Learning Objectives

- To mentally add and subtract a 3-digit number and ones
- To mentally add and subtract a 3-digit number and tens
- To mentally add and subtract a 3-digit number and hundreds
- To add and subtract 3-digit numbers using formal written methods
- To know how to estimate the answers to calculations
- To be able to use the inverse to check answers
- To be able to solve missing number problems
- To solve problems using number facts and place value
- To solve more complex addition and subtraction problems
- To know multiplication facts for the 3, 4 and 8 times tables
- To be able to write and calculate statements for multiplication and division (2-digit numbers times 1-digit numbers)
- To know how to use mental calculations
- To start using formal written methods for multiplication and division
- To know solve missing number problems

Multiplication Facts

Sometimes, you need to use your known table facts and manipulation to find missing values.

? × 3 = 21

The missing value equals 21 ÷ 3. The answer is 7.

8 = ? ÷ 4

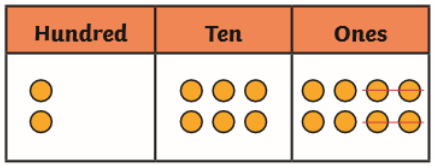
The missing value equals 8 x 4. The answer is 32.

Addition and Subtraction

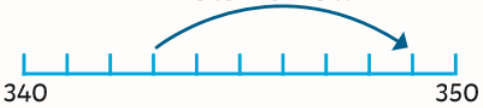
3 digit and 1 digit numbers

Not crossing 10s

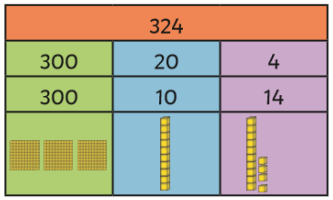
268 – 4 = 264



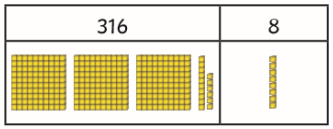
343 + 6 = 349



Crossing 10s (Exchanging)



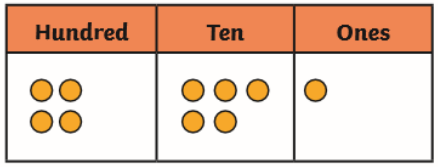
316 + 8 = 32



324 - 8 = 316

3-digit and 2-digit numbers

Add and subtract tens



451 + 3 tens = 481 (5 + 3 = 8)

451 – 4 tens = 411 (5 – 4 = 1)

Crossing 10s (Exchanging)

258 + 80 = 338

- Column method
- Count in 10s mentally
- Add 100, subtract 20

Crossing 10 and 100

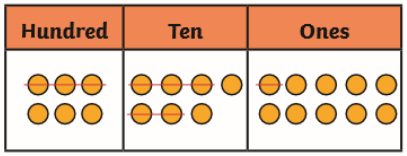
$$\begin{array}{r} 368 \\ +73 \\ \hline 1 \\ \hline 1 \end{array} \qquad \begin{array}{r} 368 \\ +73 \\ \hline 41 \\ \hline 11 \end{array} \qquad \begin{array}{r} 368 \\ +73 \\ \hline 441 \\ \hline 11 \end{array}$$

$$\begin{array}{r} {\scriptstyle 3\,1} \\ 441 \\ -73 \\ \hline 8 \end{array} \qquad \begin{array}{r} {\scriptstyle 3\,13\,1} \\ 441 \\ -73 \\ \hline 68 \end{array} \qquad \begin{array}{r} {\scriptstyle 3\,13\,1} \\ 441 \\ -73 \\ \hline 368 \end{array}$$

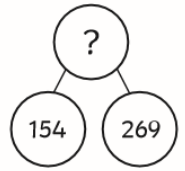
3-digit numbers

Not crossing

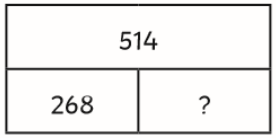
679 – 351 = 328



Crossing 10s (Exchanging)



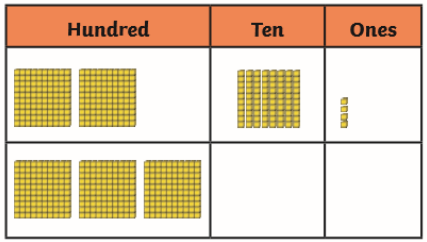
$$\begin{array}{r} 269 \\ +154 \\ \hline 423 \\ \hline 11 \end{array}$$



$$\begin{array}{r} {\scriptstyle 4\,10\,1} \\ 514 \\ -\,268 \\ \hline 246 \end{array}$$

Add and Subtract 100s

264 + 300 = 564



Multiplication and Division

Key Vocabulary
add plus total make sum more altogether increase combined
subtract leave difference less minus reduce decrease take away
multiply product lots of times as much as groups of
divide average evenly shared split
place value

*"To multiply **18 x 4**, I first I partition **18** into **10** and **8** then multiply both numbers by **4**. Finally, I find the total of both arrays, 72."*

T	O
10 x 4	8 x 4
	
10 x 4 = 40	8 x 4 = 32

Written Methods

Pupils then move towards a written method using a grid to set out the calculation.

14 x 8 = 112

×	10	4
8	80	32

Formal Written Methods

Pupils progress onto formal written method:

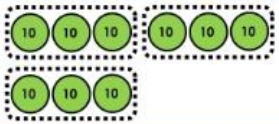
	3	7
×		5
1	8	5

3

Written Methods (Division)

Pupils use place value counters to calculate larger division statements.

*When calculating **93 ÷ 3 = 31**, the tens and ones are divided into groups of 3.*

T	O
90 ÷ 3 = 30	3 ÷ 3 = 1
	

Formal Written Methods (Division)

Pupils progress onto formal written method:

	2	4
4	9	16

3 x Tables

1 × 3 = 3	3 ÷ 3 = 1
2 × 3 = 6	6 ÷ 3 = 2
3 × 3 = 9	9 ÷ 3 = 3
4 × 3 = 12	12 ÷ 3 = 4
5 × 3 = 15	15 ÷ 3 = 5
6 × 3 = 18	18 ÷ 3 = 6
7 × 3 = 21	21 ÷ 3 = 7
8 × 3 = 24	24 ÷ 3 = 8
9 × 3 = 27	27 ÷ 3 = 9
10 × 3 = 30	30 ÷ 3 = 10
11 × 3 = 33	33 ÷ 3 = 11
12 × 3 = 36	36 ÷ 3 = 12

4 x Tables

1 × 4 = 4	4 ÷ 4 = 1
2 × 4 = 8	8 ÷ 4 = 2
3 × 4 = 12	12 ÷ 4 = 3
4 × 4 = 16	16 ÷ 4 = 4
5 × 4 = 20	20 ÷ 4 = 5
6 × 4 = 24	24 ÷ 4 = 6
7 × 4 = 28	28 ÷ 4 = 7
8 × 4 = 32	32 ÷ 4 = 8
9 × 4 = 36	36 ÷ 4 = 9
10 × 4 = 40	40 ÷ 4 = 10
11 × 4 = 44	44 ÷ 4 = 11
12 × 4 = 48	48 ÷ 4 = 12

8 x Tables

1 × 8 = 8	8 ÷ 8 = 1
2 × 8 = 16	16 ÷ 8 = 2
3 × 8 = 24	24 ÷ 8 = 3
4 × 8 = 32	32 ÷ 8 = 4
5 × 8 = 40	40 ÷ 8 = 5
6 × 8 = 48	48 ÷ 8 = 6
7 × 8 = 56	56 ÷ 8 = 7
8 × 8 = 64	64 ÷ 8 = 8
9 × 8 = 72	72 ÷ 8 = 9
10 × 8 = 80	80 ÷ 8 = 10
11 × 8 = 88	88 ÷ 8 = 11
12 × 8 = 96	96 ÷ 8 = 12

What I Should Already Know:

- How to mentally add and subtract a 2-digit number and ones
- How to mentally add and subtract a 2-digit number and tens
- How to mentally add and subtract two 2-digit numbers
- How to mentally add three 1-digit numbers
- Recall of addition and subtraction facts up to 20
- How to use related facts up to 100
- That the addition of two numbers can be done in any order
- That subtraction of two numbers must be done in a certain order
- The inverse operation between addition and subtraction
- How to solve addition and subtraction problems using concrete objects and pictorial representations
- Multiplication facts for the 2, 5 and 10 times tables
- Use the correct symbols for calculation symbols
- That multiplication can be done in any order but division cannot
- How to use repeated addition for multiplication
- How to use arrays for multiplication
- How to solve multiplication and division problems in context using mental methods and materials