044 \\ 11 \end{array}$$

Subtraction

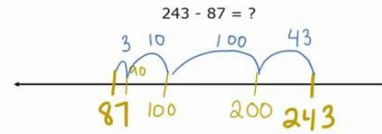
Year 3

Counting back on a number line



Counting on method

Subtraction is finding the **difference**, or **distance** between two numbers.



Partitioning and decomposition

$$\begin{array}{r}
 89 - 57 \\
 89 = 80 + 9 \\
 - 57 \quad \underline{50 + 7} \\
 30 + 2 = 32
 \end{array}$$

Formal column method

$$\begin{array}{r}
 6141 \\
 \underline{754} \\
 - 86 \\
 \hline
 668
 \end{array}$$

Year 4

Formal column method up to 4 digits

$$\begin{array}{r}
 6141 \\
 \underline{754} \\
 - 862 \\
 \hline
 6683
 \end{array}$$

Year 5

Formal column method with 4 digits or more

$$\begin{array}{r}
 6141 \\
 \underline{754} \\
 - 862 \\
 \hline
 6683
 \end{array}$$

Year 6

Formal column method - decomposition (including decimals)

$$\begin{array}{r}
 1101 \\
 \underline{21.18} \\
 - 8.43 \\
 \hline
 12.75
 \end{array}$$

Subtract decimals with different decimal places

(e.g. $4.984 - 2.66$)

$$\begin{array}{r}
 4.984 \\
 \underline{-2.660} \\
 2.324
 \end{array}$$

Multiplication

Year 3

Repeated addition

Multiplication as repeated addition
 $10 \times 5 = ?$
 $10 + 10 + 10 + 10 + 10 = 50$

Arrays

$4 \times 9 = 36$
 $9 \times 4 = 36$

Grid Method TO x Ones 23×8

\times	20	3	160
8	160	24	$+ 24$
			184

Progress to Short multiplication

$\begin{array}{r} 23 \\ \times 8 \\ \hline 24 \text{ (8x3)} \\ 160 \text{ (8x20)} \\ \hline 184 \end{array}$	$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \\ \hline \end{array}$
--	--

Year 4

Grid Method HTO x O , TO x TO

\times	70	2
30	2100	60
8	560	16

Short multiplication to 4 digits
Expanded method

$\begin{array}{r} 123 \\ \times 8 \\ \hline 24 \text{ (8x3)} \\ 160 \text{ (8x20)} \\ \hline 200 \text{ (8x100)} \\ \hline 384 \end{array}$	$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \\ \hline \end{array}$
---	--

Year 5

Grid method ThHTO x O

\times	1000	300	40	6	9000
9	9000	2700	360	54	$+ 360$
					12114

Short multiplication to 5 digits
(see Y4)

Grid method O th x O

\times	4	0.9	12
3	12	2.7	$+ 2.7$
			14.7

Long multiplication of 2 digit numbers TO X TO

$\begin{array}{r} 24 \\ \times 16 \\ \hline 24 \text{ (6x4)} \\ 120 \text{ (6x20)} \\ 40 \text{ (10x4)} \\ \hline 200 \text{ (10x20)} \\ \hline 384 \end{array}$	$\begin{array}{r} 24 \\ \times 16 \\ \hline 144 \text{ (6x24)} \\ 240 \text{ (10x24)} \\ \hline 384 \end{array}$
--	--

Year 6

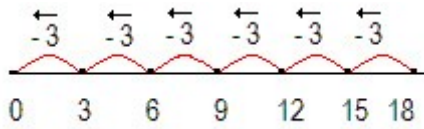
Long multiplication to 4 digit numbers

$\begin{array}{r} 124 \\ \times 56 \\ \hline 744 \\ 744 \\ \hline 7184 \end{array}$	$\begin{array}{r} 124 \\ \times 56 \\ \hline 744 \\ 744 \\ \hline 8184 \end{array}$
--	--

Division

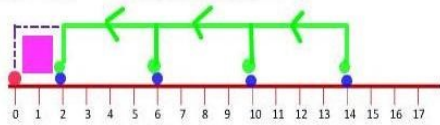
Year 3

Repeated subtraction using a number line



...with remainders

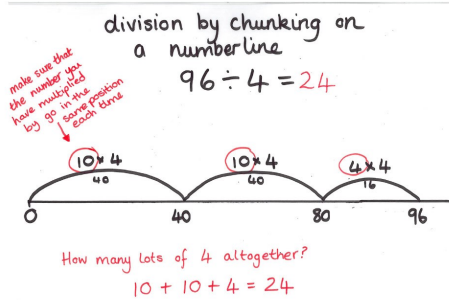
Remainder = 2 Quotient = 3



14 divided by 4. Skip counting towards left.

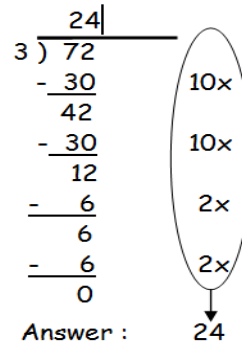
Year 4

Chunking on a number line

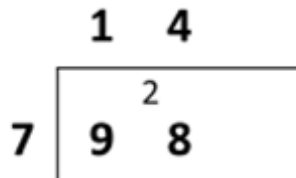


Vertical chunking method

$$72 \div 3$$



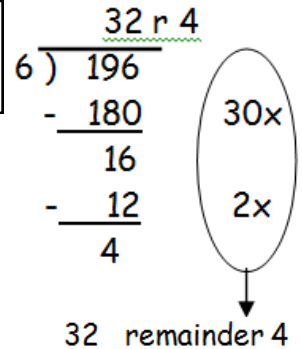
Formal short division



Year 5

Chunking with remainders

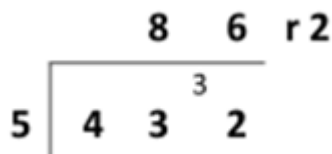
$$196 \div 6$$



32 remainder 4

Year 5

Formal short division including remainders



Year 6

Long Division

