

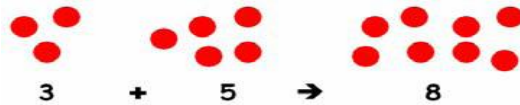
+ Addition +

Year 1 and 2

Y1

- add and subtract 1 and 2 digit numbers to 20 including 0

Count all: $3 + 5$ count out three counters and then five counters, and then find the total by counting all the counters



Count on from the first number: $3 + 5$ count on from the first number: '4, 5, 6, 7, 8'

'3'

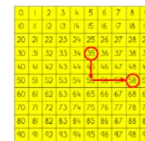
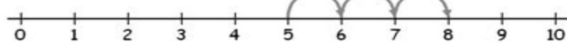


Count on from the largest number:

$3 + 5$

$35 + 23$

'5'



Count on 2 tens then 3 ones.

Year 2, Year 3

Y2

- add numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers

Y3

- add numbers with up to three digits, using formal written methods of columnar addition

Column addition

No carrying

$$\begin{array}{r} 34 \\ + 25 \\ \hline 59 \end{array}$$

Carrying

$$\begin{array}{r} 76 \\ + 47 \\ \hline 123 \\ 1 \end{array}$$

3 digits

$$\begin{array}{r} 389 \\ + 236 \\ \hline 625 \\ 11 \end{array}$$

Year 4, 6, 5

Y4

- add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate

Y5

- add numbers with more than 4 digits including using formal written methods- columnar addition

Y6

- pupils practise addition for larger numbers, using the formal written methods of columnar addition

Year 4, Year 5, Year 6 (plus challenge)

Compact addition

$$\begin{array}{r} 539 \\ + 492 \\ \hline 1031 \\ 11 \end{array}$$

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ 111 \end{array}$$

$$\begin{array}{r} 6584 \\ + 5848 \\ \hline 12432 \\ 1111 \end{array}$$

$$\begin{array}{r} 25.9 \\ + 75.3 \\ \hline 101.2 \\ 11 \end{array}$$

$$\begin{array}{r} 246.23 \\ + 538.68 \\ \hline 784.91 \\ 11 \end{array}$$

÷ **Division** ÷

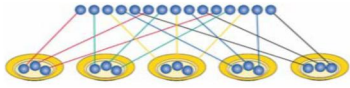
Y1,2

Y1 Through grouping and sharing small quantities, pupils begin to understand division

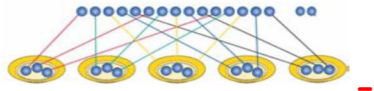
Y2 Pupils work with a range of materials and contexts in which multiplication and division relate to grouping

Sharing

15 marbles are shared out equally among 5 children



$15 \div 5 =$



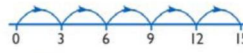
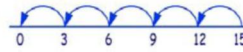
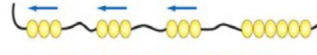
Cut the pizza in half. How many pieces are there?



How

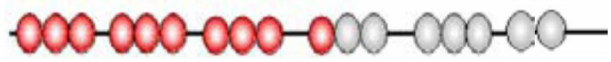
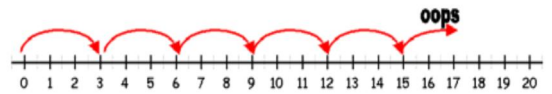
Grouping

15 marbles put into groups of 3



How many 3s in 15!
 3 3 3 3 3 15 = 3 x 5

$17 \div 3 =$



Y3
Y4
Y5

Y3 Develop reliable written methods for division, starting with calculations of two-digit numbers by one-digit numbers

Y4 Use short division with exact answers when dividing by a one-digit number

Y5 Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

Short division: compact method

No remainders

$96 \div 3 =$

$$\begin{array}{r} 32 \\ 3 \overline{) 96} \end{array}$$

$846 \div 2 =$

$$\begin{array}{r} 423 \\ 2 \overline{) 846} \end{array}$$

$75 \div 5 =$

$$\begin{array}{r} 15 \\ 5 \overline{) 75} \end{array}$$

With remainders

$95 \div 4 =$

$$\begin{array}{r} 23 \text{ r}3 \\ 4 \overline{) 95} \end{array}$$

$783 \div 4 =$

$$\begin{array}{r} 195 \text{ r}3 \\ 4 \overline{) 783} \end{array}$$

Y5,6

Y6

divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Short division: compact method

Fraction remainder

$783 \div 4 =$

$$\begin{array}{r} 195 \frac{3}{4} \\ 4 \overline{) 783} \end{array}$$

Decimal remainder

$783 \div 4 =$

$$\begin{array}{r} 195.75 \\ 4 \overline{) 783.00} \end{array}$$

Long division using the compact method/chunking

$504 \div 21 =$

$$\begin{array}{r} 024 \\ 21 \overline{) 504} \end{array}$$

Begin to write out multiples of 21:

- 21
- 42
- 63

$$\begin{array}{r} 024 \\ 21 \overline{) 504} \\ - 420 \end{array}$$

(20 x 21)

$$\begin{array}{r} 84 \\ - 84 \end{array}$$

(4 x 21)

$$\begin{array}{r} 0 \end{array}$$

x Multiplication x

Year 1

- solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Year 2

- use materials, arrays, repeated addition, mental methods and multiplication facts



Counting in equal steps: (2s, 3s, 5s and 10s)

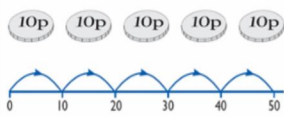
Repeated addition



$$2 + 2 + 2 + 2 + 2 = 10$$

$$2 \times 5 = 10$$

2 multiplied by 5
5 pairs

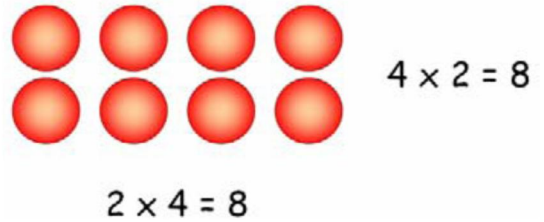


$$10p + 10p + 10p + 10p + 10p = 50p$$

$$10p \times 5 = 50p$$

5 jumps of 10

Describing an array



Year 3,4

Year 3

- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Year 4

- multiply two-digit and three-digit numbers by a one-digit number using formal written layout

Grid method

$$38 \times 7 =$$

210+	x	30	8
<u>56</u>			
266	7	210	56

$$284 \times 3 =$$

600+	x	200	80	4
<u>240</u>				
<u>12</u>	3	600	240	12
852				

Use 'Grid multiplication' ITP to help

Year 5

- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Year 6

- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Short multiplication

45	342
x 4	x 5
<u>180</u>	<u>1710</u>
2	21

Year 4, Year 5, Year 6

Short multiplication

38	25.6
x 7	x 8
<u>266</u>	<u>204.8</u>
5	44

Grid method

$$56 \times 27 =$$

x	50	6	1120+
20	1000	120	392
7	350	42	<u>1512</u>

Long multiplication

$$56 \times 27 =$$

56 x	
<u>27</u>	
392	(56 x 7)
<u>1120</u>	(56 x 20)
1512	

- Subtraction -

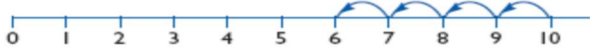
Year 1,2

Y1

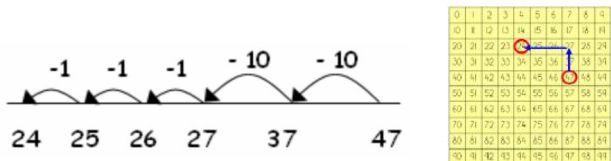
- Subtract 1 and 2 digits to 20 including 0
- Solve 1 step problems that involve subtraction using concrete objects and representations

Counting back: (take away reduction)

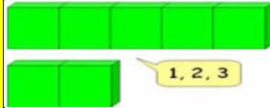
4 less than 10



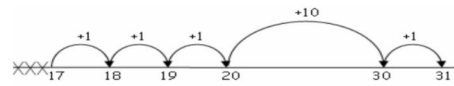
13 - 5 =



Counting on: (take away reduction)
'the difference between 3 and 6'



31 - 17 =



Start at 17 and count on to 31

Y2

- subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers

Y3

- subtract numbers with up to three digits, using formal written methods of columnar subtraction

Y4

- subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate

Y5

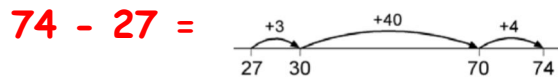
- subtract whole numbers with more than 4 digits, including using formal written methods

Y6

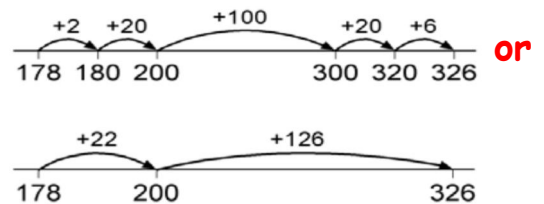
- pupils practise subtraction for larger numbers, using the formal written methods of columnar subtraction

Year 2, Year 3

Counting on



326 - 178 =



Year 2 — Year 6 plus challenge

Compact method

$\begin{array}{r} 98 \\ - 53 \\ \hline 45 \end{array}$	$\begin{array}{r} 765 \\ - 433 \\ \hline 332 \end{array}$	$\begin{array}{r} 7 \\ \cancel{8}12 \\ - 58 \\ \hline 24 \end{array}$	$\begin{array}{r} 4^{13} \\ \cancel{5}4\cancel{1}3 \\ - 268 \\ \hline 275 \end{array}$	$\begin{array}{r} 199 \\ \cancel{2}\cancel{1}\cancel{0}18 \\ - 689 \\ \hline 1319 \end{array}$	$\begin{array}{r} 8^{14} \\ 5\cancel{9}\cancel{5}14 \\ - 23.96 \\ \hline 35.58 \end{array}$
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